

THE O. A. C. REVIEW

"THE PROFESSION WHICH I HAVE EMBRACED REQUIRES A KNOWLEDGE OF EVERYTHING."

VOL. XXVIII.

JULY, 1916.

No. 11

Mushrooms and Toadstools

By R. E. Stone, B.Sc., M.Sc., Ph.D. Lecturer in Botany, O.A.C.

MUSHROOMS are the large, conspicuous fungi. They are simply organized plants, devoid of chlorophyll or leaf green, and hence depend upon other plants for their food. Most mushrooms are saprophytic, that is, they depend upon dead organic matter for food. The fleshy, umbrella-like structure, which we commonly call the mushroom, is only the fruiting portion of the plant and bears somewhat the same relation to the feeding or vegetative portion as an apple bears to an apple tree. If the soil around the base of a mushroom is carefully examined, it will be found to be full of fine threads, usually white, which spread out in all directions. These threads form the mycelium or feeding portion of the plant. This mycelium grows through the soil in which there is more or less organic matter and by giving off enzymes digest the wood, cellulose, etc., which is then absorbed and used in building up fungous material. The changes brought about in the organic matter we speak of as decay.

The fruit bodies begin as small knots of closely woven threads on the mycelium, and these knots then enlarge slowly under ground until the mushroom is nearly mature. This development lasts several weeks, in the case of the cultivated mushroom at least six weeks, under the best conditions. When the mushroom has been fully formed it expands rapidly and often pushes up out of the soil during the night. This has given rise to the idea that mushrooms grow in a night.

The terms "mushroom" and "toadstool" are used more or less interchangeably. Usually, however, the term toadstool is applied to umbrella-shaped fungi which are thought to be poisonous, while the term mushroom is applied to similar forms which are considered as edible. Unfortunately there is no simple test by which the poisonous and edible forms can be distinguished. There are certain tests which are sometimes used but these are unreliable. Such for example is the silver coin or silver spoon test. Some people think that the poisonous forms will turn silver black; this blackening of silver only indicates the presence of sulphur and has no connection with the presence of the poisons. Another test of which we hear is the peeling test. It has been supposed that if the "upper skin peels off" readily, the fungus is edible, but some of our most poisonous forms "peel" as readily as the cultivated mushroom. Even taste cannot be relied upon, as the most virulently poisonous forms possess no warning taste, in fact are said to be delicious. It is only by learning to know the poisonous species and avoiding all those with which one is not intimately acquainted that danger can be avoided.

Since it is the fruit body that is eaten, it is from the structure of this part of the plant that we must learn to distinguish the different kinds.

Let us examine the ordinary cultivated mushroom (*Agaricus campestris*, Linn.) in order to gain an idea of one of the edible forms.