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(*Agaricus* [Psalliota] *campestris*) $\times \frac{3}{8}$

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TOADSTOOLS AT HOME

*Sixty photographs from nature by Somerville Hastings, F.R.C.S.,
of British Fungi*

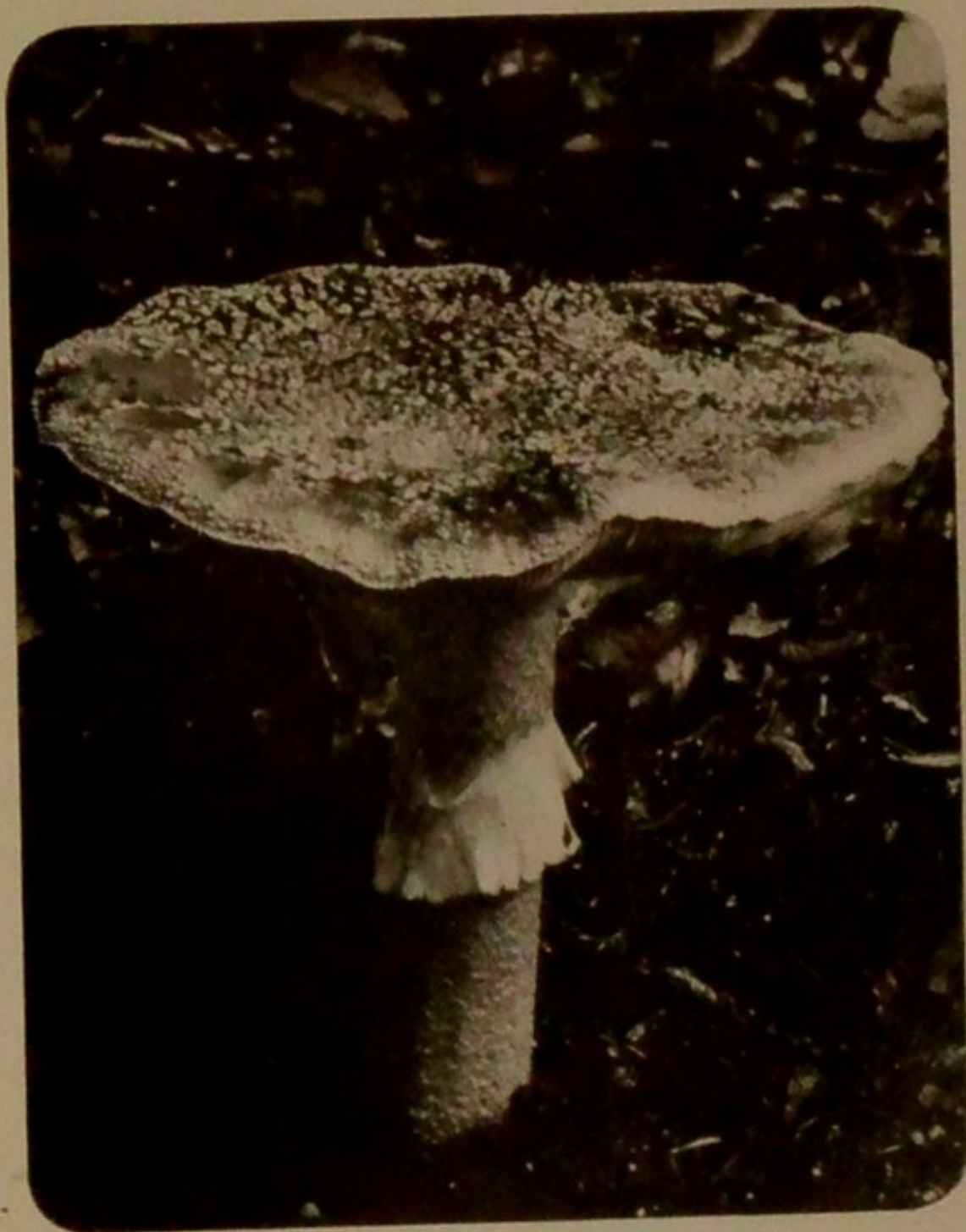
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THE PANTHER-CAP



(*Agaricus* [*Amanita*] *pantherinus*) $\times \frac{1}{3}$

THE PANTHER-CAP



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THE GREY PARASOL

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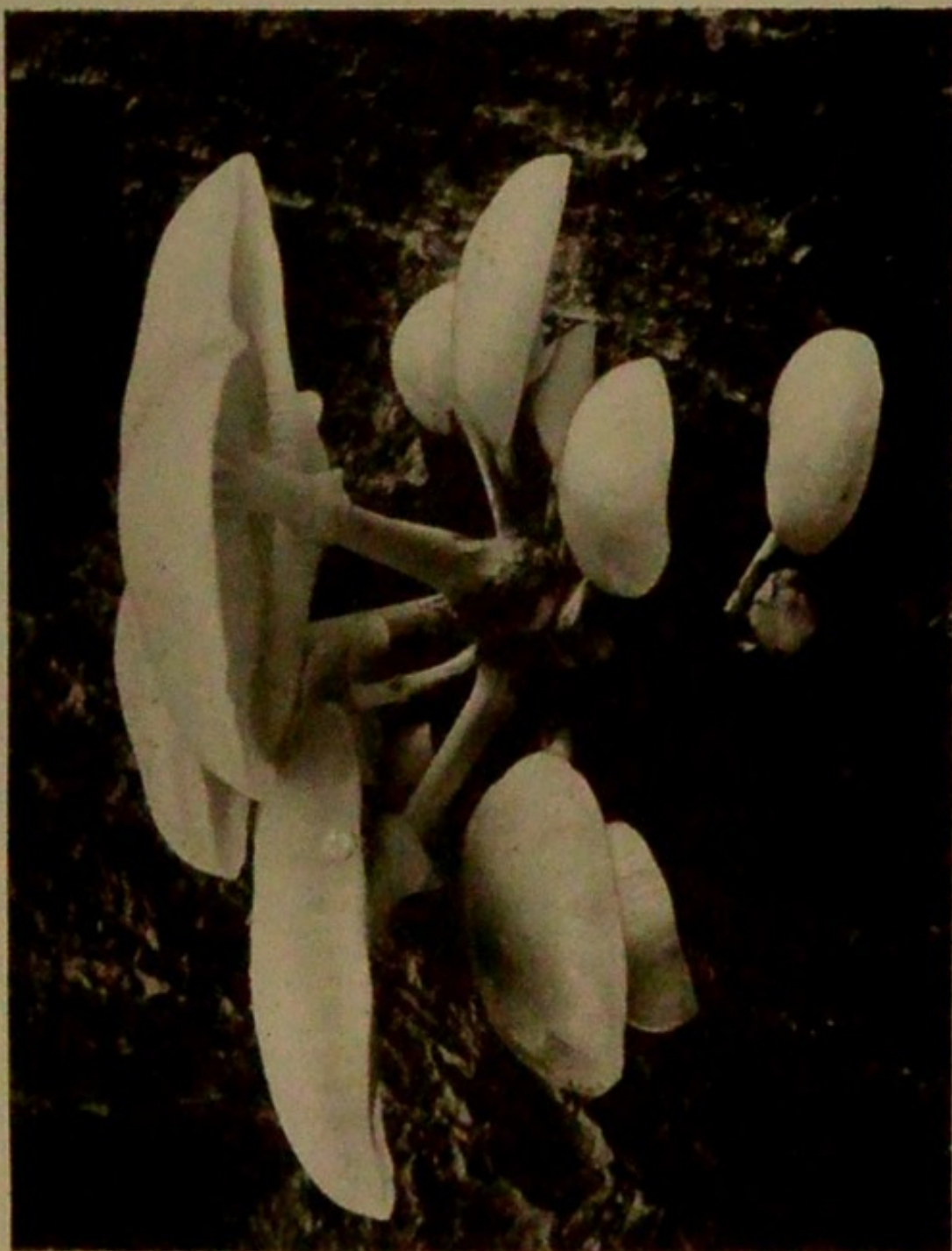


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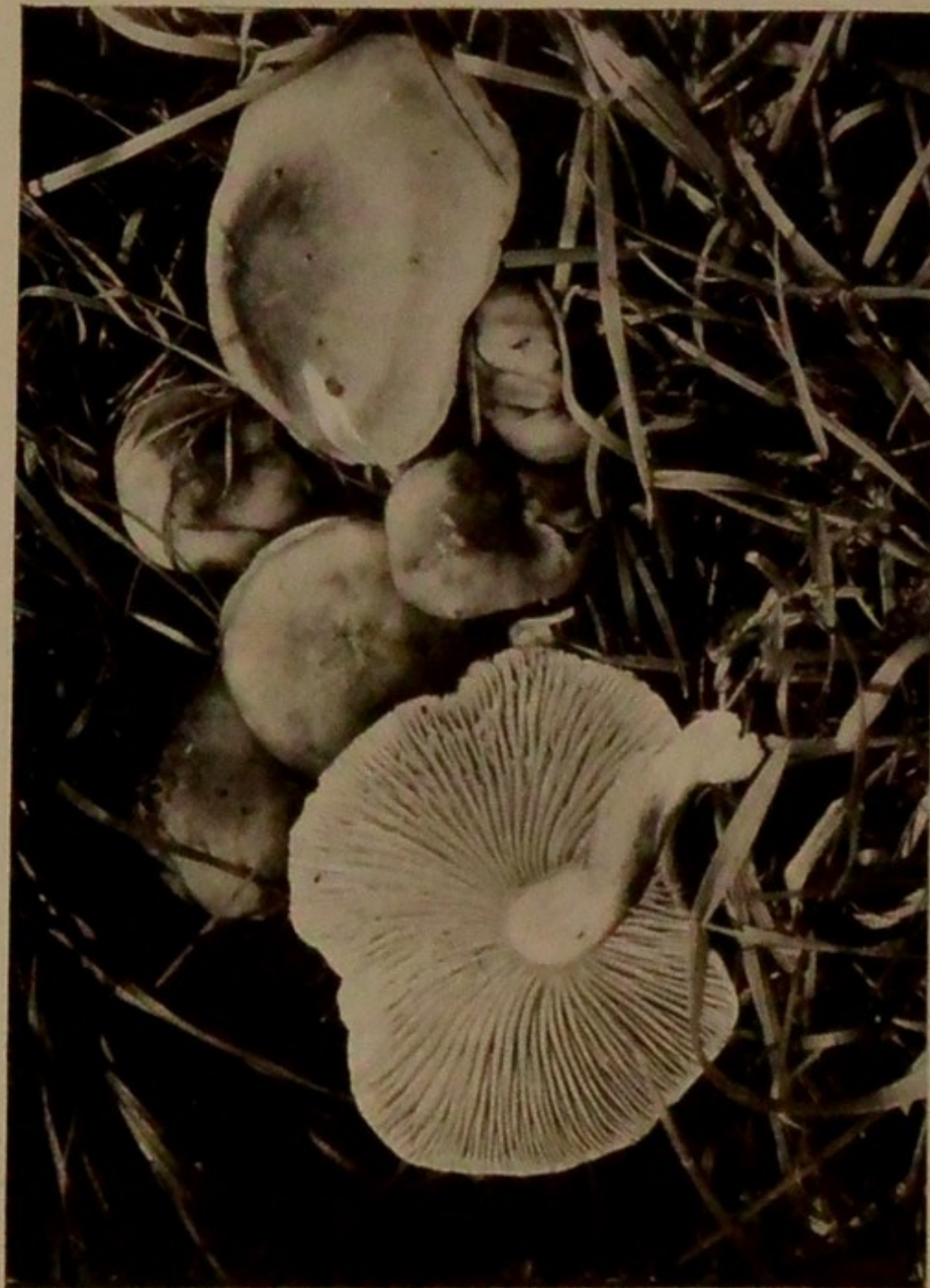
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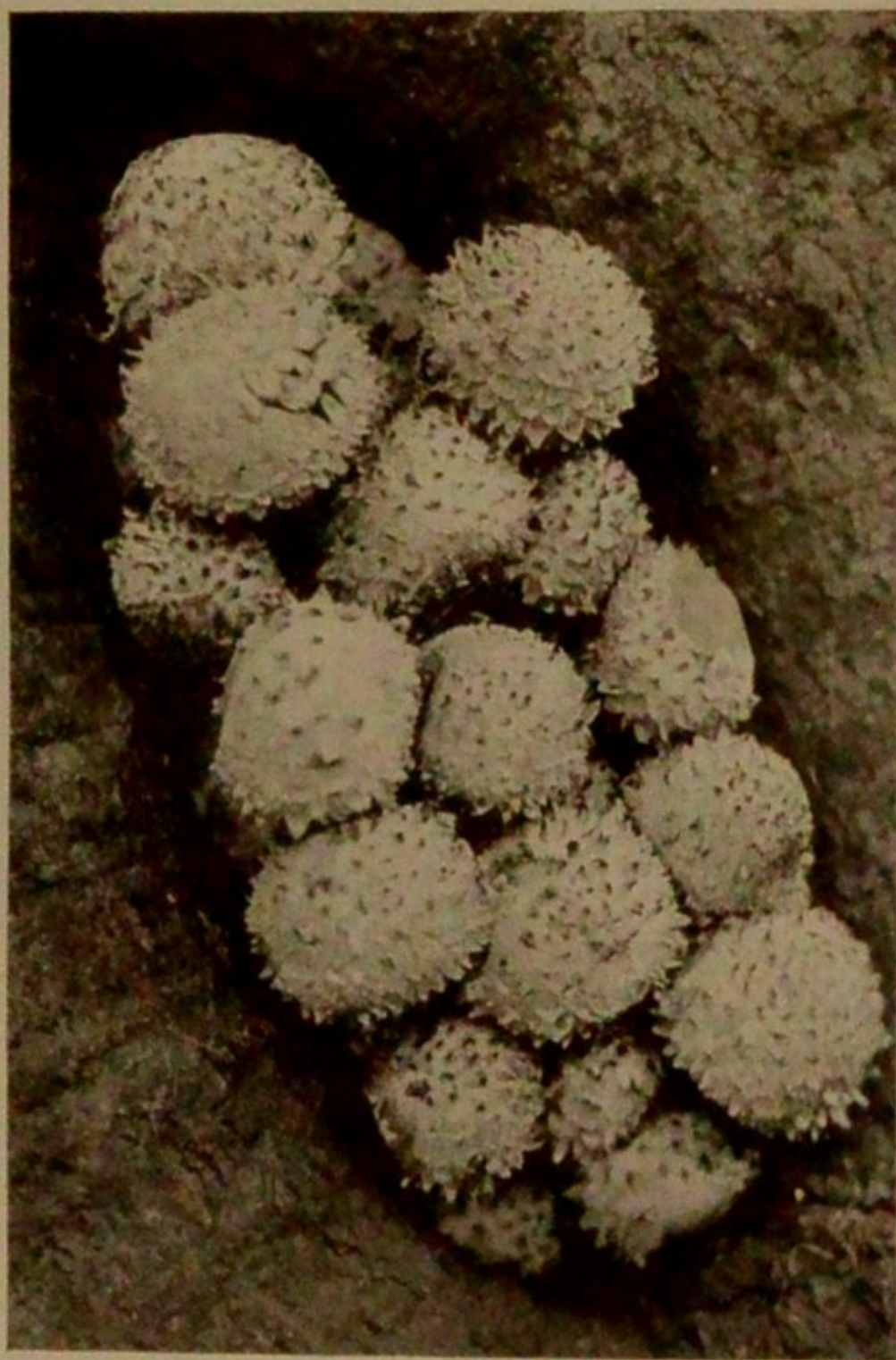
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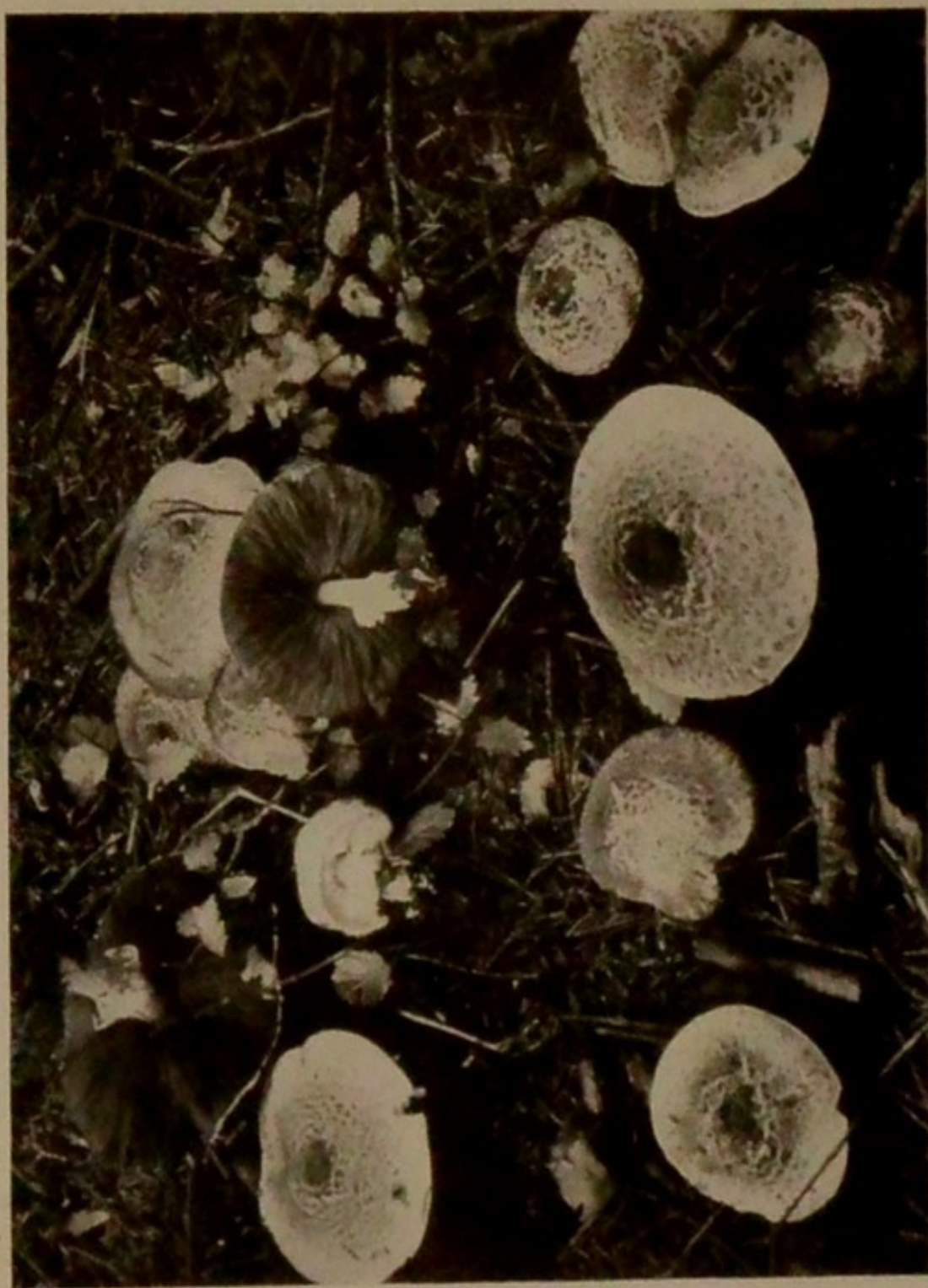


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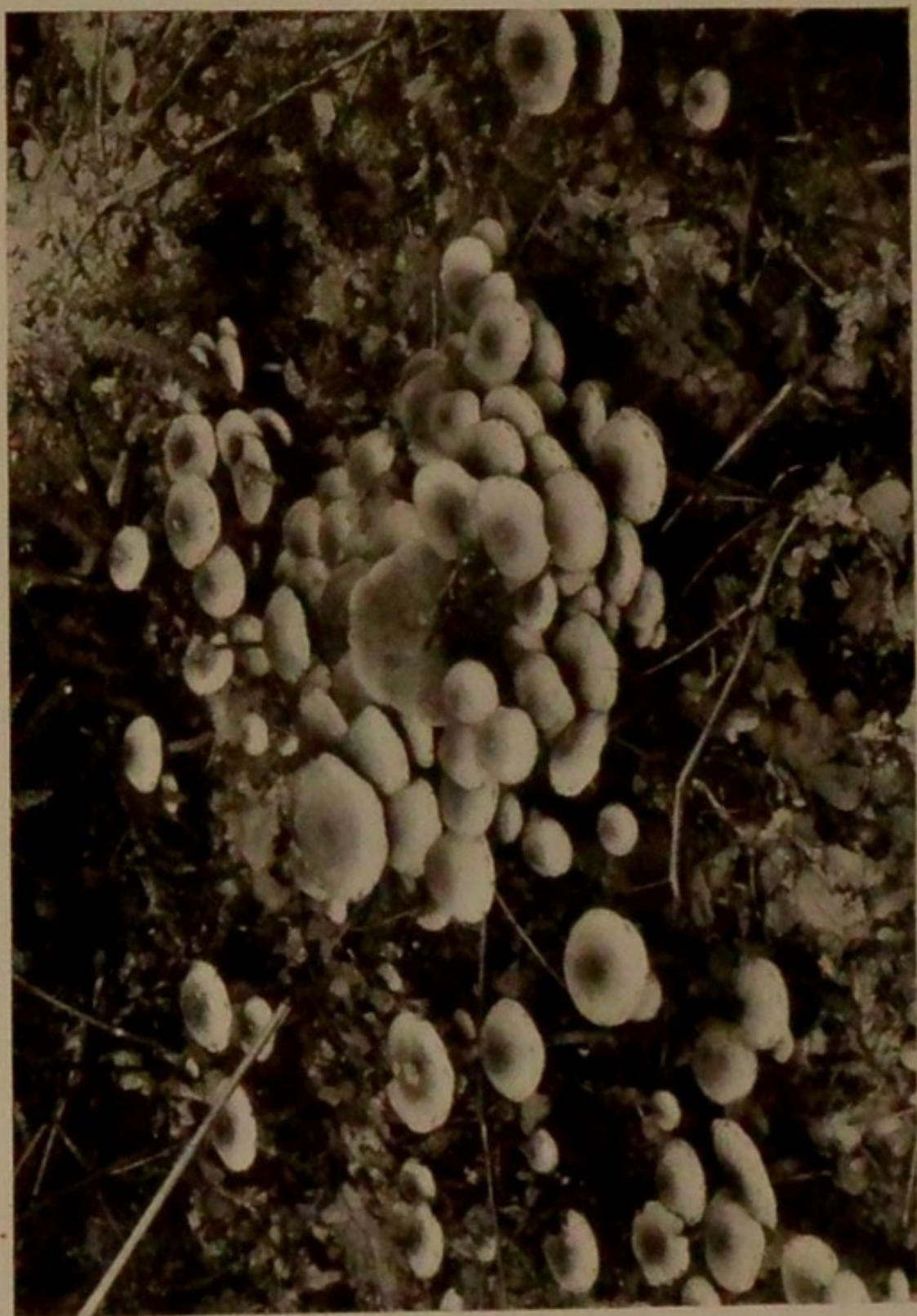
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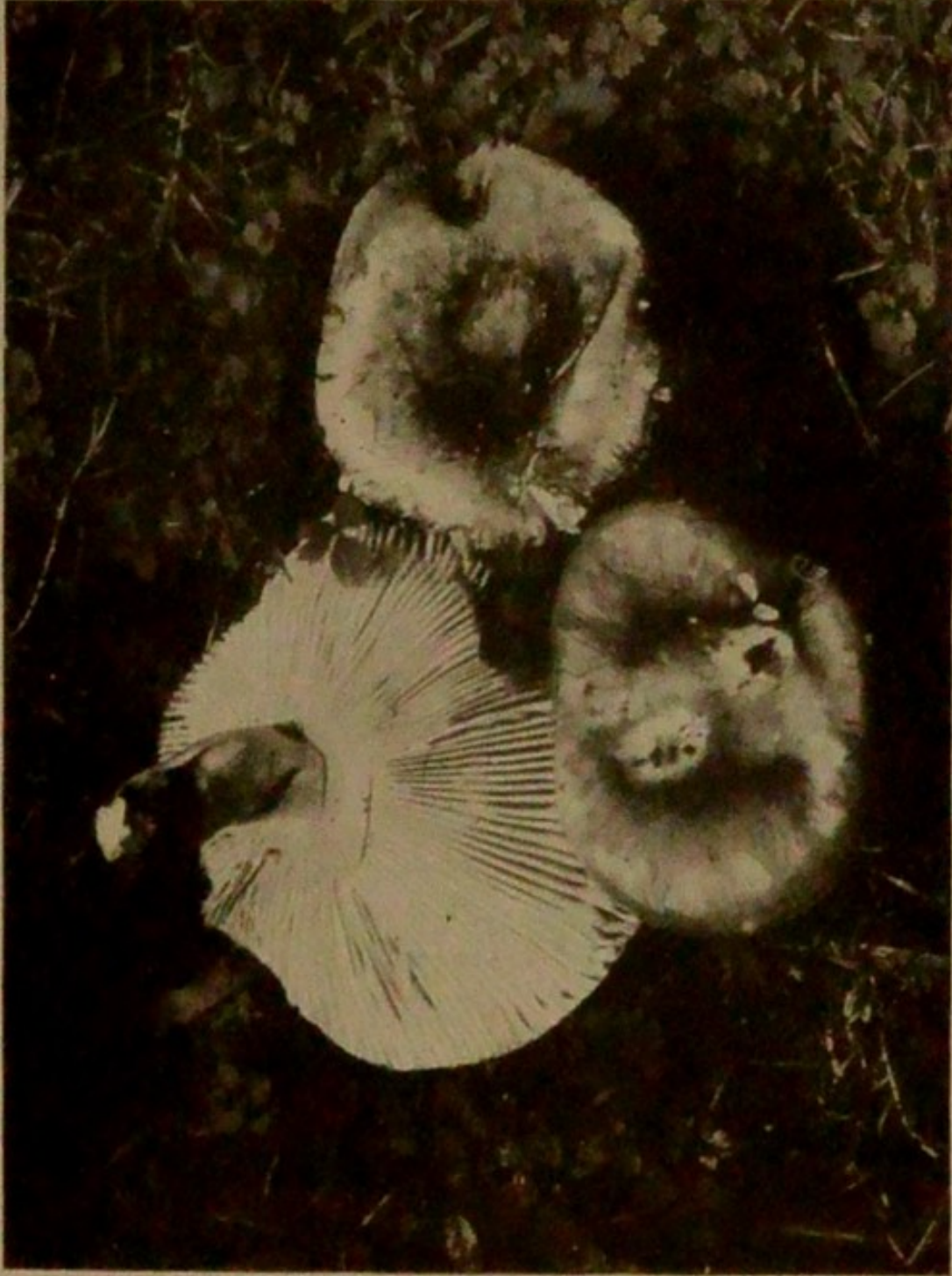
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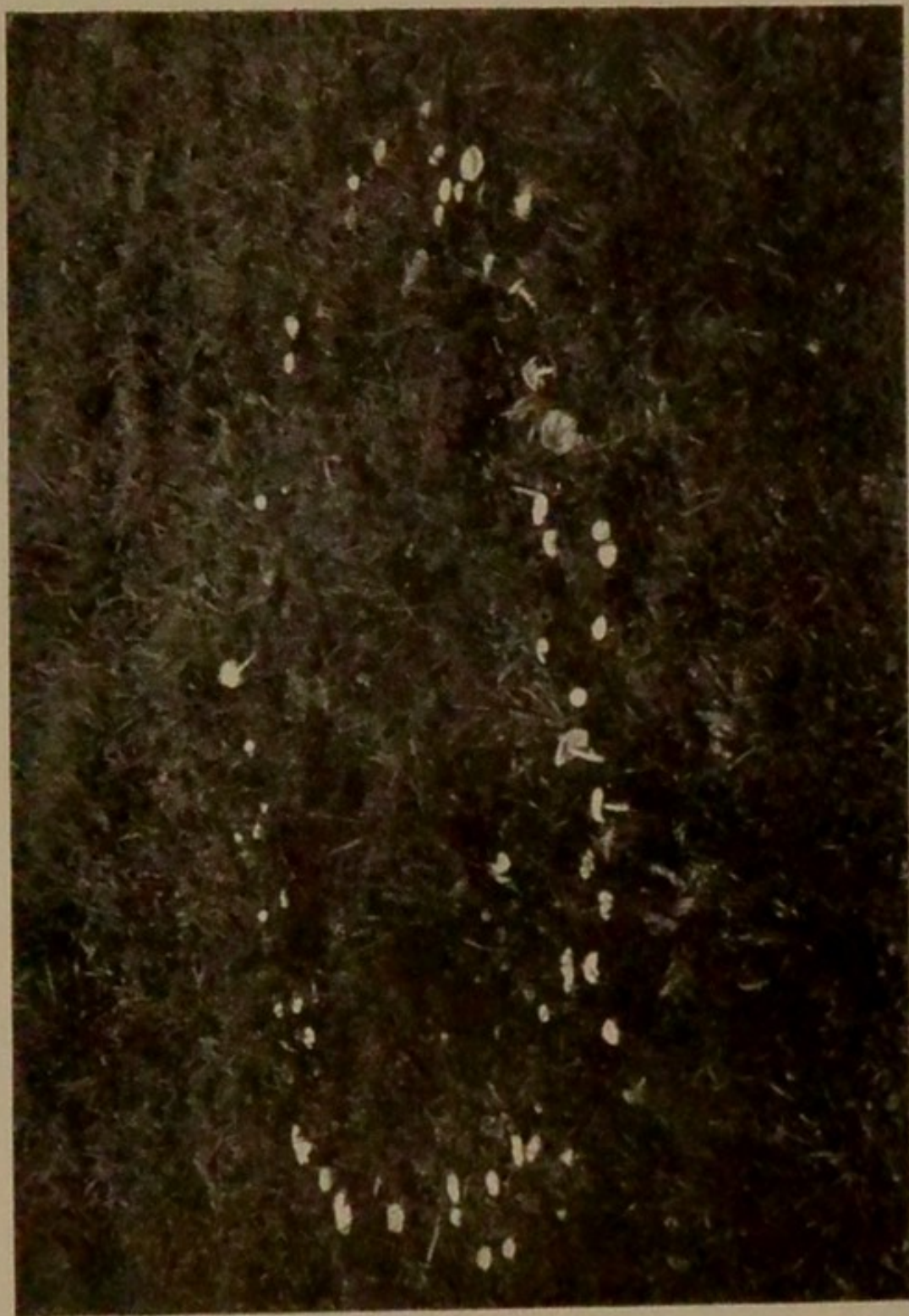
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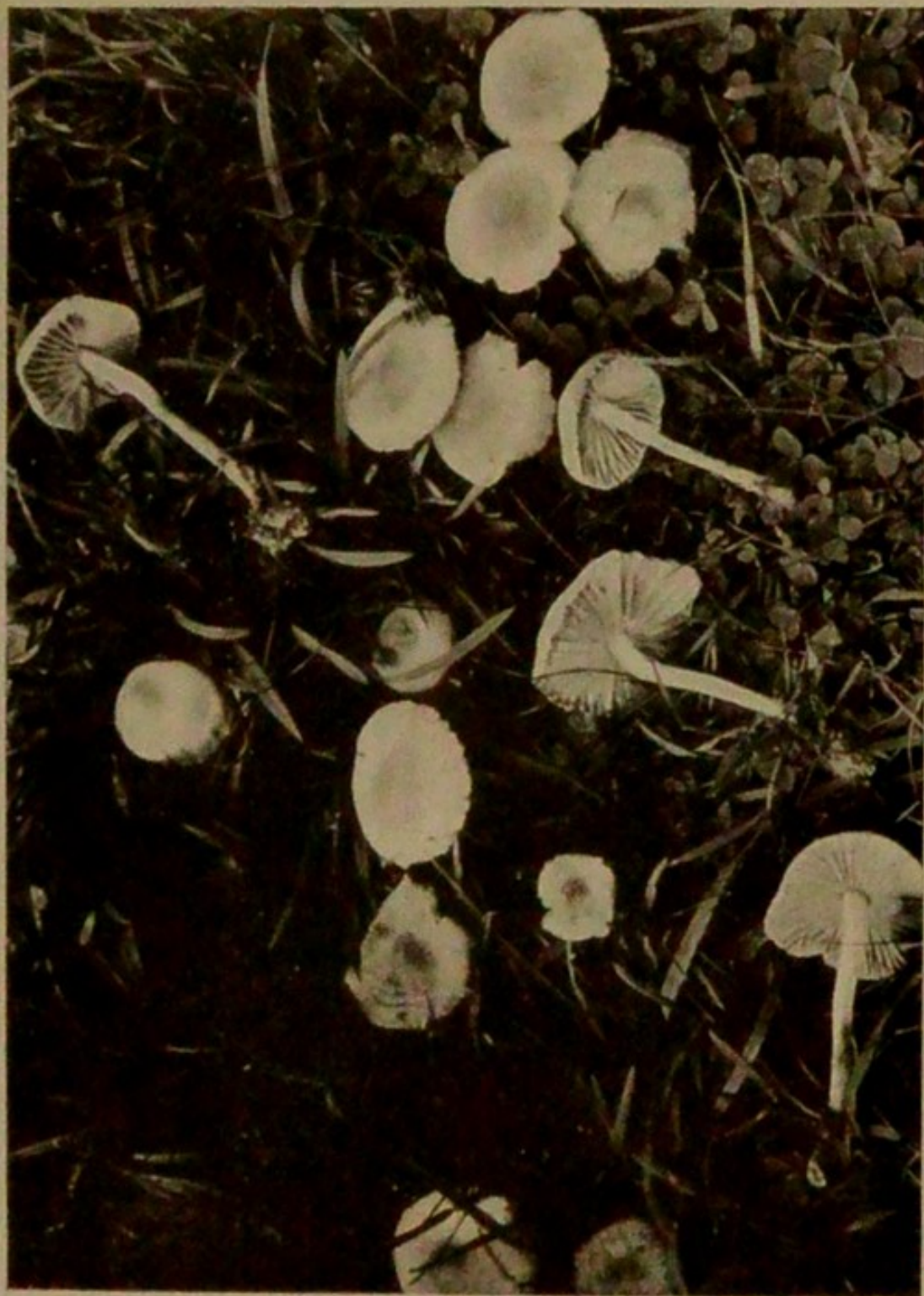
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THE CHAMPIGNON OR FAIRY-RING TOADSTOOL

(*Marasmius oreades*)



THE CHAMPIGNON OR FAIRY-RING TOADSTOOL

(*Marasmius oreades*) $\times \frac{1}{8}$



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(*Marasmius peronatus*) $\times \frac{1}{3}$



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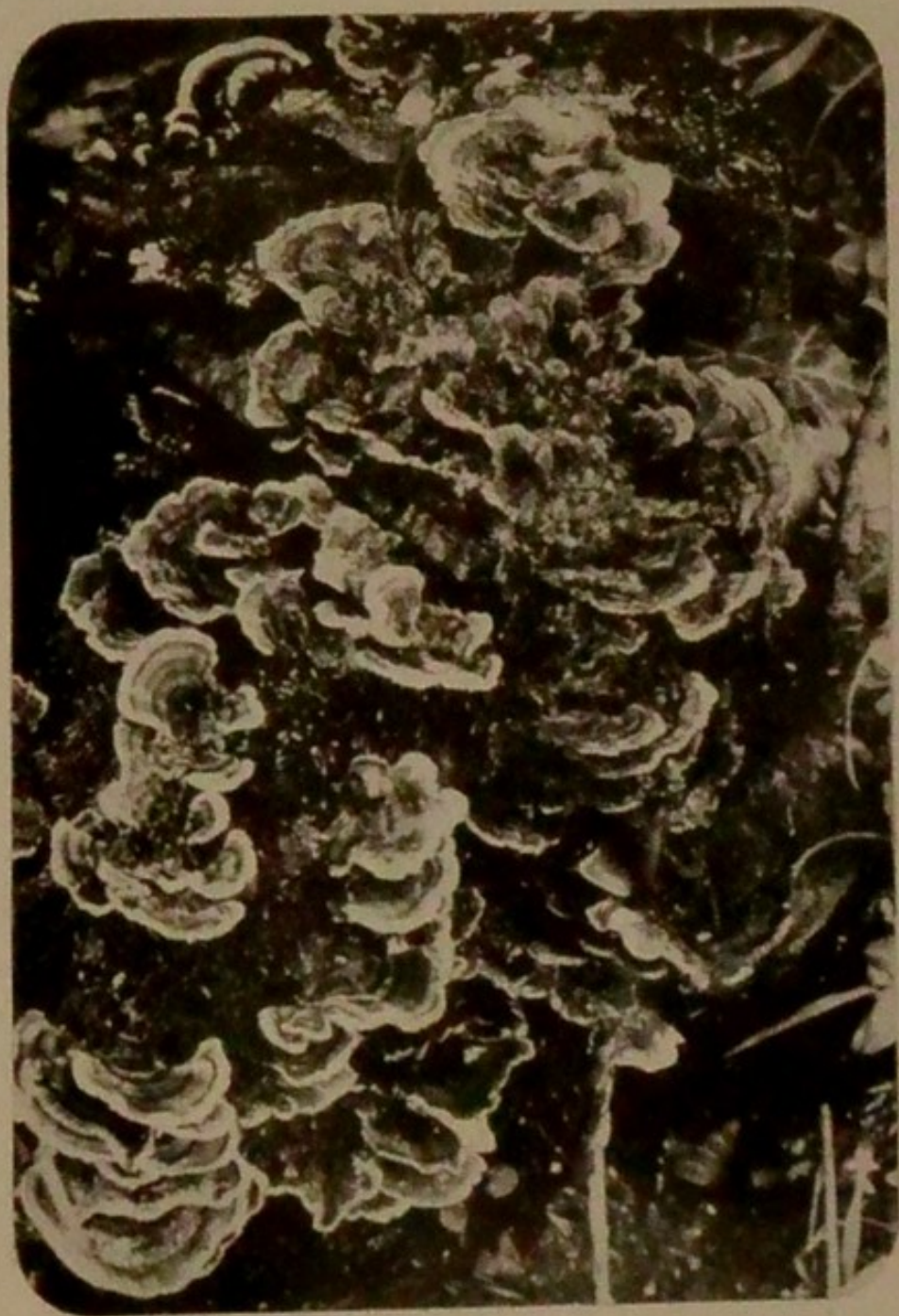
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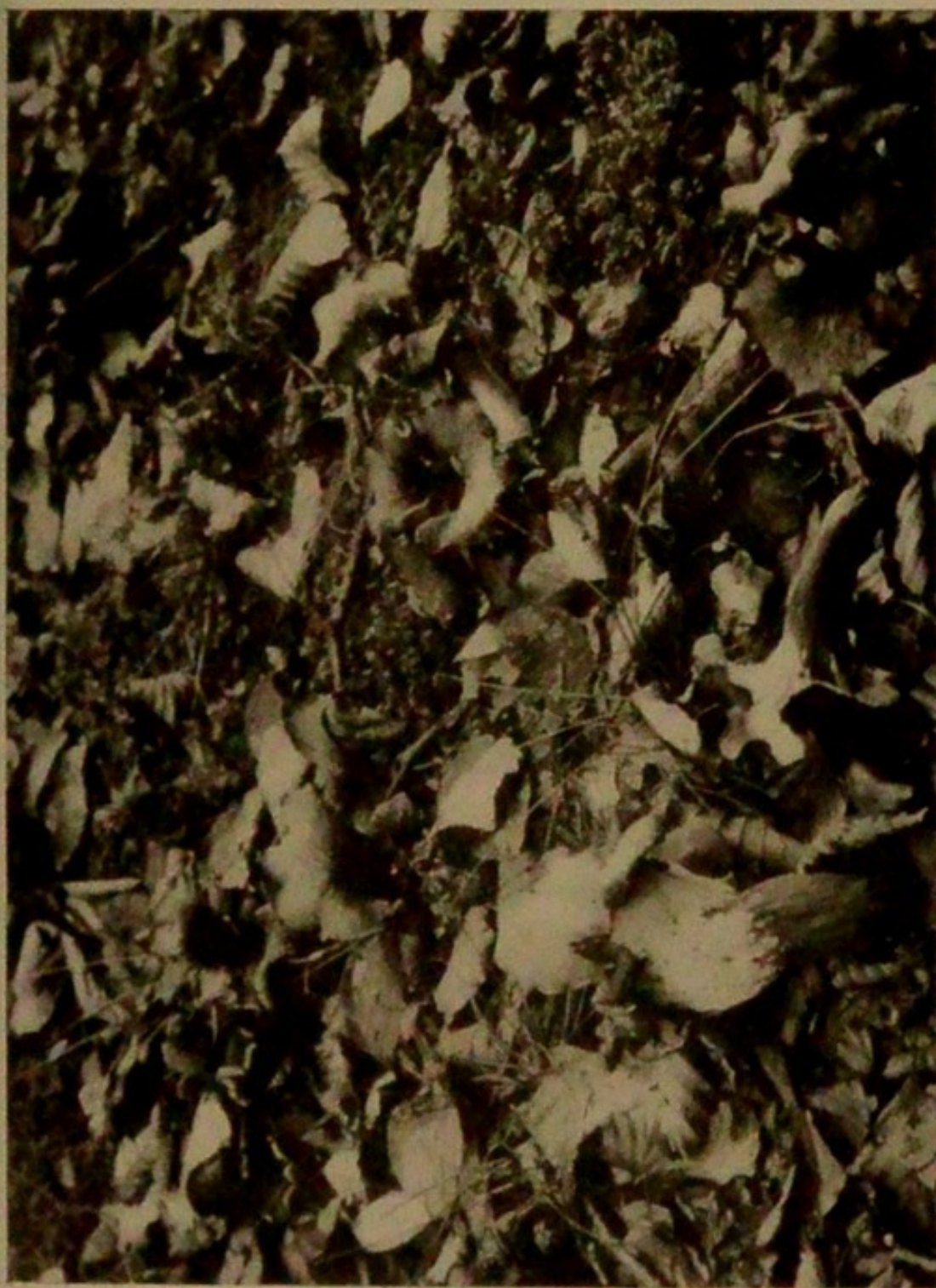


(*Polyporus squamosus*) $\times \frac{1}{3}$

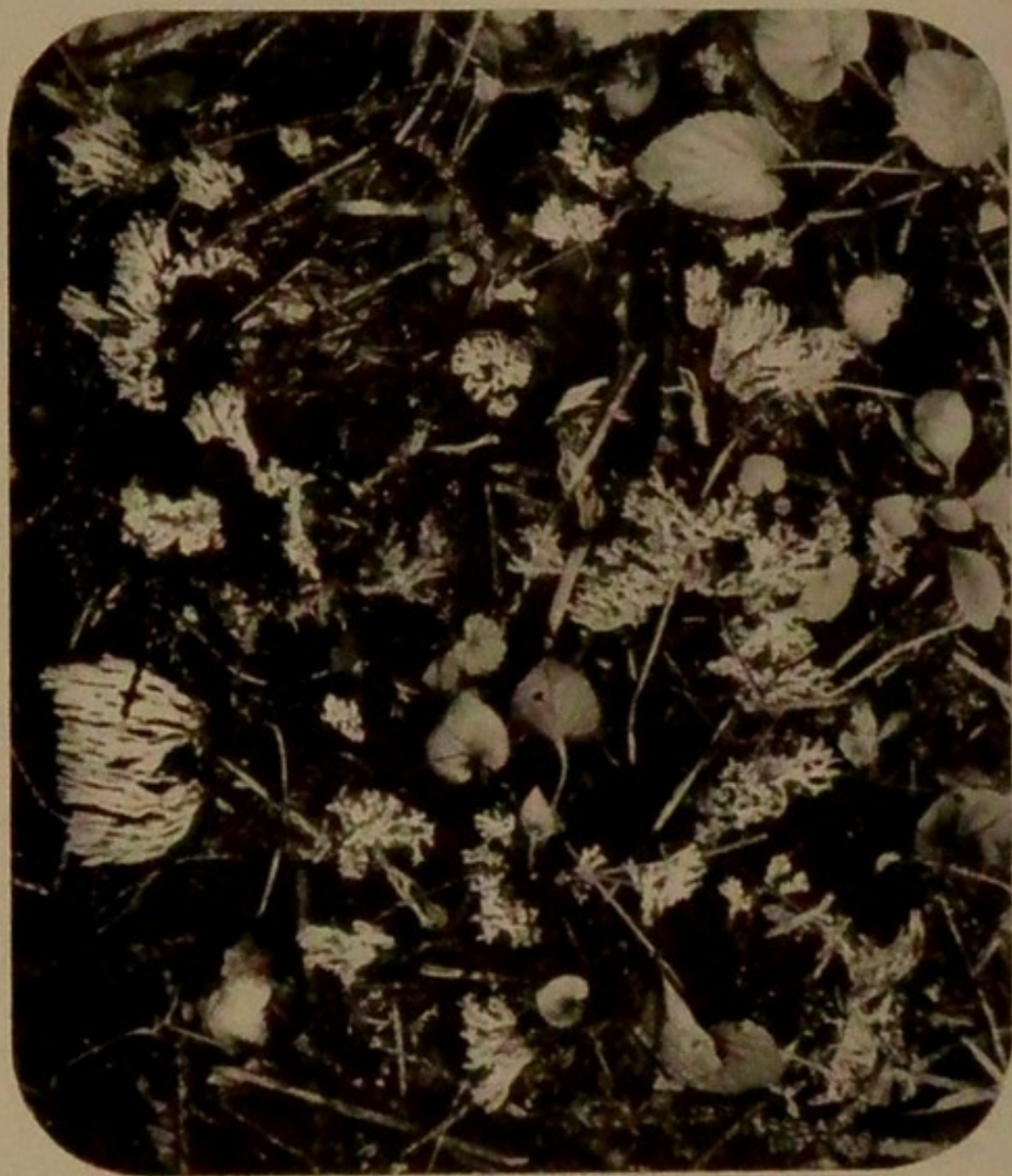
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THE COMMON POLYPORUS (*Polyporus versicolor*) $\times \frac{1}{2}$



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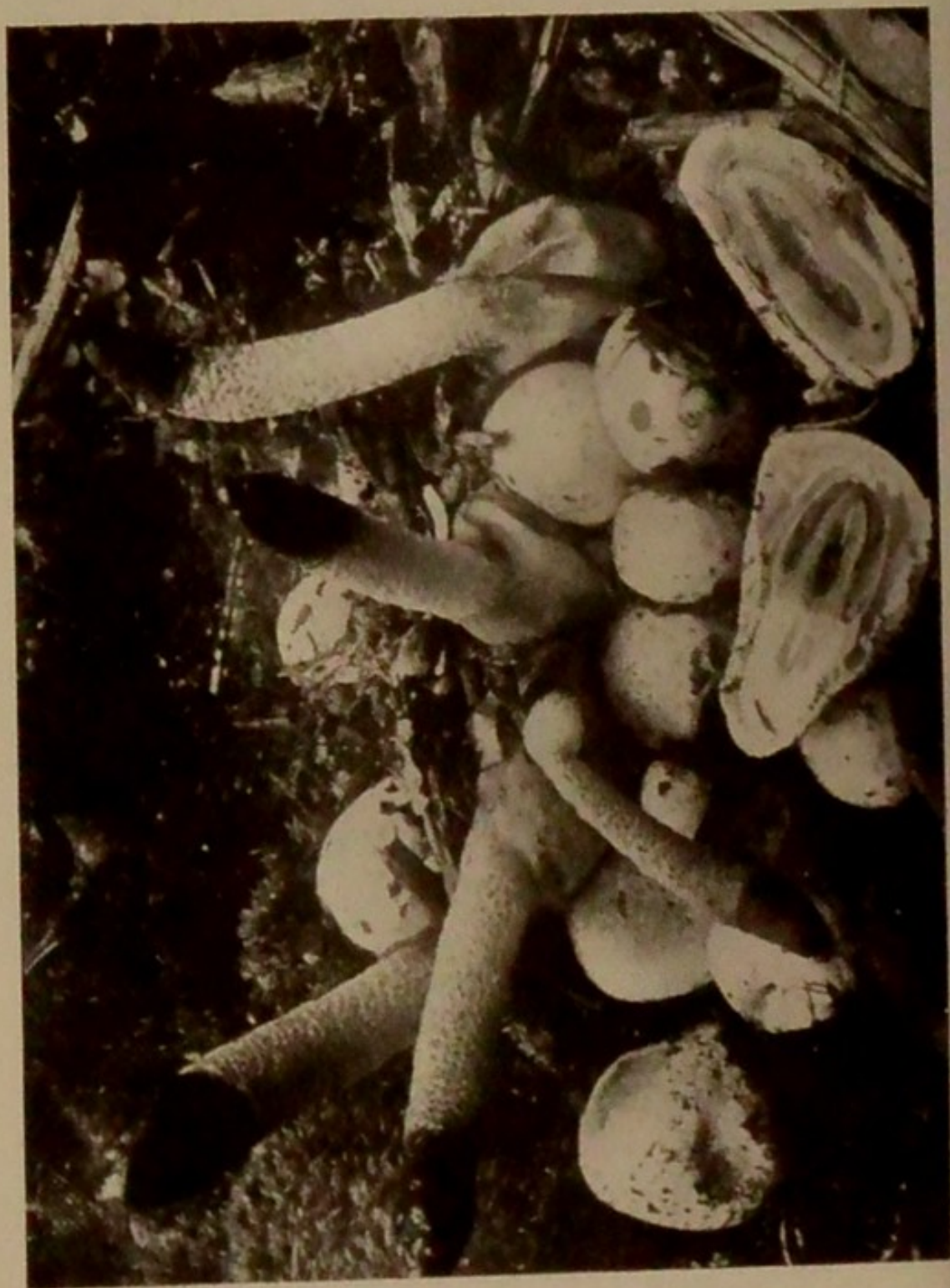
(*Clavaria rugosa*) $\times 1$



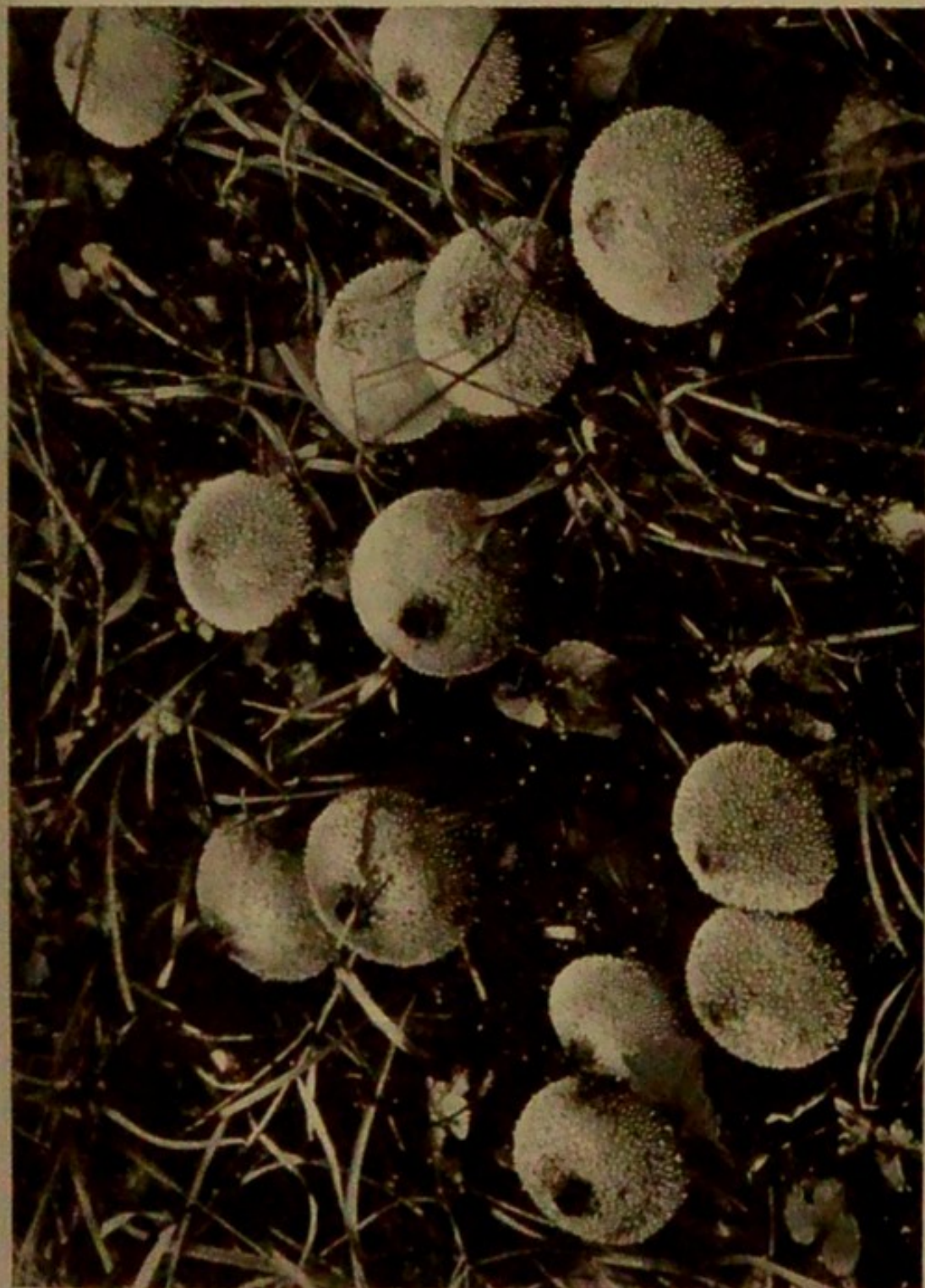
(*Phallus impudicus*) $\times 4$



THE STINKHORN *(Phallus impudicus)* × 1
(With flies eating mucus)



(*Mulinus caninus*) X 1



A COMMON PUFF-BALL

(*Lycoperdon perlatum*) $\times \frac{1}{2}$



(*Scleroderma vulgaris*) $\times 8$

THE COMMON EARTH-BALL



(*Geaster sericeus*) $\times 1$

THE EARTH-STAR
(With some young puff-balls)



THE BIRD'S-NEST

(Crucibulum vulgare) × 2



(*Coryne sarcoides*) $\times 1$

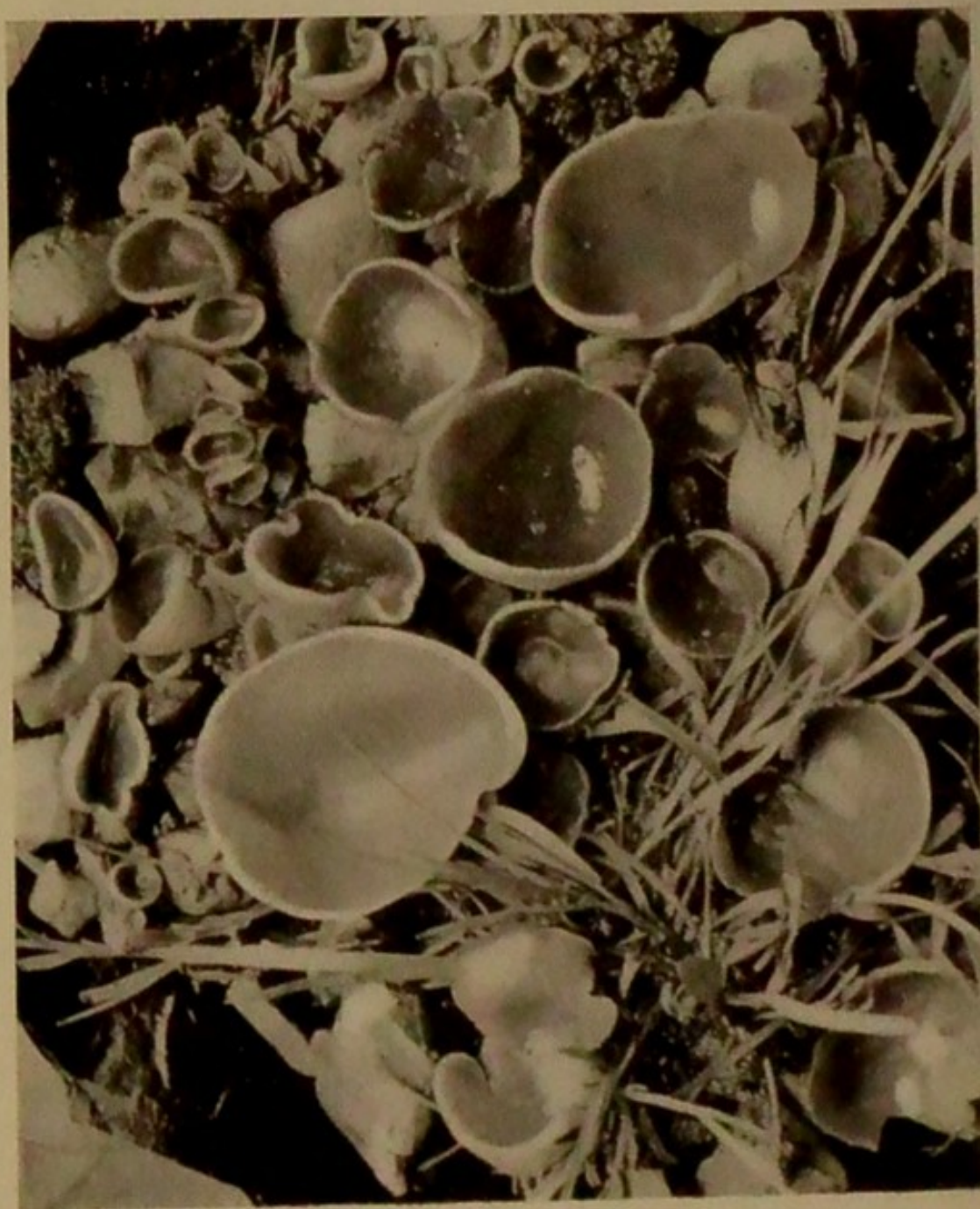


THE COMMON MOREL

(Morchella esculenta) x 1



(*Dalmanella concentrica*) $\times 1$



(*Peiza aurantia*) $\times 3$

Tan Oaxaca, Mexico



THE BLACK BULGAR

(*Bulgaria inquinans*) $\times 1$



A MYXOMYCETE

(Tubulina cylindrica) × 1

SOME Notes on the Toadstools

OF WHICH
PHOTOGRAPHS APPEAR IN
THE FOREGOING PAGES . .

BY
SOMERVILLE HASTINGS.

Mushrooms and Toadstools although perhaps less known than most members of the vegetable kingdom are nevertheless of considerable interest. They are members of the class Fungi, a family which also includes such various forms as the vinegar plant, moulds, yeasts and bacteria. The photographs represent a few only of the commoner British Toadstools, and the following brief notes may serve by way of explanation.

The frontispiece, representing a group of Mushrooms in various stages of development, is added, because most of the larger Fungi agree more or less closely with the Mushroom in structure and mode of life. A mature Mushroom, as will be seen, consists of a stalk supporting a sort of cap. Forming the lining of the cap are a number of folds called gills from their resemblance to the gills of a fish. Whilst the Mushroom is young, the gills are concealed by a kind of veil, but as the cap expands the veil is rent, the more central portion remaining attached to the stem as a sort of ring. The function of the gills is to reproduce the spores or seeds of the Mushroom plant, millions of these spores coming from a single specimen. After the gills have become exposed to the air by the rupture of the veil, the light spores are carried in all directions by the wind, and it is in this way that the plant is multiplied.

It should be clearly understood, that what is called the Mushroom is not the Mushroom plant. The plant itself is composed of a number of minute threads, which run in all directions under ground—we bury it mixed with soil as Mushroom spawn—and it is only when the plant, growing in the ground, becomes vigorous enough to wish to produce seeds or spores, that Mushrooms appear. It will thus be seen that the Mushroom, the sole function of which it is to reproduce spores, is only the fruit of the Mushroom plant, in the same way that the gooseberry, full of seeds, is the fruit of the gooseberry bush.

Although, at first sight, all Toadstools appear alike, there are in reality many thousand varieties, and to distinguish between them, some form of classification is required. One of the earliest attempts is found in the "Grete Herball" of 1526 in which we read "Fungi

ben Mussheron there be two maners of them, one maner is deadly and sleeth them that eateth of them, and be called Todestoles, and the other dooth not." This is simple, but does not carry us very far. At the present time Toadstools are divided into classes mainly by the colour of their spores, which is usually, but not invariably similar to that of the gills on which they are borne. To determine the colour of the spores of the Mushroom, for example, a fairly mature specimen should be taken, and after breaking off, its stalk should be laid, gills downwards, on a piece of white paper. When, after a few hours, the cap is lifted from the paper, a fairly accurate picture of the gills, from which the spores have fallen, will be seen mapped out in purple dust. Other Toadstools have spores of different colours.

Look a little closer at the Mushroom plant. The threads composing it push their way through the soil, and becoming strong and numerous, spore formation commences. In this process the minute filaments increase especially at one point, just below the surface of the ground, forming a sort of tuft. The tuft becomes denser, gills are then developed, and finally the Mushroom fruit, as we know it, is produced.

The Blusher (*Agaricus rubescens*, Page 6) is one of the commonest of the white spored varieties. Its warty cap is dull lilac in colour, often tinged with pink, and though it may become brick red with age, it never acquires a scarlet tint. This is important in distinguishing the edible "Blusher" from the brilliant scarlet "Fly Fungus" which is so deadly poisonous. The warts on the cap of the Blusher are white or light mauve. They are the remains of a membranous bag, in which the Fungus was inclosed when young. When the Toadstool is mature, this bag is ruptured, and the remains of it are borne aloft as warts by the expanding cap. The flesh of this Toadstool is light pink, or becomes so when broken, hence its name. The Blusher is a large Toadstool, and is found abundantly under trees in early Autumn. In flavour it is mild, and less tasty than the common Mushroom; excellent ketchup can be made from it.

The Panther-Cap (*Agaricus pantherinus*, Page 7) is a near relative of the Blusher. Like the latter it has a well marked ring. Its cap is olive brown in colour, viscid and sprinkled with regularly arranged white warts. Its flesh is pure white, and does not change when cut or broken. It is fairly common, especially on downs and in pastures, and is believed to be poisonous. Page 8 shows a paler variety of the same Fungus found growing in a wood.

Not more than a dozen, out of the many thousand varieties of British Fungi, have been proved to be poisonous, many of the others being edible and much appreciated by those who eat them. Sometimes even real Mushrooms cause symptoms of poisoning, either, because those eaten were not quite fresh, or because a poisonous species was cooked with them, and there are a few people, who are unable to eat even a small piece of Mushroom, without being exceedingly ill. It is a safe rule, never to partake of Mushrooms, that are at all decomposed or soft, or of such as have been found under trees, and to carefully avoid all that have been warmed up, after having been previously cooked.

The Solitary Toadstool (*Agaricus solitarius*, Page 9) somewhat resembles the Panther-Cap, and is white or grey in colour, but the warts are smaller, more scattered, and are easily rubbed off; moreover its stem is scaly. It is by no means uncommonly seen growing among dead leaves in damp places.

The *Grisette* (*Agaricus vaginatus*, Page 10) is a common inhabitant of the woods in Autumn. Its cap is light brown and its gills white. Though closely related to the varieties just described, it differs from them in having no ring. The sheath at its base, which in the early stages encloses the whole Toadstool, is clearly seen in the photograph.

The *Grey Parasol* (*Agaricus rachodes*, Pages 11 and 12) is another handsome Fungus, with white spores. It grows in clusters, on dead leaves in Autumn. The cap is covered with scales, and is usually of a light brown colour, but owing to the more rapid growth of its inner part, deep fissures are produced, through which the white flesh is seen. It is edible and said to be much more palatable than the ordinary Mushroom.

In England the Mushroom is practically the only Fungus used as food, but in other countries people are less fastidious, and some varieties, here despised as loathsome Toadstools, form part of the regular diet in Russia and Italy. In China and Japan Fungi are cultivated on decaying trunks of trees, as are Mushrooms in the catacombs of Paris. Mushrooms and edible Fungi are probably excellent as food, and contain a high percentage of flesh forming elements. It is further stated, that in nutritive matter they surpass any other vegetable, and observations on a dietary, composed mainly of Fungi, have proved, that they are nourishing in an unusual degree. It is also noteworthy that on wet seasons, when the crops generally have failed, Fungi are extremely abundant. Dr. Badham, deploring the little use that is made of edible Fungi, says, "I have this Autumn myself, witnessed whole hundredweights of rich wholesome diet rotting under trees, woods teeming with food, and not one hand to gather it, and this perhaps in the midst of potato blights, poverty and all manner of privations, and public prayers against imminent famine."

But how do Toadstools live? Ordinary plants with green leaves obtain their mineral food from the soil, their organic food from the air, and the energy by which they decompose the air, and obtain what is necessary from it, from the sun. But the fine filaments composing the Toadstool plant below the surface of the ground, are cut off from both air and sun, nor could they make use of them, if it were otherwise. They therefore live on dead and decomposing vegetable matter, acting, as it were, as scavengers, and using up the rotting material in the soil. A few Toadstools are less kind, and attack living plants, and trees, on the tissues of which they live. Some of these parasitic Fungi can attack a tree direct, but most of them require a wound to be made, as when a branch is broken or sawn off. There, the spores blown by the wind settle and germinate, and the plant threads growing from the spores penetrate the tissues of the tree, and slowly but surely destroy its life.

The *Stump-tuft* (*Agaricus melleus*, Page 13) is one of the commonest of parasitic Toadstools, and is a frequent cause of timber disease. It is somewhat variable in form, but almost invariably has a well marked ring. It usually grows in great clusters at the base of a tree or stump, shedding its white spores like mildew all around. The roots of a tree are first attacked, and soon both the roots and the lower part of the trunk are covered by blackish cord like threads, about as thick as fine twine, which form a network immediately beneath the bark. From these strands fine fibrils pass inwards, and absorb the nourishment of the plant, while the coarser branches radiate in the ground, and spread to other trees. Conifers, as well

as orchard and forest trees, are liable to be infected by this Fungus, which should be burned whenever found, and the infection of other trees prevented by digging a trench one foot deep around the diseased tree.

The Beech-tuft (*Agaricus mucidus*, Pages 14 and 15) is a very handsome Fungus, which grows parasitically on old beech trees. It is usually ivory white in colour, almost translucent, and grows in clusters on the bark of the affected tree. The cap is covered by a sticky slime. This Toadstool is common wherever beech trees exist in any number, and has been proved by experiment to enter the tree by the germination of its spores on a wound. In spite of its slimy appearance it is delicious when properly cooked.

The Lurid Tricholome (*Agaricus luridus*, Page 16) is another white spored Toadstool, growing, usually in clusters, among dead leaves in Autumn. It lacks the ring round the stem which most of the Fungi so far described possess. The chief distinctive point about it is its meal-like smell.

The Muscat (*Agaricus albellus*, Page 17) is a handsome white or greyish Fungus, usually found growing erect and alone. More rarely, several smaller specimens are found together. Unlike the greater number of Toadstools it is most abundant in early spring.

The Soap-scented Tricholome (*Agaricus saponaceus*, Page 18) has also white gills and spores. Its cap is olive brown in colour, and it has a thick curved stem. When broken the flesh becomes reddish and has a pronounced soap-like smell.

Agaricus grammopodius (Page 19) is a common inhabitant of pastures and woods in Autumn. It often grows in rings and is of a brownish colour when moist, but becomes lighter when dry. It is soft and brittle, and though moist in wet weather, never becomes slimy.

The Rooting-shank (*Agaricus radicans*, Page 20) is peculiar in possessing a polished twisted stem, which is continued into the ground as a tail-like root tapering to a point. It usually grows singly, a group of three, such as that shown in the photograph, being less often seen.

The Leaf-bane (*Agaricus dryophilus*, Page 21) is closely allied to the Toadstool last described. It is usually of a livid brown colour, and is very common in woods and hedgerows, and among dead leaves, at almost all seasons except mid winter. Its stalk is hollow and extends some distance into the soil.

The Oyster of the Woods (*Agaricus ostreatus*) is seen on Page 22. It is a large and beautiful Fungus growing in clusters on the trunks of trees. The colour of the cap is ash-grey, or blue-grey, but often the lower members of the cluster look as if they were covered with hoar-frost. This is due to the spores, which have fallen from those above. As this Toadstool always grows on trees, a central stalk is not needed. A lateral stem only is provided, which is short and thick, and firmly attaches the Fungus to the tree on which it grows. The Oyster of the Woods is esculent, but apt to be tough unless carefully cooked.

All the Toadstools so far described have white spores, but in the Prickly-Cap (*Agaricus squarrosus*, Page 23) we see a variety with yellowish brown spores. In the photo a group of several not-yet-fully-expanded specimens are shown protruding from a hollow in the beech tree, on which plant parasitically lives. The Fungus is of

a brilliant yellow colour with small dark scales, and has a striking and beautiful appearance.

Page 24 represents the Soft Crepidotus (*Agaricus mollis*). This is another Toadstool with yellowish brown spores. It is frequently met with on rotten stumps and usually has no stalk. Its cap is irregularly shaped, somewhat soft and gelatinous, and of a pale dingy tan colour. Its gills are crowded together and light brown in colour.

The common Mushroom (*Frontispiece*) is the best known Fungus with purplish-black spores. Though usually cultivated from spawn, Mushrooms have occasionally been successfully grown by sowing the spores on a glass plate, kept constantly moist, and sprinkled with dung. Sometimes the Mushroom grows to an enormous size, and three large specimens are stated to have lifted a flagstone weighing 80 lbs. in the city of Worcester. On Page 25 is shown the Red Pratelle (*Agaricus campestris*, var. *rufescens*) a near relation of the Mushroom, but differing from it in that it changes to a bright pink tint, when cut or bruised.

The Wood Mushroom (*Agaricus silvaticus*, page 26), another nearly related species, is very different from the common Mushroom in appearance. Its cap is light brown in colour, and is covered with dark scales, and its stalk is long and slender. It is an edible Mushroom although growing in woods.

The Green Stropharia (*Agaricus æruginosus*, Page 27) has purplish brown spores. It is a most characteristic Toadstool which cannot possibly be mistaken for any other. Its cap is light bluish-green in colour, with a few white scales on top. The colouring matter is contained in the slimy pellicle, which sometimes in wet weather gets partly washed off, thus laying bare the yellowish upper surface of the cap. The gills are light purple-brown. It is common in woods and hedgerows in late Autumn, and is probably poisonous.

Page 28 shows a pretty group of the Sulphur-tuft (*Agaricus fascicularis*). This is probably the commonest British Toadstool, and abounds everywhere on rotten wood and stumps of trees. The cap is rarely more than two inches across, and is of a sulphur-yellow colour with greenish-grey gills and purple-brown spores. It is usually regarded as a poisonous species, but the taste is so bitter and nasty, that it is difficult to imagine how anyone could eat sufficient of it to do himself any real harm. Page 29 also shows a group of the same kind of Toadstools with their caps not fully expanded.

Another group of dark purple spored Toadstools (*Agaricus canobrinneus*) is seen on Page 30. The upper surface of the cap in this species is pale brown, or pallid flesh colour, and as the cap expands radial cracks often appear. The stem is rooting and hollow. This Fungus is moderately common in open places and fields in early autumn.

Page 31 shows a typical group of a very common Toadstool (*Agaricus spadiceus*). The cap is light brown and the gills crowded together and of a whitish or reddish brown colour. The Fungus is very brittle if touched. It grows in clusters among dead leaves and on stumps of trees.

A curious group of Toadstools, which grow on dirt heaps, dead wood, etc., have the peculiar property of desolving into an inky fluid, when they have shed their black spores. The Brown Ink-Cap (*Coprinus fuscus*, Page 32) is one of these. This delicate

little Fungus is fairly common on rotten wood. In a few hours its stalk elongates and the cap spreads out like an umbrella. The black spores are then shed, and in an incredibly short time the whole thing has collapsed to a slimy ink-like mass. One could almost see them fade while the photograph was being taken.

Some young specimens of the Imperial (*Cortinarius violaceus*) are represented on Page 33. In this genus the veil is filamentous like spiders' web, and the spores brown. The Imperial is one of the handsomest of British Toadstools. It is violet in colour with a coppery gloss, and the gills are brown. A somewhat uncommon inhabitant of the woods in autumn, it grows in groups, and is said to possess "a particularly rich flavour when cooked."

A group of Paxils (*Paxillus involutus*) is seen on Page 34. This Fungus is common in and near woods from early summer to late autumn. It is easily recognised by its brown and somewhat viscid cap, with its margin incurved. It is eaten in Russia and Belgium, but those who have tried it in this country do not recommend it.

If the stalk of a poppy or wart weed be broken, a white milky juice will exude. The same thing occurs when the Slayer (*Lactarius rufus*, Page 35) is injured. Only a few Toadstools have this curious habit, and its purpose is not clearly understood. Possibly it is protective, for the juice coagulates and would thus close a wound caused by an injury. The Slayer has no smell, but a bitter acrid taste, and is believed to be poisonous. It is of a reddish-brown colour and is most often found growing on the ground among pine trees.

The Woolly Milk Mushroom (*Lactarius torminosus*, Page 36) has this milky juice also. Its cap is woolly and flesh-coloured, with a turned in margin. This beautiful Fungus is preserved in salt by the Russians and eaten with oil and vinegar.

The Slimy Lactar (*Lactarius blennius*, Page 37) is another close ally. The cap is dingy green in colour and so glutinous that the dead leaves, sticking to it, make the Fungus difficult to see. The gills are white and crowded, and an acrid milky juice exudes whenever the Fungus is injured.

Page 38 represents the Emetic Russule (*Russula emetica*), a striking feature of the woods in Autumn. The cap is of a rose-pink or bright red colour, but the rest of the Fungus is white. Its taste is acrid, and it is said to possess emetic properties. Slugs, however, seem rather to enjoy it, for they frequently nibble through the red pellicle and expose the white flesh beneath.

Another closely allied Russule (*Russula chamaeleontina*) with a rose red cap is seen on Page 39. This fragile little Toadstool is fairly common in mixed woods, and is peculiar in that its colour changes to a yellowish tint with age.

Who has not seen on our pastures and downs circles of grass of a deep green shade? They are popularly believed to be caused by the midnight dances of elves and fairies, and are known as fairy-rings. Early in Autumn these rings are covered with the Fairy-ring Toadstool or Champignon (Page 40), and Dr. Berkeley, the Fungologist, has given us a less romantic, but truer explanation of their causation. He says: "They originate from a single Fungus, whose growth renders the soil immediately beneath unfit for its reproduction. The spawn however spreads all around, 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 does not spread on all sides an arc of a circle only is produced. The manure arising from the dead Fungi of 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." On Page 41 some of the Fairy-ring Toadstools are shown on a larger scale; they are usually abundant in August and September, and have a pleasant mushroomy odour. Though rarely eaten in England, they are much used on the continent, and are often dried on strings for winter use. The individual Toadstools are small, tough and elastic, shrivelling in dry weather, and reviving again in wet. They are of a pale tan colour, lighter when dry; the gills are rather far apart, and not attached to the stem.

Somewhat resembling the Champignon is the Wood Woolly-foot (*Marasmius peronatus*, Page 42). Its colour is, however, much darker, and the base of the stem is clothed with a pale shaggy wool. Besides this, the Woolly-foot grows on dead leaves, under trees, and appears later in the year than the Champignon. If a mistake should arise, probably little harm would result, for this Toadstool is said to have been repeatedly eaten with impunity. Its taste is acrid and unpleasant when raw.

If you can imagine a large mushroom with its gills cut away, and replaced by a number of fine tubes tightly pressed together, you will have a very good idea what a Boletus is like. The tubes vary in length, colour and size in different species, and bear spores on their inner surfaces, in the same way that the gills of a mushroom do. The Boleti are large Fungi, and many varieties may be safely eaten, but all those which turn blue when broken or cut, should be regarded with suspicion. On the Continent the Boletus is probably more commonly used as an article of diet than any other Fungus, and may be purchased cut into slices and dried, under the name of "ceps," in which condition it is used to flavour soups and made dishes. In the more foreign quarters of London "ceps" may frequently be seen for sale. In preparing Boleti for culinary purposes it is best to use only young specimens, and to remove the stems, and scrape away the tubes before cooking, as the latter are rather mucilaginous. On Page 43 is seen the large and beautiful summer Boletus (*Boletus aestivalis*). Its cap is tan-coloured and silky above, and its pores greyish. It does not change in colour when broken or cut, and is said to be delicious. The Variegated Boletus (*Boletus variegatus*) seen on Page 44 has very fine pores of a yellow or brown colour, and a yellowish, rather sticky cap. Its smell is unpleasant, and its flesh becomes bluish when broken or cut.

The Vegetable Beef-steak (*Fistulina hepatica*, Page 45) is indeed a curious Fungus. It grows on old oaks, and first appears as a reddish knob, rather like a strawberry, on the bark of a tree in early Autumn. This enlarges, and becomes darker in colour and in a few weeks a shelf-like projection is formed sticking out horizontally from the tree. As it ripens, it becomes more succulent, and the reason of its name becomes clear, for in both colour and texture it is like beef-steak, and the dark reddish juice which exudes increases this resemblance. The specimen in the photograph is rather young, but in older ones, the spore-bearing tubes on the under surface are easily seen. The Beef-steak is edible, and differs from all other Fungi in

that it is best eaten when thoroughly mature and almost beginning to decay, for when young it is bitter and astringent. It is sometimes used raw as salad, but in the writer's opinion is not to be recommended in this form. When stewed with butter, it is quite nice, though its taste is rather acrid, and very different from that of the Mushroom. It usually grows on the same tree, and not infrequently in exactly the same position, year after year.

The Genus *Polyporus* resembles the *Boleti* in possessing pores, but differs from them in being dry and woody in nature, instead of succulent. Fungi of this genus are common on rotting stumps, and some grow parasitically on living trees. The Giant-tuft (*Polyporus giganteus*, Page 46) is a large Fungus which grows at the roots of living trees in dense clustered masses. The numerous fronds grow out from a tuberous base. They are brown and velvety above, but are much paler on their lower surfaces, which are covered with very fine pores.

Dryad's Saddle (Page 47), another large *Polyporus* with a dingy yellow scaly cap, is often seen on living trees and sprouts out year after year from the same spot. It usually grows in overlapping clusters, a single specimen like that shown being unusual.

Page 48 (*Polyporus versicolor*) shows probably the commonest British Fungus, but makes an unattractive photo. It grows on stumps of trees, and is of a dark greenish-brown colour marked with brown or orange narrow concentric zones. The upper surface is velvety, and the lower is covered with short minute pores.

Craterellus cornucopioides (Page 49) is a common Fungus, but its appearance is so unattractive, that it has acquired no common name. It is shaped like a horn or trumpet, is hollow and of a dark brown or black colour. If cut in two, longitudinally, it will be seen to be made up of two layers of tissue, which can be easily separated from one another, except along the trumpet edge. It is often met with in woods in autumn, but, though a good sized Fungus, it frequently escapes notice, so closely does it resemble the dead leaves amongst which it grows. There is a greyish frosty bloom on its outer side, due to the spores, which are borne on the whole outer surface, which is without gills or pores. Though uncanny in appearance *Craterellus* is said to be very good when cooked. It should first be slit down the middle and carefully washed, as grit, and even small snails frequently collect at the apex of its hollow interior.

Stag's Horn Fungi or *Clavarias* of various colours are often met with in fields and among dead leaves in Autumn. Most are small, delicate and much branched, and spores are borne over the whole of the exposed surface. Page 50 shows a white variety (*Clavaria cinerea*) which grows among dead leaves in woods, while *Clavaria rugosa* (Page 51), is of a dingy yellow colour, and is found among the grass in fields and woods. It is distinguished by its irregular longitudinal wrinkles. *Clavarias* are sometimes eaten in England, and not at all uncommonly abroad, but most British species are quite small, and hardly worth the trouble of collecting for culinary purposes.

Page 52 represents what is perhaps the most curious of all the British Fungi. It is called the Stinkhorn (*Phallus impudicus*) and well deserves its name, for its smell is detestable. This Fungus is fairly common, and the odour is so distinctive that a specimen can be detected by it many yards off, and thus tracked to its lair. Indeed, something like heroism was needed to secure the photographs

shown. In its early stages the Stinkhorn resembles a turtle's egg, is white in colour, soft to the touch, and is fixed to the ground by thread-like roots. In this condition it has no smell, and may frequently be found among dead leaves in late summer and early autumn. The people of Kent call them "ghosts' eggs," a not inappropriate title. If the Fungus in this stage be cut open, the "egg shell" consisting of two membranes with gelatinous material between will be seen enclosing a white spongy-looking mass of tissue, surrounded by a blackish layer. After remaining for a variable time in this dormant condition, the "ghost" is hatched in the following way. Most often, perhaps, in the early morning, or at any time, the shell is ruptured on top, and the spongy stalk then elongates, bearing above a sort of helmet covered by a dark green slimy mass containing spores. So rapidly do these changes take place, that in the course of two or three hours the stalk has increased in length from an inch and a half to five or six inches. When elongation is almost complete, the whole plant and especially the slimy material above, which previously had only a faint and honey-like smell, begins to exhale a most fetid and disgusting odour, more like rotting cheese than anything else, but much too horrible to describe. Flies of all sorts, blue-bottles especially, are attracted by the smell, and eagerly devour the greenish slime, with its contained spores (Page 53), and as the latter pass unchanged through the insects' bodies, dissemination of the Fungus is thus effected. So greedy are the flies that it is unusual to find a fully expanded "Stinkhorn" with a single drop of mucus left on it.

The Dog Stinkhorn (*Mutinus caninus*, Page 54) closely resembles *Phallus*, but is smaller in size. Its smell, too, is quite different, being faint and not unpleasant, and there is no helmet, for the spore-containing mucus simply covers the upper extremity of the spongy stalk. Like the Stinkhorn, it grows in woods, but the flies, which visit are much smaller, and the bluebottle seldom condescends to favour it with a call. When mucous and dark spores are removed, the bright red extremity of the stalk becomes visible.

The Puff-balls are well known to everybody. A pretty group of a small variety (*Lycoperdon perlatum*), which grows in woods, is seen on Page 55. In its early stages the puff-ball is white and solid all through, but, as it becomes ripe, the central portion changes to a mass of brown spores. Lastly, the outer covering gives way above, as a pore, and the spores may be driven out through this, when the puff-ball is squeezed, a favourite amusement with children. The commoner varieties of puff-ball are small, rarely exceeding an orange in size, and though occasionally eaten in their young state, are not to be recommended.

The common Earth-ball (*Scleroderma vulgare*, Page 56) closely resembles the puff-balls, but differs from them in that no spore is formed, and it is only by the decay of the outer coat that the spores get disseminated. This Fungus is often seen in woods and hedge-rows in summer and autumn. In the early stages of growth the central portion is hard and blue-grey in colour, but towards autumn a mass of powdery spores becomes developed from it. The earth-ball is rarely eaten, for it is tough and has a rank and disagreeable smell.

The Earth-star (*Geaster sericus*, Page 57) is another ally of the puff-balls. It has two coats, the outer of which splits radially into seven or eight segments, which turn outwards, producing a beautiful

stellate appearance and exposing the thin inner coat, which encloses the spores. It is unfortunately a somewhat rare Fungus.

The Bird's-nest (*Crucibulum vulgare*) is shown on Page 58 growing on a piece of old sacking. In the photograph different stages in the formation of the Bird's-nests are exhibited. First of all a little ball of Fungus threads will be noticed, which soon grows larger and more solid. In the middle of this masses of spores, each mass enclosed in a thick capsule, become distinguished and finally the tissue between these disintegrates and the egg-like collections of spores become distributed. Last of all, the thick egg-shell enclosing the spores decays, allowing them the opportunity of germination.

A purple jelly-like Fungus (*Coryne sarcoides*) is seen on Page 59. It is not uncommon in autumn, and growing among grey lichens and green mosses on the bark of trees and on stumps, is an object of considerable beauty. It is probably of little use for the table.

Most of us know the Morel (*Morchella esculenta*, Page 60) by name, but perhaps not all have been fortunate enough to find it. Morels cannot be said to be common in England, and they are found in early summer, when Fungi generally are scarce. They grow in woods and hedgerows, and prefer a limestone soil. Not infrequently they come up in great numbers after brushwood has been burned. In Germany, where they are considered a great delicacy, the peasantry are said to have burned large tracts of woodland, in the hope of producing Morels, until the practice was stopped by legislative enactments. In Gloucestershire Morels are sometimes found and have acquired the local name of "Cankers" but they are rarely appreciated as articles of diet. The upper part of a Morel is light brown or tawny in colour, and much pitted, so as to appear almost like honeycomb; it is covered all over with spores embedded in its surface. The stalk is white and the whole Fungus, including the stalk is hollow. It has a pleasant mushroomy smell, and is dry but fragile, and in no way tough. It is rarely that fresh Morels are seen on sale at Covent Garden, but the dried Fungus can usually be bought as a flavouring for soups and sometimes commands fabulous prices. Morels may be cooked in various ways, but are perhaps nicest when stuffed with minced veal, and eaten with fried bacon. Delicious ketchup of a pale colour can be made from them. Attempts to cultivate the Morel have not been generally successful.

Several dark Fungi (*Daldinia concentrica*) with a forbidding appearance, growing on the bark of a fallen tree, are shown on Page 61. The plant grows slowly, and those photographed are probably several years old. The surface is covered with small flask-shaped pits filled with dark spores.

The Cup-fungi still remain to be mentioned. As their name implies, they are cup-like in form, bearing spores on their inner surfaces. The Orange Elf-Cup (*Peziza aurantia*, Page 62) is bright-orange in colour, with a faint smell, which reminds one of that of the apricot. Usually several are found together on the ground, and make a very pretty group. This Fungus is widely distributed, being found all over Europe, India and the United States. It is edible, but too small to be worth cooking. On Page 63 are seen more cup-fungi, of a dark brown colour, growing on the bark of a tree and called Black Bulgars (*Bulgaria inquinans*). The cups dry up during fine weather, but expand again when it is wet, sometimes so much so that instead of taking the form of cups they become quite flat. Like

the Orange "Elf-cup," spores are borne on the inner and upper surface only.

One of the Mycetozoa (*Tubina cylindrica*) is shown on Page 64. This curious group of organisms occupies the border-land between the animal and vegetable kingdoms. During one stage of its existence the example shown consists of a jelly-like mass of protoplasm, which creeps over the surface of rotten wood in search of food. When the fruiting period arrives the protoplasm becomes condensed into small cylindrical masses of a pink colour, closely packed together, which in a few hours become transformed into reddish brown capsules of minute spores. The photograph was taken while this change was proceeding.

ERRATA.

- Page 65, line 11 from foot, for "bury" read "buy."
 " 65, " 8 " delete "is."
 " 68, " 11 from top, for "it" read "in."
 " 68, last line, insert "the" before "plant."
 " 69, line 14 from foot, for "canobrinneus" read "cano-
 brunneus."
 " 70 line 14 from foot, for "chamaeleontina" read "chamæ-
 leontina."
 " 73, line 11 from foot, for "spore" read "pore."



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