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## New Reports of Iowa Fungi

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## NEW REPORTS OF IOWA FUNGI

HORACE L. BARNET

The following report of Iowa fungi is based on a study of the mycological collection of the late Professor Bohumil Shimek. This study has disclosed a number of unusual or rare fungi which have not to my knowledge been previously reported from Iowa. The present paper includes only the Gasteromyceteae and the Uredinales. All collections mentioned herein have been deposited in the mycological herbarium of the State University of Iowa.

### GASTEROMYCETEAE

"The Gasteromycetes of Iowa" by Kambly and Lee (4), published in 1936, included all species of this group known to occur in the state. Dr. G. W. Martin (9) has since added *Pisolithus tinctorius* (Pers.) Coker and Couch and *Rhopalogaster transversiarum* (Bosc) Johnston to this list. The present report adds six more species of Gasteromycetes not listed by Kambly and Lee. Only a few of the distinguishing features of these species are given here. More complete descriptions are given by Coker and Couch (2), Lloyd (5, 6, 7, 8), Johnson (3), White (10) and others.

### LYCOPERDON ECHINATUM Pers.

The long dark spines (particularly the tips) of the outer peridium which, as they fall off, leave a reticulated pattern on the light colored inner peridium serves to distinguish this species from *L. pulcherrimum* B. & C., to which it is very similar when young. Three collections (two of which were already correctly named) were found among the Shimek material. These are as follows: on decaying leaves in woods, Wayne, Iowa, Sept. 1896, C. L. Smith (2 fruit bodies); on ground in woods, Iowa City, Iowa, 1901 (4 fruit bodies), collector not given; deep woods, McGregor Heights, Aug. 14, 1921, (1 fruit body), collector not given. The species is widely scattered in the Eastern part of the United States but is not common in any section. It has been previously reported from Wisconsin, Michigan, Pennsylvania, Ohio, Kentucky, New York, New Jersey, North Carolina and Missouri.

### BOVISTELLA ECHINELLA (Pat.) Lloyd. Fig. 1

One collection was made by Professor Shimek of 15 fruit bodies (3 immature) growing among moss on sandstone (salt peter) ledges north of McGregor, Iowa, Oct. 20, 1931. Although this species is widely distributed over the world, it is apparently very rare in the United States. It has been reported only from Michigan, North Dakota and Washington. It might easily be overlooked because of its small size

which ranges from 4-8 mm. in diameter. In mature fruit bodies the dark brown inner peridium is sprinkled with tiny light colored flecks of the outer peridium. The fruit bodies are nearly globose with protruding fimbriate mouths. Lloyd (8) states that "*Bovistella echinella* is one of the smallest and rarest 'puff balls' known."

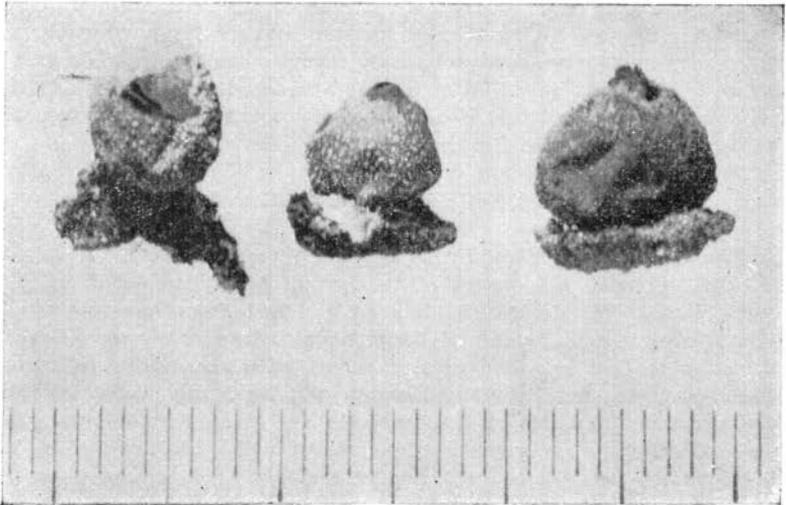


Fig. 1. *Bovistella echinella*,  $\times 3$

GEASTRUM MIRABILIS Mont.

This species resembles *G. saccatum* Fries in appearance. It can be distinguished from the latter by its cespitose habit, smaller size, and the hairy outer surface of the buttons. One collection was made by Professor Shimek of approximately 20 fruit bodies on sandy ground, north of Bayfield, Iowa, Sept. 29, 1926. The hairy outer surface is not evident on all of the fruit bodies (most of which were opened). Coker and Couch (2) report this species from North Carolina, Virginia, Ohio, Kansas and Missouri.

TULOSTOMA POCULATUM White. Fig. 2

The Shimek material contained four collections of this species. These were as follows: two at Big Mound, Louisa County, Oct. 1915, (15 fruit bodies) and Nov. 19, 1923, (40 fruit bodies); north of Bayfield, Iowa, Nov. 10, 1923 (8 fruit bodies); Muscatine County, Iowa, Nov. 20, 1923 (2 fruit bodies). All were collected by Professor Shimek and all were growing in sand.

The species is distinguished from other known Iowa species of *Tulostoma* by the raised fimbriate mouth (described by Lloyd (7) as "fibrillose"), the persistent outer peridium (the lower portion re-

maintaining as a thick cup or pad near the base), the smooth tan inner peridium and the non-warted spores. In the original description Miss White (10) describes the spores as "subglobose, smooth or irregularly ridged in the older specimens, owing to the shrinking of the inner substance, 4-5u in diameter". Her drawings show the ridges on some of the spores. I find the spores in all of the specimens examined to be slightly larger, 4.5u, globose to irregular, mostly showing a prominent irregular pattern of coarse ridges on the surface, much like that figured by Miss White. Some spores are nearly smooth. Since the specimens agree in all respects, except spore characters, with the original description of *T. poculatum*, and since this description includes ridged spores, I am inclined to think that the Iowa material represents a form of this species. The species has been previously reported from Colorado, Nebraska, Indiana and Alabama.

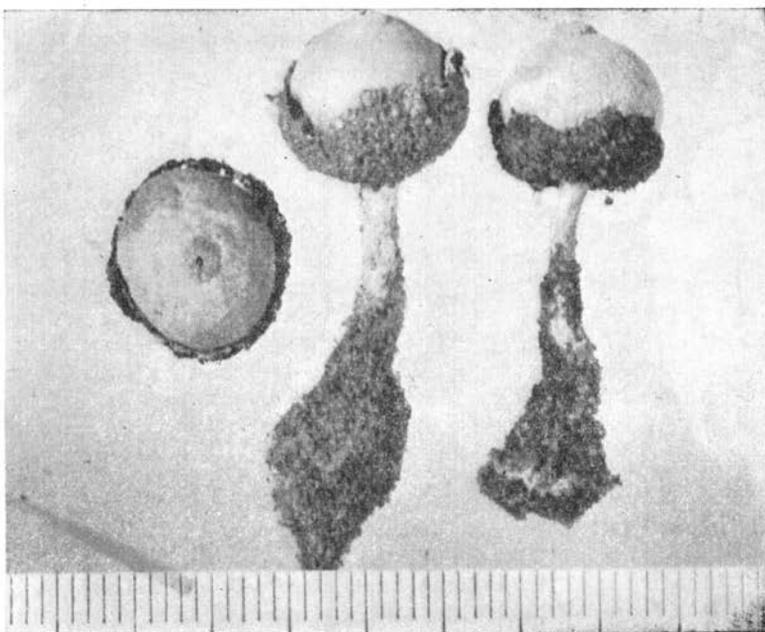


Fig. 2. *Tulostoma poculatum*,  $\times 2$

SCLERODERMA FLAVIDUM E. AND E.

This species may be distinguished from *S. polyrhizum* Pers. by its smaller size, thinner peridium and larger, non-reticulate spores. One collection of 4 open fruit bodies was made by Professor Shimek south of Ft. Madison, Iowa, Nov. 8, 1926. The surface of these specimens was cracked into shallow small areas, giving more of a "shingled appearance" described by Coker and Couch for some specimens, than the appearance of cracked "dried mud" which seems to be more com-

mon. These specimens agree in spore characterizations with an authentic specimen (E. and E. N. A. Fungi, Second Series, No. 1698). This species has been frequently reported from the Eastern part of the United States, and is said to occur in California (3).

#### SCLERODERMA CEPA (Vall.) Pers. ....

This species most closely resembles *S. bovista* Fries (not reported from Iowa) in appearance, but can be distinguished by its thinner, less rigid peridium and the lighter, spiny, non-reticulated spores. *S. aurantium* (Vall.) Pers., which is the most common species in Iowa, is distinguished by its rough, aerolate peridium and its dark reticulate spores. Four collections of this species were found in the Shimek material. These were as follows: near Wayne, Iowa (one fruit body), and Coppock, Henry County, Iowa, (2 fruit bodies), both by C. L. Smith, Oct. 1896; Iowa City (3 fruit bodies, under the name *S. bovista*), B. Shimek, Sept. 1885; Jefferson Township, Johnson County, Iowa (one fruit body, under the name *S. bovista*), B. Shimek, Oct. 1894. The species is reported from Wisconsin, Missouri, Ohio, Massachusetts, North Carolina and Florida.

#### UREDINALES

Arthur's "Manual of Rusts in the United States and Canada" (1) was used almost exclusively for the identification of the rusts and information concerning host plants and range. All of the collections listed below, unless otherwise specifically stated, were made by Professor Shimek. These reports are given under three separate headings: (A) New host species; (B) Rusts not previously reported from Iowa; (C) New fungus—host—state combinations.

##### A. New Host Species

*Puccinia vernoniae* Schw. III, on *Vernonia illinoensis* Gleason. One collection, Des Moines River, Keokuk, Iowa, Sept. 19, 1917. The host was identified by B. Shimek and the label accompanying it is in his own handwriting. The material consisted of only a few leaves, and, as its identity could not be accurately checked, Shimek's identification of the host is assumed to be correct. Arthur lists no species of *Puccinia* on this host.

*Puccinia angustata typica* Arth. I, on *Pycnanthemum pilosum* Nutt. One collection near Muscatine, Iowa, June 9, 1928. The aecial stage of this species may be distinguished from that of *P. menthae* (the more common rust on Lamiaceae) by the cupulate aecia and the smaller aeciospores. Arthur has reported *Pycnanthemum virginianum* (L.) Dur. & Jacks. as a host of this rust in Indiana.

##### B. Rusts not Previously Reported From Iowa.

*Coleosporium ipomoeae* (Schw.) Burr. II, III, on *Ipomoea pandur-*

*ata* (L.) G. W. Mey. Two collections near Keokuk, Iowa, Sept. 10 and 11, 1917. This locality lies within the range given by Arthur.

*Puccinia physostegiae* P. & C. III, on *Physostegia virginiana* (L.) Benth. Two collections, Big Sand Mound, Louisa County, Iowa, Oct. 6, 1921, and July 10, 1922. The rust has a wide range but apparently its occurrence is rather rare. Arthur reports it from only three scattered states, New York, Indiana and Montana. *P. virginica* is the host in New York and Indiana.

*Puccinia ruelliae* (B. & Br.) Legrh. II, III, on *Ruellia ciliosa* Pursh. Two collections, Tracey, Iowa, Oct. 12, 1921, and Mason City, Iowa, (no date given). Iowa is located at the northern edge of the range given by Arthur.

*Puccinia windsoriae* Schw. III, on *Triodia flava* (L.) Hitchc. One collection, along Skunk River, Des Moines County, Iowa, Sept. 7, 1932. Iowa lies within the range of the rust as given by Arthur.

*Uromyces glycyrrhizae* (Rab.) Magn. I, on *Glycyrrhize lepidota* Nutt. One collection south of Silver Lake, Dickinson County, Iowa, Aug. 3, 1933. This locality is somewhat east of the range given by Arthur as North Dakota, southward to New Mexico and southern California.

#### C. New Fungus—Host—State Combinations

The following rusts are known to be present in Iowa, but, to my knowledge, have not been reported from Iowa on the particular host species listed here.

*Puccinia menthae* Pers. III, on *Pycnanthemum flexnosum* (Walt.) B.S.P. One collection, Mason City, Iowa, Oct. 1, 1932.

*Puccinia silphii* Schw. III, on *Silphium integrifolium* Michx. One collection, Iowa City, Iowa, June 18, 1928.

*Uromyces hedysari-paniculate* (Schw.) Farl. III, on *Desmodium paniculatum* (L.) D.C. One collection, Muscatine, Iowa, Aug. 2, 1910.

*Uromyces phaseoli strophostylis* Arth. III, on *Strophostylis pauciflora* (Benth.) Wats. One collection, Muscatine, Iowa, Sept. 19, 1932.

*Uropyxis petalostemonis* (Farl.) De-T. III, on *Petalostemon candidus* (Willd.) Michx. One collection, west side of Okobojo Lake, Iowa, Aug. 12, 1916. There is also one collection in the S.U.I. mycological herbarium made by Dr. G. W. Martin on the same host and in the same locality, July 15, 1926.

An expression of appreciation is due to Dr. W. A. Anderson for his aid in checking the identity of some of the host species of the rusts.

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