

## MORPHOLOGY.

Bacilli usually arranged in pairs, rarely singly. They measure .5 mu in width, and 1.5 mu. in length.

## BIOLOGICAL CHARACTERS.

This species is a non-liquefying, non-chromogenic, motile, facultative anaerobic bacillus, which grows very well at the room temperature, but not so well at the body temperature.

On gelatin stab cultures a few scattered colonies appear along the line of inoculation, and a button-like growth on the surface. The gelatin is not liquefied in two weeks.

On agar streak, a whitish growth follows the line of inoculation.

On potato the growth is a yellowish, lead-colored one, following the line of inoculation.

Glucose solutions are not fermented.

Nitrate solutions are completely reduced to nitrites in three days.

Milk is coagulated, but remains neutral.

Other species are now being worked upon, which have been separated from many other leguminous plants, including crimson clover, locust, small white clover, whippoorwill cow pea, black cow pea, and alfalfa.

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A FEW MYCOLOGICAL NOTES FOR JULY AND AUGUST, 1900,  
WELLS AND WHITLEY COUNTIES.

BY E. B. WILLIAMSON.

An interest in the doings which go on in fields and woods is natural to everyone, bearing, as all of us do, in our own brains, cells which still retain the impress given them as they developed and multiplied to gradually make man, by the cunning of his intellect, master of his environment. Interest is attracted most easily to those everyday, more conspicuous and beautiful objects, and those which have never been dangerous to man during the period of his later evolution. So at the present time we have popular illustrated works on birds, butterflies and

flowering plants, and when the Garden shall have faded into a more correct perspective, we may expect some such popular treatises on the humble though usually beautiful, creatures which go with heads in the dust. But I leave it to the student of psychogony to discover why the fastidious human so often turns with loathing from a mushroom. It would seem that these plants, by their graceful adaptive forms and varied colors, could easily conquer the feelings which seem to frequently exist only because of the falsely suggestive name of "toadstools" commonly given to all species of the Agaricaceae. However, an interest in these larger fungi is felt by many, and one purpose of this brief note is to call attention to two recently published works which make possible at least a general knowledge of the forms to be found in the United States.

The first of these books is "Moulds, Mildews and Mushrooms," by Dr. Underwood, published by Henry Holt & Company. Keys enable the student to trace specimens to their genera, and notes on distribution, habitat, etc., conspicuous species, and a full bibliography are given. The second book is "A Thousand Fungi," by Charles McIlvaine, published by the Bowen-Merrill Company. Many fine plates from photographs and water color studies illustrate a large number of species, especially the commoner and more conspicuous forms. This work is decidedly less scientific than the first, and the many notes are usually intended especially for the mycophagist.

To the best of my knowledge those who gather fungi for food purposes in Wells County, and doubtless also in other portions of the State, confine themselves exclusively to the morel. This species is not rare in the spring. It belongs to another group than the one to which other mushrooms, as they are known, belong. Near Bluffton a species of *Geoglossum*, a genus belonging to the same order as *Morchella*, was not rare in low woods in August. It was not found in sufficient quantities to cook, but eaten raw had a nutty flavor, woody texture.

In low woods on and about rotting logs in Wells and Whitley counties during August *Clavarias* were common. *C. cristata* seemed to be the common species. Underwood says none of them are deleterious, and McIlvane recommends some of them especially for soups. In past years species of *Hydnium* have been observed commonly in the two counties mentioned above, but this year, possibly because of the little time spent in the woods compared with some former years, none were seen.

On August 17 an oak stump growing in a thick woods near Bluffton was found literally covered with *Polyporus sulfureus*. No other mass of color could have clothed the stump to render it more conspicuous in the dark woods. The fungus was young and tender, and a number of persons ate of it sliced and stewed. The flavor possibly suggested veal. I have seen this species growing more in the open on logs where it was almost completely pulverized by insect larvae.

Of the Boletaceae three genera were observed in Wells County—*Fistulina*, *Boletus* and *Boletinus*. None of these were tested for their edible qualities. *Fistulina hepatica* was found only once, on August 25. *Boletinus porosus* grew in shaded woods among old leaves. The short stipe and mottled yellow-ochre and burnt umber pileus of this species render even large specimens six or seven inches in diameter inconspicuous. One species of *Boletus* was common in both Whitley and Wells counties, but was not specifically identified. Height, two inches; diameter of pileus, one and one-half inches; pileus above, chocolate brown, reddish or reddish yellow; flesh, white or very pale yellow, when broken becoming bluish, then very dark yellow; tubes yellow; stipe solid, reddish yellow, not annulated.

*Pleurotus ostreatus* to the mycophagist is one of the most valuable fungi in northern Indiana. About Bluffton it was found especially on the northern exposures of elm logs which still held their bark, though it has a wide range of habitat. To some its flavor is as good as any mushroom, and the quantities that can often be gathered after a rain from one log recommend it. It often becomes soggy during a rainy spell, but if it is not too much infested with larvae this does not interfere with its edibility. Fried in butter this species is as good as cooked any other way. It is attacked by more enemies than any other woods species of fungus I have noticed. At least two or three species of mollusca, two diptera, possibly a dozen coleoptera and two hymenoptera infest it. A friend reports grasshoppers feeding on it. Centipedes are often found among the gills, being there doubtless in search of insect prey.

*Amanita phalloides* was found once in a cleared spot in a thin woods near Shriner Lake, Whitley County. This was the only one of the few deadly mushrooms seen during the season. A species which is perhaps dangerous is *Lepiota morgani*. It reaches the maximum of size for an Agaricaceae. One specimen collected at Bluffton was ten inches high, and the pileus was eleven inches in diameter. Another specimen broken off at the ground weighed eleven ounces. I saw the species growing at only two

stations and at one of these it formed an incomplete giant fairy ring as has been described. At Bluffton eight persons ate freely of this species, and none suffered any inconvenience. It is generally accepted that genuine cases of mushroom poisoning have never resulted from eating decomposing nonpoisonous species. But is it possible that the ripening of the spores might develop some minor poison? The specimens of *L. morgani* eaten at Bluffton were in every case young and the gills were not colored by the spores. Several small species of *Lepiota* were common in the woods during August, but none of these were specifically determined. One of them had the pileus usually under an inch in diameter, white, the umbo dark wood brown. As it aged the margin of the disc became a delicate and beautiful blue.

Another dangerous species is *Clitocybe illudens*. This was found twice near Shriner Lake, growing on stumps, once in an open field, the second time in the woods. None were cooked. Dr. Underwood says it is unwholesome; Mr. McIlvaine says it is poisonous to some, and its odor is certainly not attractive. It possesses fully the phosphorescent property attributed to it by authors. *Clitocybe monadelpha* was found twice near Bluffton, each cluster growing on the ground in low, thick woods. Another species was very common about logs in woods. It was gray or light brown in color, thin, woody, and wine-glass shaped. The odor if long continued was sickening. On two occasions, when I had a quantity of it in the room where I was working, it all but nauseated me, though I am not easily offended through my olfactory organ.

*Collybia radicata* was common in Wells County, and it and two larger species of the same genus, all growing in woodland, were frequently eaten. They have nothing in particular to recommend them. *Russula emetica* was taken in Wells County and *Russula roseipes* in Whitley County. The latter species was eaten raw. It had a nutty flavor much like *Marasmius*. A species of *Cantharellus* was found at Bluffton, August 25, but was not identified.

After rains *Marasmius oreades* appears abundantly on the lawn about my home near Bluffton. The fairy rings were seldom well marked. We could not say that the flavor of this species was superior to that of some larger mushrooms which are usually more easily collected. However, the large number of *Marasmius* which may sometimes occur within a small area make it possible to gather a quantity of caps without much labor. *Panus strigosus* was found near Bluffton, August 19. A single individual

grew from a decayed spot in a living tree. It was a beautiful specimen and suggested *Pleurotus ostreatus*. *Pluteus cervinus* was common both in Wells and Whitley counties, growing on very old logs, and once in a mass of rotting sawdust, in the woods. The pileus varies greatly in coloration. The species was often eaten, but unless fried crisp it has a rather unpleasant flavor. A species of *Galera*, apparently *flava*, was not rare in the woods about Bluffton, growing in clusters on decaying logs. It was cooked and the caps retained most of their bright yellow or orange color. It might be used as "trimming" for a dish of larger species.

*Agaricus campestris* was taken in pastures, but I did not find it in quantities as it is often found. A single specimen taken in the woods near Bluffton seemed to be *A. silvaticus*. In the same pastures and in thin woodland, often on manure, *Psathyrella* was common. All the specimens seen seemed to belong to one species, undetermined.

Belonging to another order are the puffballs, the larger species of which are among the most valuable and delicate fungi. Representatives of three genera were observed this season about Bluffton. *Gruster* was found a number of times in thin woodland. *Calvatia* was found a few times. The best way to cook it is like egg plant. In former years *Calvatia* has often been observed in great abundance, occurring at the edges of woods or in thin woodland. Specimens not less than eighteen inches in diameter have been seen, and individuals eight or ten inches in diameter were not rare. A species of *Lycoperdon*, which suggested a sea-urchin with the spines removed, was common in pastures. Its diameter seldom exceeded two inches; it seemed to ripen rapidly, and it was usually infested with larvae, so none were cooked.

### THE KANKAKEE SALAMANDER.

BY T. H. BALL.

### THE EEL QUESTION AND THE DEVELOPMENT OF THE CONGER EEL.

(Abstract.)

BY C. H. EIGENMANN.

The eel question, or "when, how and where does the eel reproduce," which is as old as history, was in part solved by Grassi, who in 1897 found