

MYCOLOGICAL NOTES.

BY G. G. LLOYD,

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200.—THE BOVISTAE.

We have classed the Bovistae as a subtribe of the Lycoperdeae (see Genera of Gastromycetes, p. 11). They are the "tumblers" of the puff ball world. They differ essentially from the true Lycoperdae in their habits (see Myc. Notes, p. 85). When ripe they break away from the place of growth and disperse their spores by a method entirely different from that of the Lycoperdae. Nature has provided them with peridia and capillitia specially suited for this method of spore dispersion.

THE PERIDIUM.—The peridia of the genera Bovista and Mycenastrum when young consist of two layers, an outer thin layer called the cortex, and an inner firm layer that is permanent and generally referred to as "the peridium." In Catastoma the outer peridium is thick. Details regarding the nature of the peridium layers will be found under each species.

COLOR OF THE SPORE MASS.—The immature gleba is white. As it ripens it passes through various shades of olive (or even yellow) to a dark brownish purple, almost black. If a specimen be collected and dried when it begins to ripen, the gleba will retain to a large extent the color it possessed when collected, hence the color of the spore mass of various specimens as found in collections is of no value in determining the species.

STERILE BASE.—All species of Bovistae as far as we know are devoid of a sterile base. For a long time this was the main character used to define the genus.

The "Bovista" of Fries' conception was in brief a puff-ball without a sterile base. According to our present views the absence of sterile base is only one of the characters of the genus, hence in Bovista of Saccardo, Masee, Fries, we find species that we refer to Mycenastrum, Catastoma, Calvatia and even Lycoperdon.

CAPILLITIUM.—The capillitium of the Bovistae is strongly characteristic. It consists of *separate, usually branching threads*. Each thread is distinct and complete in itself and has no connection with the peridium or columella. Each genus of the Bovistae has its peculiar type of threads (see figures in the plates of various species of Bovista, Mycenastrum and Catastoma). In Bovista lateritia (see plate 4, fig. 6,) the threads are very long, slender, branched, interwoven, and it is not possible to float out "separate threads" as can readily be done with most species of the genus. (See note page 7, Gastromycetes Genera). The first impression in examining the threads in this species is that they do not belong to the Bovista type. The threads of Catastoma (see

plate 6, fig. 6) have blunt ends and appear as fragments of a continuous thread. Whether they are fragments that have broken up or are separate distinct threads we do not know. Reasoning from analogy as concerns the threads of others of the Bovista, and from the fact that we find none that are tapering we are inclined to the latter view.

CLASSIFICATION.

The Bovistae is composed of three genera, which as far as we know, are entirely distinct and do not shade into each other. The genus Bovista however, does shade into the genera Bovistella and Lycoperdon of the Lycoperdace.

- Capillitium of separate, much branched threads, with slender pointed branches, Bovista.
- Capillitium of separate, entire or few branched, threads, bearing spiny points, Mycenastrum.
- Capillitium of short, entire, smooth threads with blunt ends, Catastoma.

201—BOVISTA.

With a little experience the genus is recognizable on sight by reason of external appearances, the nature of the peridia and the habits of the plants. Of course there are internal features and microscopic conditions that confirm the distinction. There may be it is true, plants with the "Bovista appearance" outside that have entirely distinct internal structure, but we do not know of any. Plants are known that have the same internal structure, but are different in their habits and nature of the peridium, these we call Bovistella (*) (see Myc. Notes, p. 85).

The peridium of Bovista is firm, parchment-like, elastic, persistent. The plant breaks away from the place of growth, and persist tumbling about on the ground for months. There are two layers of the peridium in young plants, the outer very thin and called the cortex. As the plant ripens the cortex peels off in patches and entirely disappears from the perfectly ripe plant. The cortex of most species is smooth, nor does it develop spines as do most species of Lycoperdon. Bovista pila has a smooth cortex when very young. As it grows it becomes somewhat broken up in scales or granules, but it is never "pilose."

The capillitium of Bovista consists of separate threads as shown in our plates. In the mass, these threads are firm and elastic, and thus the spore mass of Bovista can be distinguished by the eye from that of other genera of "puff-balls." This is an adaptation to further the method of spore dispersion of Bovista (cfr. Myc. Notes, p. 85). The spores of most species of Bovista are pedicellate, a few are not. Lycoperdon pedicellatum is the only gastromyces I know that has truly pedicellate spores and does not belong to Bovista, or the related genus Bovistella.

(*) Systematists who attach importance entirely to structural characters will call them all Bovista. This is simply a question of opinion. I am partial to genera that present features by which I know them as soon as I see them. Acknowledging theoretically the structural importance of the distinction, I do not fancy a genus like "Ulocolla" where you have to "sprout the spores" before you can tell it.

THE SPECIES OF BOVISTA.

We have specimens representative of six species. *Bovista plumbea*, a small plant, common both in this country and Europe; *Bovista pila*, a large plant frequent in this country, not in Europe; *Bovista nigrescens*, a large plant from Europe which does not grow with us. Of the rare species we have *Bovista minor* from Ohio; *B. tomentosa* from Italy, and *B. lateritia* from Mexico. *Bovista pila* and *lateritia* have spores with none, or very short pedicels; the remainder have long-pedicellate spores.

202—BOVISTA PLUMBEA.

(Plate 1.)

Usually globose, or depressed globose, from two to three cm. in diameter. Old specimens from which the cortex has disappeared are somewhat lead color, hence the name. The cortex of a young growing plant is smooth and white. The surface sometimes breaks up into little white granules as it dries; finally the cortex loosens and shells off entirely from the peridium. The peridium is of a lead color, smooth, firm, parchment-like. It opens by a small definite mouth. Spore mass compact, elastic, olivaceous if the specimen is dried before perfect ripening, but when normally ripened dark purplish-brown. Capillitium threads much branched, with slender tapering branches. Spores sub-globose or ovate, smooth, even, 5–6 mc. with long pedicels (10–12 mc.)

Bovista plumbea is a frequent plant in Europe and Northern sections of this country, growing usually in old pastures. It is readily distinguished from our other common species of *Bovista* (*B. pila*) by its color, small size, and pedicellate spores.

Specimens in our Collection.

Maine, H. C. Beardslee. *Massachusetts*, Simon Davis, G. E. Morris, H. Page, H. E. Warner. *New Hampshire*, C. E. Montgomery, (†) Hollis Webster, (†). *Michigan*, (very common) C. G. Lloyd. *Minnesota*, E. P. Ely, (†) Minn. Bot. Survey, Dr. N. M. Cook. *Illinois*, (near Chicago) H. L. Watson, W. S. Moffatt. *Wisconsin*, C. E. Brown, Wisc. Myc. Club. *Iowa*, W. J. Teeters, T. H. Macbride. *Colorado*, E. Bethel, (†) (Pike's Peak) Chas. E. Bessey, (†). *Oregon*, David Griffith. *Washington*, W. N. Suksdorf, Susan Tucker, C. V. Piper. *California*, L. A. Greata, A. J. McClatchie (labeled *ammophila*). *Ohio*, (Cincinnati) A. P. Morgan (†). (Rare here, I have never found it.—C. G. L.)

Canada, J. M. Macoun. *France*, N. Patouillard. *Germany*, P. Magnus, Otto Jaap.

From the above it will be noted that *Bovista plumbea* is of a northern range extending across the continent. Los Angeles, Cal. and Cincinnati are the only stations at all Southern. The specimens from C. V. Piper, Washington, are larger and blacker than usual and at first we were disposed to refer them to *B. nigrescens*, from which however, they differ as to spores.

203—BOVISTA PLUMBEA. (Oval Spored Form.)

(Plate 1, Fig. 8.)

Morgan describes the spores as oval and states that he has never seen specimens with globose spores. A close examination of the 45 different collections in our Museum shows that most spores are not truly globose but have a tendency to oval form. There is, however, a wide range in this respect, as shown in our microphotograph (plate 1, figures 7 and 8). In only a very few is the shape de-

cidedly oval and those are marked with a † in our list of specimens. Morgan suggests that it is *B. ovalispora* of Massee. We think it is rather *B. fulva* of the same author (described from immature specimens) and that *B. ovalispora* bears the same relations to *B. nigrescens* that "*B. fulva*" does to *B. plumbea*.

204—BOVISTA PILA.

(Plate 2.)

Usually globose, or somewhat plicate at the base, from four to eight cm. in diameter. Old specimens from which the cortex has disappeared are black or bronzed color. The cortex is early broken into granules which finally disappear, leaving the peridium smooth and shiny. The peridium opens by an irregular torn aperture. Spore mass firm, compact, at first olivaceous, finally dark purplish brown. Capillitium threads much branched, with short, thick, rigid, tapering branches. Spores globose, even, 4–5 mc. in diameter, usually without a pedicel, sometimes with a very short one.

Bovista pila is the only large species in this country. In size and general appearance it closely resembles *B. nigrescens* of Europe and the early mycologists (Schweinitz, Curtis and Berkeley at first) took it for *nigrescens*. When Berkeley worked over the American *Bovistas* for Grevillea (1873) he no doubt noticed the discrepancy in the spores and having a young specimen from Wisconsin he inaccurately described it as being "finely tomentose." If he recognized as the same plant the specimen he had previously called *B. nigrescens* for Lea he made no mention of the fact. When Ellis worked with the plant he evidently noted that it had the same capillitium threads as *Bovistella Ohiensis*. Cooke had written Ellis that they were the threads of *Mycenastrum* (Cooke's idea of *Mycenastrum* threads was certainly vague at that time). Ellis therefore first called it *Mycenastrum Oregonense* and published it under that name. Afterwards Cooke wrote Ellis that the species was Berkeley's *Bovista pila*. Morgan who was in close touch with Ellis thus published it, and since Morgan's work appeared, the plant has been generally known in this country under this name. If Berkeley had purposely exerted his utmost ingenuity, he could not have selected a more inappropriate name. The plant is *never* "*pilose*" and when perfectly ripe is the smoothest of the smooth species.

Specimens in our Collection.

Canada, A. J. Hill. Maine, (obovate form, see plate 2, fig. 5) F. K. Vreeland, P. L. Ricker. New Hampshire, Mrs. A. R. Warner. Massachusetts, Simon Davis, L. Leroy Sargent. New York, C. L. Wakeman. Pennsylvania, Dr. Wm. Herbst. West Virginia, Dr. J. Gilbert Selby, C. G. Lloyd. Ohio, C. G. Lloyd. Minnesota, E. P. Ely, Dr. N. M. Cook. Michigan, W. H. Aiken (see plate 2, fig. 4), Mrs. Eugene Wright, L. E. Weld, C. G. Lloyd. Iowa, T. J. Fitzpatrick, W. J. Teeters, T. J. Macbride. Colorado, E. Bethel. Washington, W. N. Suksdorf. North Carolina, A. G. Wetherby.

It will thus be noticed that the plant is principally of a northern range and extends from coast to coast. Michigan supplies us specimens in the greatest abundance. The only Southern station we know is North Carolina.

The plant does not grow in Europe.

SYNONYMS.

Bovista Montana. We have examined authentic specimens of this plant which was described as having a thinner peridium and more slender threads than *Bovista pila*, and are unable to distinguish any difference.

We have also seen authentic *Bovista tabacina* (*Lanopila tabacina* in Sac. Syl.) and it is a bronzed form, or rather a bronzed condition. Specimens that have wintered in the open take on a bronzed color like the throat of a turkey gobbler and are frequent both in Ellis's and our own collection.

Occasionally we meet with specimens not globose but obovate in shape as figured plate 2, figs. 4 and 5. Such specimens we think are what Massee has called *Bovista obovata*. De Toni (in Sac. Sylloge) has compiled Ellis's "*Mycenastrium Oregonense*" as *Scleroderma Oregonense*.

205—BOVISTA NIGRESCENS.

(Plate 3.)

Usually globose, from four to six cm. in diameter. Old specimens from which the cortex has disappeared are black or dark brown, smooth and shining. Cortex a thin, smooth, white layer which peels away entirely. Peridium dehiscing by a large torn aperture. Spore-mass umber brown with a purple tinge. Threads branched, with slender tapering branches. Spores globose, smooth, 5-6 mc. with a short pedicel 5-6 mc.

Bovista nigrescens is the large species of Europe. It is said to grow in "dry pastures and heathy places." The general appearance is the same as *B. pila* of this country, but it can be distinguished at once by its spores. It does not grow in our country notwithstanding the numerous records.

Specimens in our Collection.

England, Chas. Crossland (a fine lot). *France*, N. Patouillard. *Tirol*, Rev. G. Bresadola. *Belgium*, C. Van Bambeke.

SYNONYMS.

The plant has been called in various writings *Lycoperdon nigrescens*, *Globaria nigrescens*, *Lycoperdon globosum*, *Lycoperdon Bovista*. The latter name is applied by Sowerby to his illustration t. 331, which is evidently this plant. Sowerby however, confuses in his text *Bovista plumbea*, *Bovista nigrescens* and *Calvatia Bovista* under the Linnaean name for the last species.

206—BOVISTA MINOR.

(Plate 3.)

Sub-globose, about 1½ cm. in diameter. Cortex thick, attached to the soil by universal mycelium, and falling away at maturity, excepting a small portion at the base. Inner peridium thin, subflaccid, opening by a small aperture. Spore mass brown. Capillitium threads branched, with long slender branches. Spores 4 mc. globose, smooth, with long (15 mc.) pedicels.

This plant is peculiar in its habits. Buried in the ground, the cortex peels off adhering to the soil as the plant comes to the surface. A portion of the cortex remains at the very base and in general appearance it resembles a *Catastoma*. Hollos claims that it is the same as *Bovista tomentosa*, but it seems to me to differ widely as to habits. Its capillitium threads are quite different. Its spores are smaller and have longer pedicels.

Specimens in our Collection.

Type specimen from A. P. Morgan. It has never reached me otherwise save some very young specimens which I doubtfully refer to this plant, sent by H. Page, Massachusetts.

207—BOVISTA TOMENTOSA.

(Plate 4.)

My knowledge of this plant is confined to a single pressed specimen received from Bresadola. This specimen is about the size of plumbea, but has a dull surface. Capillitium threads as shown are relatively short and thick. Spores much smaller than plumbea, 4-5 mc. with pedicels 8-10 mc. long.

Specimens in our Collection.

Tirol, Rev. G. Bresadola.

SYNONYMS AND HISTORY.

It was described by Vittadini as *Lycoperdon tomentosum* and is badly named for it is really not "tomentose." It has been called also *Globaria tomentosa*. It occurs in the warmer portion of Europe.

208--BOVISTA LATERITIA.

(Plate 4.)

When Massee (1888) worked up the Bovistas he found in Berkeley's herbarium a specimen labeled "*Bovista lateritia*" sent by Montagne. Locality not known. We have received from Prof. T. H. Macbride a half specimen so labeled, collected by Sanderson in Mexico. It seems to us to answer the description. The cortex is gone, and the peridium which is very thin, is brick red, (the name means brick color.) Spore mass compact, rust-color. Capillitium of long slender branching threads, at first sight seeming to be of the *Lycoperdon* type. They are however, separate threads, but so long, slender, and interwoven that they cannot be floated out singly as can the threads of most species of *Bovista*. Spores globose, warted, 5-7 mc.

209--BOVISTA ASPERA.

(Plate 4.)

We have received from W. Jekyll, Jamaica, little specimens which Prof. Patouillard refers to *Bovista aspera*.

In Saccardo this plant is given as a *Lycoperdon* on authority of Spegazzini (where? *not Fungi Guaranitica*) but evidently referring to some other plant as spore description does not agree at all. Our specimens are true Bovistas, though the cortex has little spiny nodules as a *Lycoperdon*. There is no sterile base. Capillitium of separate threads with slender branches. Spores globose, smooth, 5 mc. with pedicels 10 mc. long. Several species in our collection appear to dehisce by several mouths (see plate 4, fig. 8) but whether this is normal or due to work of insects we do not know.

Specimens in our Collection.

Jamaica, W. Jekyll.

210—MYCENASTRUM.

The genus is characterized by the spiny capillitium (see plate 5, fig. 8). Even in very immature plants these peculiar threads can be distinguished. We have never seen them so excessively spiny as shown by the figure in Engler and Prantl. Morgan's drawing does not well represent them.

Many species of *Mycenastrum* have been described which Dr. Hollos claims to be all forms of the same plant, and that it is cosmopolitan. These are mostly included in Saccardo as *Sclerodermas*, but the genus is widely different from *Scleroderma*. The original species came from France and was called *Lycoperdon Corium*. In this country the species is usually known as *Mycenastrum spinulosum*, but I do not think it presents any characters by which it can be distinguished from the European plant. (Our previous note on the subject, *Myc. Notes*, p. 79, to the contrary notwithstanding).

211—MYCENASTRUM CORIUM.

(Plate 5.)

If we accept Hollos' references of all species of *Mycenastrum* to this one species, the plant grows in every continent in the world. In the United States, its home is the plains of the Western States, and it occurs in abundance in Colorado, Kansas, Iowa, as far south as Texas, west to the coast (Southern California), Washington. The furthest east that we have specimens is near Chicago.

As found in this country the plant is usually globose or depressed globose, but specimens from Texas (plate 5, figures 4 and 5) and from Hungary (plate 5, fig. 6) are obovate in shape. The peridium is thick, hard, almost woody. It varies in thickness from one to four millimeters. When young the cortex is smooth, or with a felty appearance (see plate 5, fig. 2). It dries up and disappears when the plant ripens, leaving the peridium smooth. The plant dehisces by the peridium splitting into a number of stellate lobes, but usually the plant breaks away from its base, and is rolled about unopened for months. In ripening the gleba first turns bright olive (almost yellow). Finally it becomes dark purplish brown. The peculiar capillitium threads are the generic character. They are simple, or few branched, short, thick, pointed at the ends, and *bearing little spiny prickles*. The spores are globose, large, 8-10 mc., warted. (*)

In *Myc. Notes*, p. 79, we drew attention to the fact that the American plant has columella strands (see plate 5, fig. 3). In no other country has a columella ever been noted in a *Mycenastrum*. If it were a constant character of our plant we should say it was of specific importance, but an examination of many specimens shows that while present in some specimens, in others there is no trace of it and there is no other difference between them. It is simply a fact that some plants possess columellæ and others do not. This columella is of the nature of undeliquescing gleba, though the hyphæ while of a

(*) Morgan states they "often have a minute or slender hyaline pedicel" We have never seen them, though an examination of immature gleba demonstrates they are borne on the basidia on short pedicels.

similar nature to the capillitium are larger, thicker, more branched, and the spores in the tissue are very few.

SYNONYMS.

The plant was first described as *Lycoperdon Corium*. It has undoubtedly been redescribed under a number of names. Hollos states that twelve of the "Sclerodermas" in Saccardo belong here. In this country the plant has been mostly known as *Mycenastrum spinulosum*.

Specimens in our Collection.

Illinois, (near Chicago) Dr. L. H. Watson, (near Havana) H. C. Beardslee. *Minnesota*, Minn. Bot. Survey. *Iowa*, W. J. Teeters, T. H. Macbride. *Kansas*, E. Bartholomew. *Colorado*, E. B. Sterling, (In great abundance). *Nevada*, David Griffith. *Texas*, E. P. Ely, T. C. Horton. *Washington*, C. V. Piper. *California*, (Los Angeles) L. A. Greata. *Canada*, T. R. Donnelly. *Hungary*, Dr. L. Hollos.

212--MYCENASTRUM CORIUM form STERLINGII.

(Plate 5, Figures 10 and 11.)

We have received from E. B. Sterling, Denver, Colo., and from him alone, a remarkable form which instead of being smooth as usual, has the peridium marked with large scales (see plate 5, figs. 10 and 11). When we first received young specimens of this plant, we supposed it to be the young of *Calvatia sculpturatum*, but the *Mycenastrum* capillitium showed its true nature. Since, an abundance of material sent by Mr. Sterling exhibits all grades of connecting forms between it and the ordinary smooth form, we question if it is even entitled to a distinctive name. Had specimens of the extreme form been sent to Berkeley he would probably have called it a marked "new species" and our literature would have been burdened with one more synonym.

The Genus *Catastoma* will appear in next issue.

213—MICRO-PHOTOGRAPHS.

Mr. Uranus Hord, an expert microscopist as well as photographer, has installed in the Lloyd library a micro-photographic apparatus. We thus have facilities for making micro-photographs as easily as we can photograph ordinary objects. For the spores of the *Gastromycetes* we shall adopt a uniform magnification of an even thousand. This has one strong advantage. As a micron is a millionth part of a meter, one thousand microns are equal to a millimeter. Therefore the size of the spores can be readily ascertained by a *millimeter scale*, each millimeter of the micro-photograph representing a micron of the actual size of the object. Individual observers may vary as to the size of the spores when measured by an eye piece scale, but we cannot see how there can be any error in a process of micro-photography where the instruments that magnify and photograph are always exactly the same.



Fig. 1.

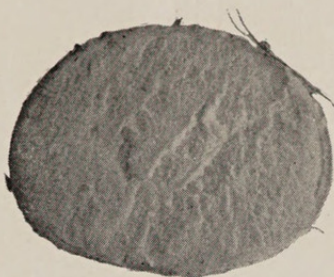


Fig. 2.

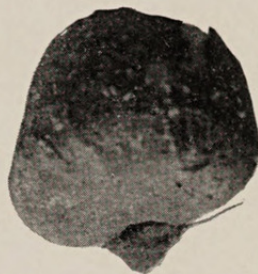


Fig. 3.



Fig. 4

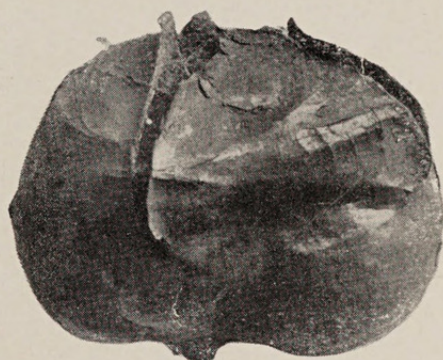


Fig. 5.

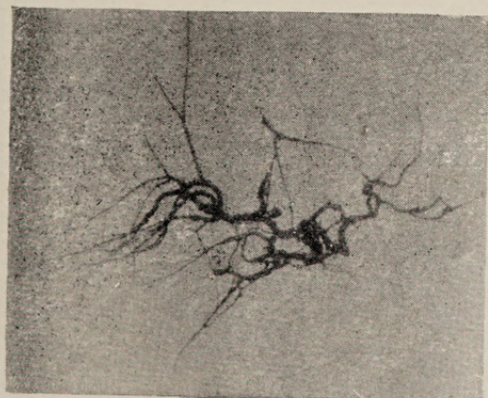


Fig. 6.



Fig. 7.

BOVISTA PLUMBEA.

(Explanation of figures, see over.)

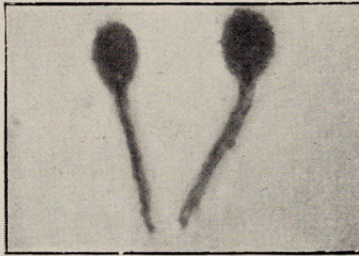


Fig. 8.

Explanation of Figures.

Fig. 1. A mature plant. Fig. 2. Section of young plant. Fig. 3. A plant with scurfy particles of exoperidium. Fig. 4. A plant with exoperidium. Fig. 5. An unusually large plant, from C. V. Piper, Washington. Fig. 6. Capillitium (x 80). Fig. 7. Spores (x 1000). Fig. 8. Spores of oval-spored form (x 1000).

BOVISTA PLUMBEA.



Fig. 1.



Fig. 2.



Fig. 3.

BOVISTA PILA.

(Explanation of figures, see over.)



Fig. 4.

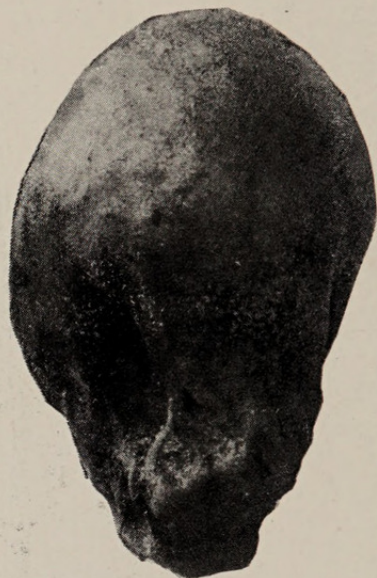


Fig 5.

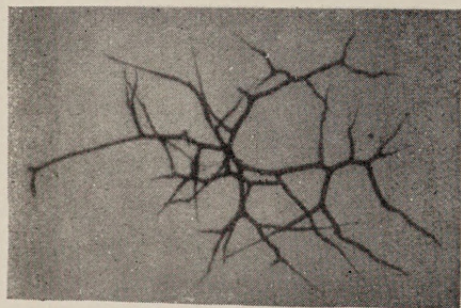


Fig. 6.

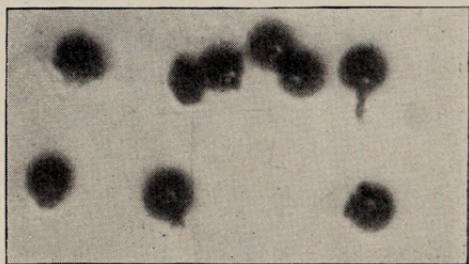


Fig.7.

Explanation of Figures.

Figure 1 and 2. Mature plants. Fig. 3. Young plant with scurfy exoperidium. Fig. 4. Obovate form with plicate base from W. H. Aiken, Michigan. Fig. 5. Obovate form from F. K. Vreeland, Maine. Fig. 6. Capillitium (x 80). Fig. 7. Spores (x 1000).

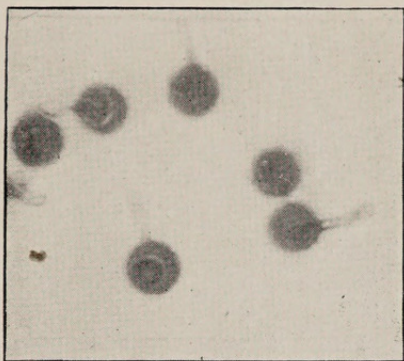


Fig. 1.

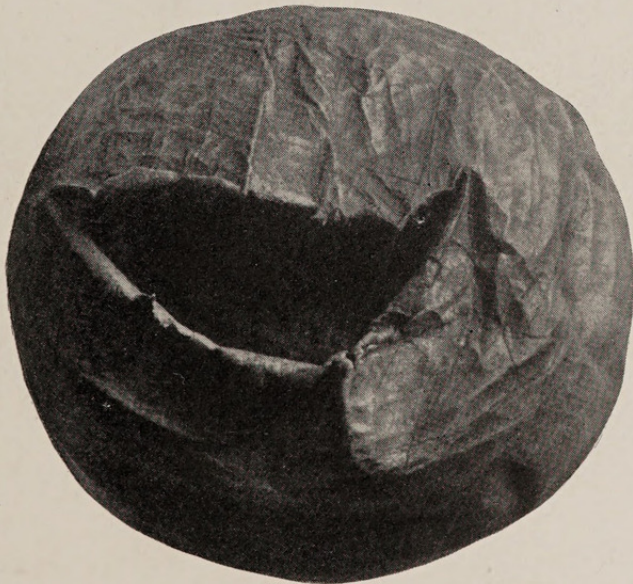


Fig. 2.

Explanation of Figures.

Fig. 1. Spores. (x 1000). Fig. 2. A mature specimen from Charles Crossland, England.

BOVISTA NIGRESCENS.



Fig. 3.

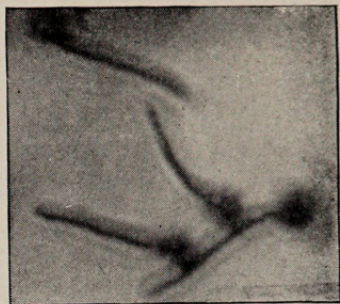


Fig. 4.

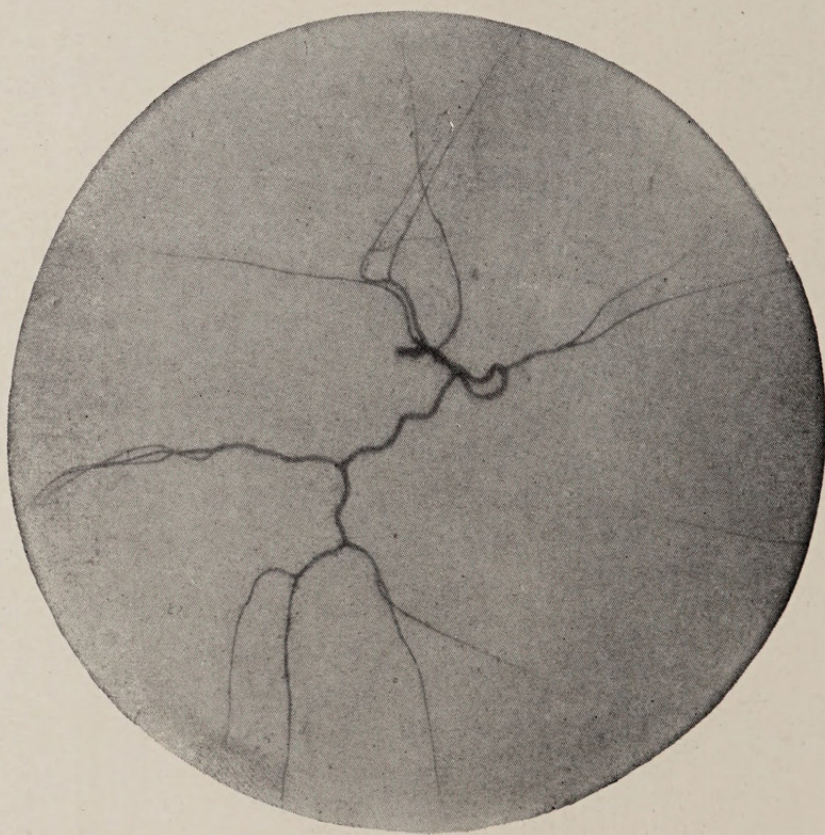


Fig. 5.

Explanation of Figures.

Fig. 3. A dried plant, type from A. P. Morgan, Ohio. Fig. 4. Spores (x 1000). Fig. 5. Capillitium (x 80).

BOVISTA MINOR.



Fig. 1.

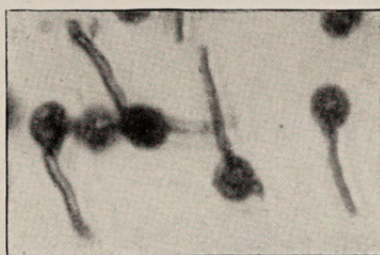


Fig. 2.

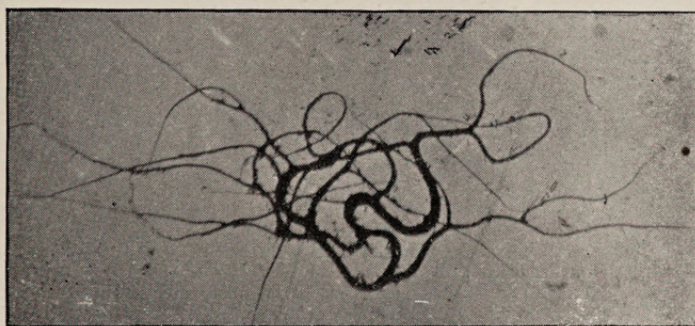


Fig. 3.

EXPLANATION OF FIGURES.

Fig. 1. Half, dried, pressed plant from Rev. G. Bresadola, Tirol. Fig. 2. Spores (x 1000). Fig. 3. Capillitium (x 80).

BOVISTA TOMENTOSA.



Fig. 4.

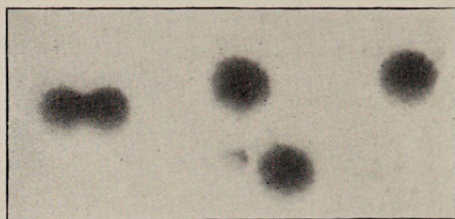


Fig. 5.

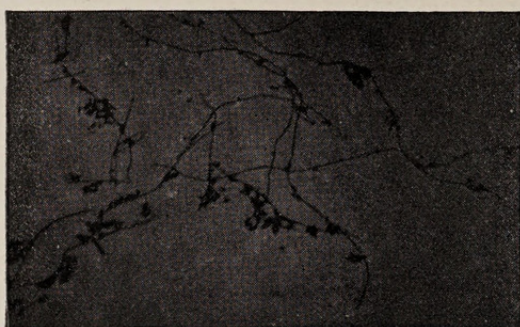


Fig. 6.

Explanation of Figures.

Fig. 4. A half section of plant from Mexico, given us by Prof. T. H. Macbride. Fig. 5. Spores (x 1000). Fig. 6. Capillitium (x 55).

BOVISTA LATERTIA.



Fig. 7.



Fig. 8.

Explanation of Figures.

Fig. 7. A small plant (x 2½) to shown spiny nodules. Fig. 8. Old plants natural size. Specimens all from W. Jekyll, Jamaica.

BOVISTA ASPERA.

Fig. 1.



MYCENASTRUM CORIUM.



Fig. 2.



Fig. 3.

MYCENASTRUM CORIUM.



Fig. 4.



Fig. 5.

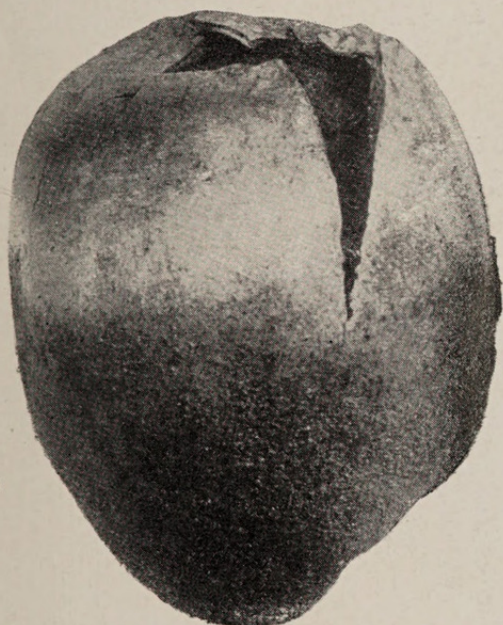


Fig. 6.



Fig. 7.

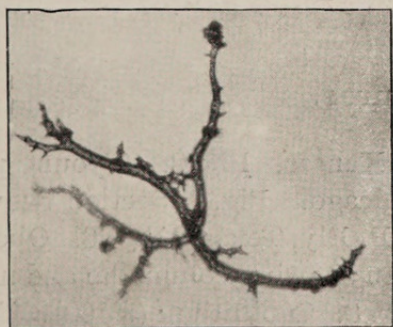


Fig. 8.

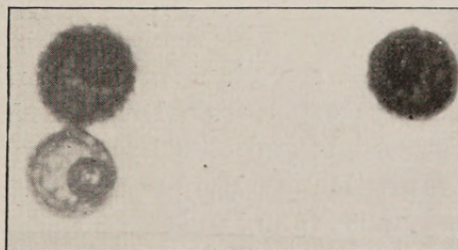


Fig. 9.

MYCENASTRUM CORIUM.



Fig. 10.

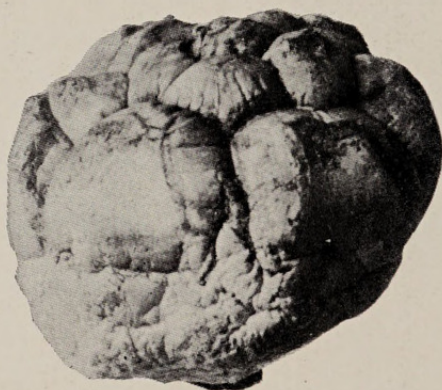


Fig. 11.

Explanation of Figures.

Fig. 1. A ripe plant from E. Bartholomew, Kansas. Fig. 2. A young plant showing felty cortex, from Dr. L. H. Watson, Chicago. Fig. 3. Section showing columellæ. Fig. 4 and 5. Obovate form from E. P. Ely, Texas. Fig. 6. Obovate form from Dr. Hollos, Hungary. Fig. 7. Specimen showing columellæ and method of dehiscence, from David Griffith, Nevada. Fig. 8. Capillitium ($\times 100$). These spiny capillitium are characteristic of the genus. Fig. 9. Spores ($\times 1000$). Fig. 10 and 11. *Mycenastrum Corium* form *Sterlingii*, from E. B. Sterling, Denver.

MYCENASTRUM CORIUM.



Fig. 1.



Fig. 2.



Fig. 3.

CATASTOMA CIRCUMSCISSUM.

(Explanation of figures, see over.)



Fig. 4.



Fig. 5.

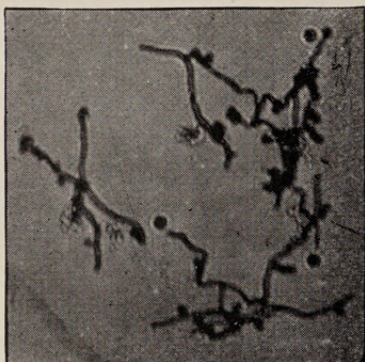


Fig. 6.

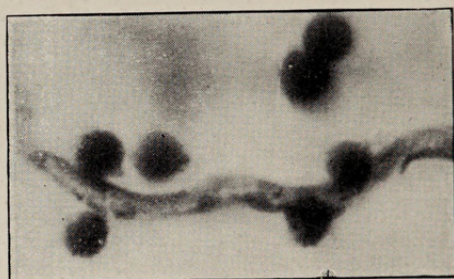


Fig. 7.

Explanation of Figures.

Fig. 1. Fresh plant as it grows half buried in the ground. Fig. 2, 3, 4 and 5. Dried plants natural size. Fig. 6. Capillitium threads (x 100). Fig. 7. Spores (x 1000).

CATASTOMA CIRCUMSCISSUM.



Lloyd, C. G. 1902. "Mycological Notes, No. 12 (200-213)." *Mycological writings of C. G. Lloyd* 1, 113–120.

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