

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

CINCINNATI, O. November, 1898.

1—INTRODUCTION.

The generous appreciation that has been bestowed on my recent pamphlet the "Volvæ" by mycological workers in all parts of the country, evidences the growing interest in this branch of botany, and encourages me to further efforts in this line.

We have three practical methods of making record of fleshy agarics, and we will enumerate them in the order of value that we attach to them. 1st, Photographs; 2nd, Alcoholic Specimens; 3rd, Dried Specimens. Each is of value in preserving a record of an agaric, but neither is sufficient in itself (nor all together for that matter.) Agarics should be studied fresh. If you are acquainted with an agaric, have studied it as it grows and know it, you will probably recognize either a dried specimen, an alcoholic specimen, or a good photograph of it, but in my opinion, for the purpose of *study*, pictures or preserved specimens are at the best only aids.

About two years ago I began to have photogravures made of a few of my negatives of fungi and distributed them to a limited number of correspondents who have aided in the collection of a mycological museum. The expense attending this process of reproduction is considerable, the edition necessarily limited, and the issues few. Many persons have applied for sets and are willing to pay for them, but I now find it impracticable to make any additions to the list of recipients and I have been forced to deny not only these applicants, but besides a number who wish more frequent issues of these plates.

By means of the present pamphlet I shall record descriptions drawn from growing plants, and those who desire can obtain photographs from me at the actual cost of printing. These photographs will be sent unmounted with the descriptions pasted on the back, and so indicated by let-

ters that they can readily be kept in the order of classification. I am in hopes sufficient interest will be awakened so that I will feel justified in gradually issuing these photographs and descriptions, until the field is fairly well covered. Recognizing the growing interest in "edible fungi" I shall give preference in illustrating to those of economic value.

Since I have been working with the fungi it has been my custom to photograph those I have found and the result is that I have now over 450 $6\frac{1}{2} \times 8\frac{1}{2}$ plates of our native fungi. I have received many compliments regarding my photographs that I feel, should, with greater justice, have been given to *the lens*. Photography I consider to be largely mechanical, and anyone with a good lens and suitable apparatus ought with practice to succeed. In photographing fungi, it is necessary to have a "long focus" lens capable of covering, natural size of the object, a $6\frac{1}{2} \times 8\frac{1}{2}$ plate and with perfect achromatic properties and what is known as "depth of focus". Such a lens with camera will cost about \$150.00. Every mycological club, and all students who can afford it should be equipped with this outfit, and I will be pleased to give further information in detail to those requesting it.

2—HYDNUM TINCTORIUM.

A HYDNUM ANALAGOUS TO FOMES.

Description.—Pileus dimidiate, sessile, hard, woody. Upper surface dark, almost black, concentrically zoned, (each zone I think, represents an annual growth) the outer (more recent) zone is brown.

Interior substance bright dark red color, hard.

Teeth numerous, about a cm. long, 2 mm. thick, acute, firm, light brown color, the interior dark red, under the microscope covered with spines as in Prof. Ellis' genus, *Mucronoporus*.

Spores hyaline, broadly elliptical, 4×6 mc.

Specimen received was 18 cm. long, 9 cm. wide, and 7 cm. deep. It is evidently of several years' growth. Traces of the teeth structure can be observed for 3 cm. into the substance of the pileus and it is evident that as the teeth grow each year, the substance of the pileus fills in between them at the base.

This specimen was sent by C. V. Piper, and collected on *Abies grandis* at Jansville, Idaho. Prof. Piper informs me that in that locality the hydnum was quite common on diseased *Abies grandis* trunks and that some of the specimens were much larger than the one sent me.

It is of exceeding interest being the first woody hydnum described, to my knowledge.

It might well be taken as the type of a new genus for which Prof. Ellis suggests the name *Echinodontium*, if this view be accepted, making the name *Echinodontium tinctorium*, E. & E.

Prof. Ellis advises me that the plant is evidently the same as one he received from the Alaska collection of J. G. Swan, but in that specimen the teeth were all broken off at the base and their hollow remains were mistaken for pores. The plant was described (Bull. Torr. Club, Vol. 22, p. 362,) as *Fomes tinctorius*, E. & E. The rich red color of the substance of the pileus is very peculiar, and Prof. Ellis states is used in Alaska for dyeing. I acknowledge my grateful indebtedness to C. V. Piper for this interesting specimen and to Prof. J. B. Ellis for aid in its classification.

3—THE ABNORMAL GENUS MYRIADOPORUS.

In 1884 Prof. Peck described (in Bull. Torr. Club, Vol. 11, p. 26,) a new genus *Myriadoporus*, which he stated at the time, appeared to him as an abnormal form of *Polyporus*. We found a specimen belonging to this genus this year and distributed portions to various mycologists. From a very interesting letter received from Prof. Patouillard regarding this specimen, I am enabled to present the following points regarding the genus. *Myriadoporus* as described has the "Hymenium cellular-porous; pores of the surface shallow, open, the others imbedded in the hymenium. The pores do not as in *Polyporus* form vertical parallel tubes, but rather cells or short tubes variously directed, so that a vertical section of the hymenium as well as a horizontal one is porous." Prof. Peck originally described two species, but numerous others have since been observed and it is found that they are always *sterile* and are abnormal forms of various *Polyporii*.

Prof. Patouillard has observed the form corresponding to *Poria subacida*, *Polyporus adustus*, *Fomes connatus*, *Polystictus sanguineus*, and *Fomes marmoratus*. The specimen we found was evidently derived from *Polyporus delectans*, and we have seen at Trexlertown, Pa., the form corresponding to *Poria salmonicolor* (?). The genus *Bresadolia* established by Spegazzini on a South American species, evidently belongs to the same forms. The specimen we found grew in close proximity to *Polyporus delectans*, and is without doubt a curious variation of this species, for no other soft, *large pored*, white species of *Polyporus* occurs in this section. Our photograph gives an excellent idea of this curious plant.

4—THE LARGE LEPIOTAS.

As the genus *Lepiota* is one of the easiest we have for the beginner to work with we will begin our description and photograph distributions, with this genus. We will select first the large species (7–10 cm, or larger) which we find around Cincinnati, reserving the small species for a future paper. Two species we have met, are omitted as we are not as yet sure about their determination.

Two of the species can be known by their dry rough pilei, resembling undressed leather, viz: *Morgani* and *procera*; two by the flesh turning red when bruised, *Americana* and *meleagris*; *cepæstipes*, a white species, by the abundant flocculent particles which cover the pileus; *nau-cinus*, the other white species, by its smooth firm pileus devoid of scales and meal; *acutesquamosa* by the erect blackish scales; *rubrotincta* by its dark red, thin cuticle, often cracked or peeling off, but not broken into squamose scales.

5—LEPIOTA MORGANI.

Pileus globose when young, then explanate, white, covered with large, shaggy, darker scales. Gills, remote from the stem ($\frac{1}{2}$ cm), narrowing in front, broader behind, when mature pale *greenish* color. Ring large, firm, distant from the gills, sometimes fixed, sometimes movable. Stem cylindrical, firm, stuffed then hollow, slightly thickened below, surface smooth. Spores, *greenish* in mass, 7x12 mc. apiculate.

This is much the largest species we have; stipe 30 to 40 cm. high, 2 cm. thick, pileus 20 to 30 cm. broad. It usually grows in wet pastures. It does not occur in the east, but is quite frequent with us and ranges southward, being reported from Georgia, Berry Benson; and Louisiana, Father Langlois. It is readily distinguished from all other known agarics by the *greenish* color of its gills. It was named for its discoverer, Prof. A. P. Morgan one of the leading mycologists of our country.

Regarding the edible properties of this species reports are conflicting. I have eaten it without any bad result, and Berry Benson used to write me it was a regular article of diet with him. Prof. Peck advises me however, that some of his correspondents report indisposition from eating it. I do not think it has any poisonous properties, but probably does not agree with some stomachs like many articles of food. Our photograph is necessarily taken from small specimens not more than one-third the usual size.

6—LEPIOTA PROCERA.

Pileus ovate, then campanulate or expanded, with a small prominent unbo, covered with brownish dry cuticle which breaks up (save the umbo) into adnate, torn scales. Flesh soft, white. Gills white, remote from the stipe. Ring firm, remote, usually entire and movable. Stem tall, firm, thickened at the base, hollow, the cuticle cracking, forming appressed fuscous scales. Spores white, 10x14 mc. broadly ovate, not apiculate.

This is a large species, but smaller than the preceding. Stipe about 20 cm. high; pileus 10-15 cm. broad. It is rather rare around Cincinnati, being generally found in the fall of the year in woodland pastures. It is however of wide distribution in this country, being reported from many localities. Regarding its esculent properties, all authorities agree that it is *most excellent*.

It makes a beautiful photograph, and our picture will give a better idea of the plant than any possible word description, and I might add, than any colored plate I have ever seen.

7—LEPIOTA PROCERA, FORM RUBESCENS.

Description agrees with *procera* in every respect save that the gills become slowly red spotted when bruised.

I have no doubt this is the plant on which *L. rachodes* is based in Prof. Morgan's flora, but I would consider it hardly a good variety of *procera*. The plant of Europe usually referred to *L. rachodes* differs from *procera*, especially in its smooth stem, besides it belongs to the section *quickly* turning red when bruised, analogous to *L. Americana* (if not that species).

8—LEPIOTA AMERICANA.

Quickly turning red when bruised or cut. Pileus convex, then expanded, flat or sometimes umbonate, margin in large specimens usually strongly striate, white, but covered with a red cuticle which breaks up (save on the disk) into large, somewhat adnate, scales. Gills free, broad, white. Ring entire or sometimes torn. Stem smooth, hollow, or

stuffed, sometimes thickened below, (sometimes not, see photograph), frequently enlarged below into a bulb-like swelling, like "cepæstipes." Spores white, subelliptical, 5x7 mc.

The fresh plant turns red when bruised or cut; it also dries red, and turns alcohol red into which it is placed. It is of wide distribution from Louisiana, (Father Langlois) north and east. It is a common plant in the late summer at Cincinnati. Sometimes we find it in the grass, then it is frequently large. Usually it grows at base of stumps and rarely on decaying wood. I am strongly of the opinion that it is the same plant known as *rachodes* in Europe, though no one would suspect it from Cooke's plate. Some figures such as Price and Barla closely approximate it. I presume the early records of "*rachodes*" from this country are based on this plant. I have sent *dried* specimens to two of the leading mycologists of Europe. One states "It is unlike any species we have in Europe, and I consider a good species." The other, "It is identical with *Lepiota Badhami*, Berk. and to *Lepiota rachodes* of most authors, but scarcely as described by Vittadina, which according to his description has not yet been re-discovered."

Regarding the edible properties of the plant, there is no question of its wholesomeness, but its change of color makes an uninviting dish.

9—LEPIOTA MELEAGRIS.

Pileus explanate, obtuse, white, but covered with small brown scales. Flesh white, turning red spotted when cut or bruised, afterwards turning brown. Gills white, remote. Ring fragile, soon withering. Stem usually swollen below, stuffed, generally brown spotted. Spores, 4x7 mc.

This plant approximates the preceding in its properties of turning red when bruised, turning alcohol red, and drying reddish. It is however, a much smaller plant and occurs in rich leaf mold in the woods, where we rarely find *Americana*. It grows singly or three or four caespitose. The whole plant (especially when handled) is covered with brown spots which make it appear dirty and untidy. Below the ring, the stipe is covered with loose white fibrils (more perhaps in the nature of pruinosity) which turn red quicker when bruised than any other part of the plant. The stipes are usually much swollen but some times very slightly as shown in Cooke's figure and in our photograph.

Our plant differs somewhat from the English description. The stem is not "tinged with yellow." The flesh does not change to a "beautiful red" when cut but merely red spotted. Cooke's figure shows pileus and stipe covered with *black* scales; our stipe is destitute of scales and those of the pileus are brown. I do not believe that Stevenson's description or Cooke's figure applies to Sowerby's original figure which shows much fewer and *larger* scales than our plant and the stipe is solid. I do not find any record that the plant is edible, though I do not question it, as all similar species are.

10—LEPIOTA CEPÆSTIPES.

Pileus campanulate, or convex, even, save the margin which is usually striate or sulcate (sometimes however, not), pure white, or very slightly brownish only at the disk, covered with large, loose, floccose, white scales, easily rubbed off. Gills free, pure white, rather broad. Flesh thin, white. Stipe thickened at the base, tapering up, and slightly enlarged at the insertion in the pileus, white farinose but with

a slight yellowish tint when the mealiness is rubbed off. Ring large, lacerate, soft, usually torn. Spores elliptical, 6×8 mc.

The specimen photographed, and from which the above description was drawn, was referred when collected to Prof. Peck's "*farinosa*." Having received from Prof. Burt an alcoholic specimen of the same plant labelled "*cepæstipes* syn. *farinosa*" on further study of the European plant and descriptions we coincide in Prof. Burt's views. Judging from the foreign plates and from alcoholic specimens received from the South (Father Langlois) the plant photographed differs from the usual form in being much larger and not having a typical "*cepæform*" stem. In Europe and in the South (Benson) a yellow form also occurs.

Some of my alcoholic specimens have *abruptly bulbous* stems but that this is not always a character, see Greville's figure.

The character of the plant seems to me to be the dense mealiness covering all portions especially when young, well shown in our photograph (but not in the principal foreign plates, Barla, Cooke, Greville, Sowerby, though covered in their text) and Prof. Peck's name, *farinosa*, would be more appropriate than the name it bears.

We distribute photographs of two forms, one the large form (*L. farinosa* Pk.), the other the smaller form agreeing more closely with the European plant save the stipe is not so "*cepæform*." All authorities concur in its being edible.

11—LEPIOTA NAUCINUS.

Pileus white, convex then expanded, obtuse, smooth. Flesh soft, white. Gills free, narrower in front, white, discolored when old. Stipe firm, white, smooth, stuffed, then hollow. Ring entire, white. Spores 6×7 mc.

This white species can readily be distinguished from the preceding by the absence of the mealiness. We generally find it pure white and smooth. Sometimes however there are a few minute darker scales on the pileus. Prof. Peck considers our American plant distinct from the European under the name *naucoinoides*.

From an economic standpoint we consider this the most important mushroom we have, except the field agaric, *Psalliota arvensis*. We prefer its flavor and it often occurs in the greatest abundance. The plants are not so much infested by larvæ as the field agaric. It usually grows in pastures in rich moist situations where the grass is green. Sometimes in the fall in the rich bottom land around Cincinnati the fields are full of it. There is only one danger in collecting it. An inexperienced collector may mistake *Amanita phalloides* for it, as they resemble in general appearance. Unless you are sure of it do not gather a "white mushroom" in the woods, or in newly cleared ground, or woodland pastures.

12—LEPIOTA ACUTESQUAMOSA.

Pileus convex or expanded, obtuse or subumbonate, covered with brownish fibrils which coalesce and form *erect* blackish scales, thickly covering the pileus especially the disk. Gills white, narrow, close, free, crowded. Ring thin, large, white, often *cobwebby*, frequently torn. Stem equal or thickened below, stuffed or hollow. Spore, long, 3×7 mc.

There are many species with spreading scales but this is the only large one we have with erect scales; (*felina* has similar scales but it is a *small* plant). Fries recognizes two related species *Friesii* and *acute-squamosa* the former with appressed scales and branched gills, the latter with erect scales and simple gills.

Our plants all have *erect* scales; sometimes the gills are simple, sometimes a few only branched, and sometimes most of the gills are branched. We would consider them all, *acutesquamosa* but would modify Fries' gill characters. It seems to me the descriptions of this plant do not emphasize enough the peculiar *cobwebby* veil in which it differs from all other large species. Usually it is woven into a thin membrane as shown in our photograph, but we have a photograph (425) where the veil consists of distinct fragile threads, like a spider's web. We only find the plant in the woods, and generally growing in soil thickly mixed with decaying wood as where a log has rotted away. Our photograph distributed (one of the first we made, No. 37) is not as good as we would like and we will probably substitute later a better one.

13—LEPIOTA RUBROTINCTA.

Pileus explanate, thin, obtuse, entirely covered with a reddish thin cuticle, which often cracks or peels away but does not break up into scales. Gills close, free, white. Flesh white. Stipe slender, equal or slightly thickened below, white, smooth, hollow. Ring usually entire, white, or the margin often similarly colored like the pileus. Spores, 5×7 mc.

This is a beautiful species found in the woods. Prof. Peck compares it to *cristata* but if I have correctly identified his species it seems to me to have little in common excepting the *color* of the pileus cuticle. The thin cuticle often cracks or peels away in a radiating manner, but does not form similar spreading scales, to *cristata*. Often we find specimens of this species with the cuticle unbroken, never in *cristata* save on the very disk. In our photograph the three erect plants have the usual character of the cuticle, very rarely we find it as seen in the specimen where the full top of pileus is shown. I consider *Lepiota carneo-annulata*, Clements the same plant. Often we find specimens with the ring beautifully incarnate margined. The species is no doubt edible but not abundant enough to be of any importance.

14—PHOTOGRAPHS.

In order to encourage a more general study of our native agarics, I will supply photographs of the plants described in these pamphlets at cost of printing, viz. 10 cents each, and will send a set of twelve photographs representing the plants here described, on receipt of \$1.20. With the aid of these photographs and descriptions, any one should recognize the specimens when found growing. Having disclaimed any personal credit for the excellence of my photographs and given it where due to the *lens*, it will not be amiss to say that notwithstanding the lack of color I consider them the best illustrations of fungi I have ever seen and would not exchange them for any colored plates ever issued. Artists are often inaccurate but a good lens makes no mistakes. A delay of a week or ten days will elapse after receipt of order before the set can be mailed, as it requires this much time to have the set printed.

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Lloyd, C. G. 1898. "Mycological Notes, No. 1 (1-14)." *Mycological writings of C. G. Lloyd* 1, 1-8.

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