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Notes on Iowa Fungi. XII

By G. W. MARTIN

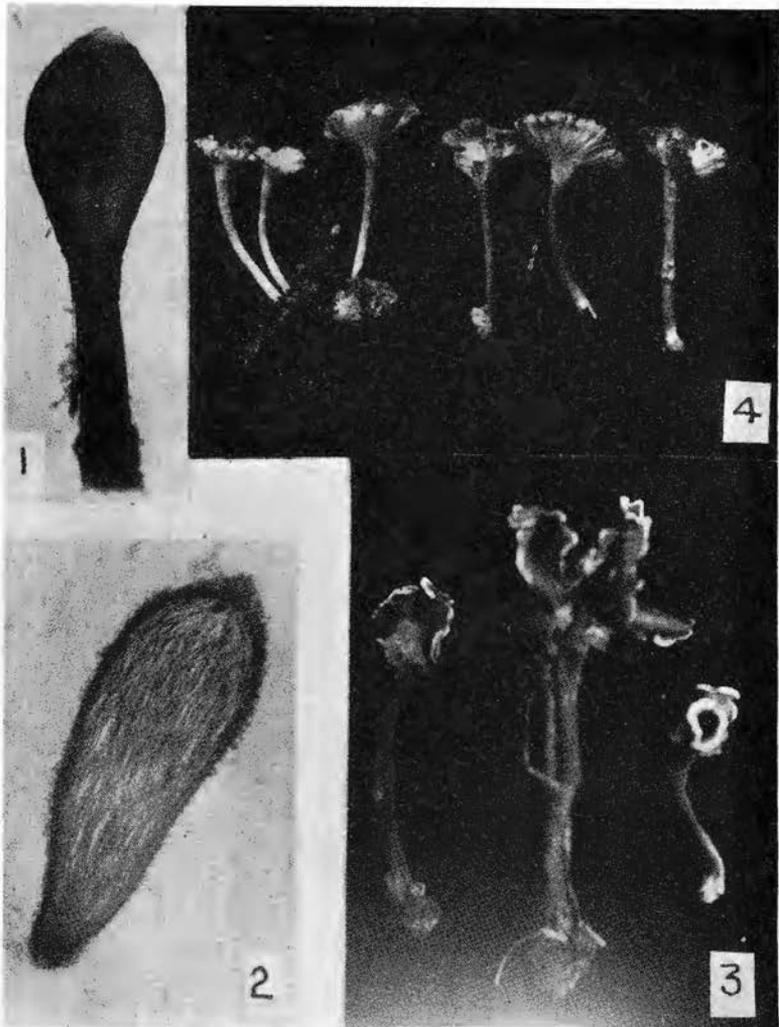
ACROSPERMUM IN IOWA. Figs. 1, 2

AcrospERMUM includes a few small and inconspicuous species of club-like fungi in which the single erect ovate or flattened spore chamber is borne on a stalk or a constricted base. Lindau (in Engler & Prantl, Nat. Pfl. I. 1:278. 1896) erected for the genus the monotypic family AcrospERMACEAE, based largely on the flattened ascocarp and slit-like dehiscence of *A. compressum* Tode ex Fries, the oldest and best-known species, and included the family, with some reservation, in the Hysteriales. Other authors have assigned it to the Hypocreales and Sphaeriales. Brandriff (Mycologia 28: 228-235. 1936) gives a review of the pertinent literature. She succeeded in growing *A. compressum* in pure culture and made a histological study of the development of the ascocarp, as a result of which she decided that the ascigerous cavity is a true locule, hence the entire ascocarp consists of an erect, uniloculate stroma and that the species should be assigned to a position among the loculate groups "in the vicinity of the Coryneales and Pseudosphaeriales." In accordance with this suggestion, verified by my own observations, I included the AcrospERMACEAE in the Dothideales in the 1950 edition of the Outline of the Fungi.

So far as I am aware, no species of *AcrospERMUM* have been reported from Iowa. The small size of the fructification and their occurrence on dead plant litter makes their collection largely a matter of chance. *A. foliicolum* Berk. (Fig. 1) and *A. compressum* Tode ex Fries (Fig. 2) have both been found in Iowa City, the former on decayed elm leaves in May, 1948, and the latter on an ash leaf in May, 1944. *A. foliicolum* was distributed by Ellis & Everhart in North American Fungi, Nos. 2149 and 2629. No. 2149 differs from our material only in the shorter stem and No. 2629 is practically identical.

LEOTIA CHLOROCEPHALA Schw. ex Fries

In modern keys this species is said to differ from the common *Leotia lubrica* and the not too distinct *L. stipitata* in its much firmer consistency, smaller size and the greenish cap and green-flecked stem, drying black. Seaver (N. Am. Cup-fungi. Inoperc. 38. 1951) gives its range as New Hampshire to Alabama. A cluster of small firm, deep-green ascocarps was gathered in Iowa City in July, 1951.



1. *Acrospermum foliicolum*. Whole mount, $\times 47$.
2. *Acrospermum compressum*. Microtome section through locule, $\times 95$.
3. *Helvella atra*, $\times 1$.
4. *Craterellus subundulatus*, slightly reduced.

It was strikingly different from *L. lubrica*, common at the same time in the same locality, and I assign it to *chlorocephala* on the basis of Seaver's description. The original description of Schweinitz (Schr. Nat. Ges. Leipzig 1:114. 1822) includes the phrase "stipes ad quatuor uncias longus", which suggests a larger species.

HELVELLA ATRA Fries. Fig. 3

In a previous report on Iowa fungi (Proc. Iowa Acad. 55: 200 [1948] 1949) I referred to this species certain small, dark *Helvellas* found on rotten wood in the Iowa City area, noting that they differed from the common *H. elastica* not only in their darker color and lignicolous habit but also in their shorter stems. A collection made by Dr. H. S. Conard near Milford, Iowa, growing among grasses in an abandoned gravel pit, throws doubt on these earlier determinations. In the Conard specimens, the pileus is shining black except for the conspicuous white margin and the stem is very dark brown, nearly black, except for the white-tomentose base. The spores are slightly larger than those of typical *elastica*, $20-21.5 \times 11-14.5 \mu$ as compared with $18-20 \times 10-12 \mu$, and the paraphyses, while clavate, are slightly narrower, but the measurements in both cases overlap.

Seaver (N. Am. Cup-fungi. Operc. 248. 1942) says of *atra* "entirely black", but the species is based on the illustration in the Flora Danica, Plate 534, f. 1. 1770, which shows a black *Helvella* with a white-margined pileus which would serve as an excellent illustration of the Conard specimens. I believe this is the true *Helvella atra*. What to do with the earlier specimens reported under that name is a question. Perhaps they represent depauperate *H. elastica* modified by the growth on wood.

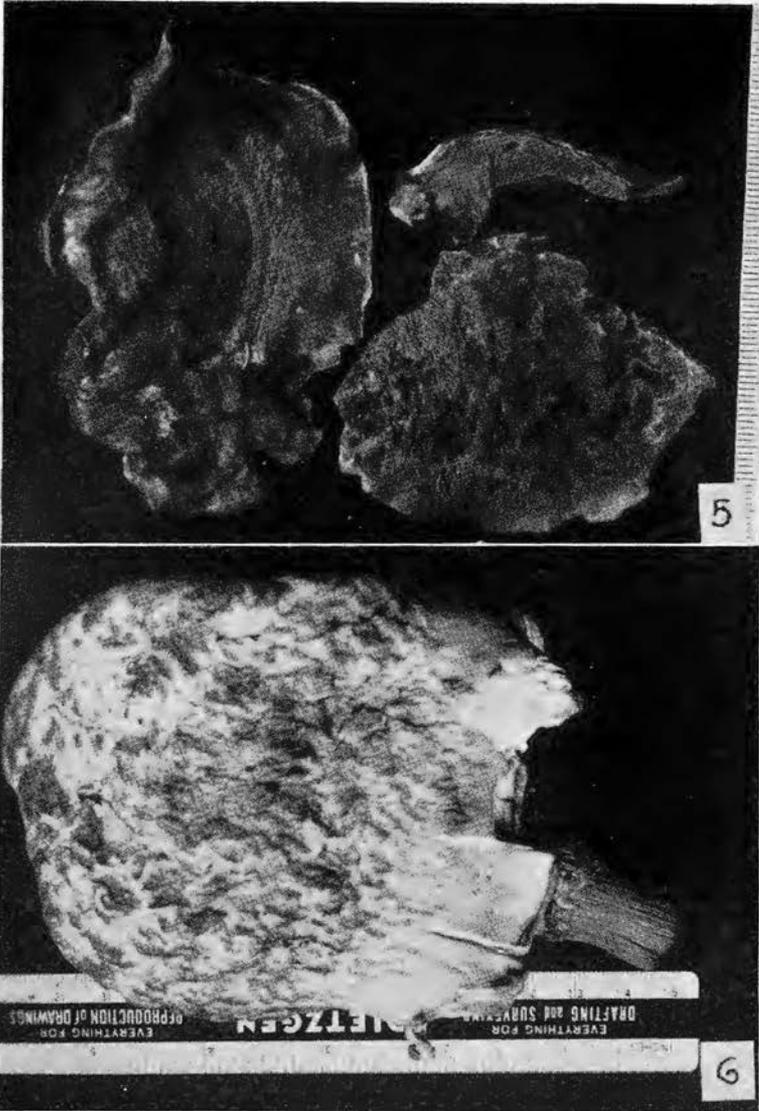
HERPOBASIDIUM FILICINUM (Rostr.) Lind

This interesting auriculariaceous parasite of ferns is either uncommon in North America or has been overlooked. The only Iowa collection I have seen is one gathered by Professor H. S. Conard on *Dryopteris marginalis* (L.) Gray at Eldora in May, 1937. The species may well be present in other localities and should be looked for on our native ferns in late spring.

CRATERELLUS SUBUNDULATUS (Peck) Peck. Fig. 4

Originally described from Delaware as *Thelephora subundulata* Peck (Bull. Torrey Club 22: 492. 1895), its author later (Bull. N. Y. State Mus. 67: 27. 1903) transferred the species to *Craterellus* after studying a second collection from the grounds of the New York Botanical Garden. These are the only two collections listed by Burt (Ann. Missouri Bot. Gard. 13:312. 1926).

A small, but adequate collection, consisting of about twenty basidiocarps, made in Iowa City in July 1951 (G. W. M. 6430) seems clearly referable to this species and marks an interesting extension of the range. When fresh, the pileus was nearly black above; the



5. *Polyporus cuticularis*, slightly reduced.
 6. *Armillaria mellea*. Abnormal pileus, $\times \frac{3}{5}$.

hymenium dark gray. Both quickly faded on drying and are now grayish brown and ashy respectively. The spores are oval and $10-11.5 \times 6-8 \mu$, substantially larger than the dimensions, $6-9 \times 4.5 \mu$, given by Burt or than Peck's dimensions given in fractions of an inch, but this includes the very thick (1μ) but almost invisible

hyaline wall surrounding the spore. If the wall be disregarded, the dimensions of the interior agree very well with the earlier figures.

MERULIUS PINASTRI (Fries) Burt

This very widely distributed species has been reported from the adjoining states of Illinois, Missouri and Nebraska but I find no record of its occurrence in Iowa. It appeared in great abundance on pine flats in a greenhouse at the State University in January, 1949, where Mr. William Shimitz of our staff noted it and called it to my attention. Burt (Ann. Missouri Bot. Gard. 4:357. 1917) says of it: "More common and more luxuriantly developed in greenhouses." The Missouri records are from the greenhouses of the Missouri Botanical Garden.

POLYPORUS CUTICULARIS Auct. Fig. 5

A polypore widely distributed in temperate North America on the wood of various species of frondose trees is commonly reported as *polyporus cuticularis* rom. It is not listed by Wolf in the Polyporaceae of Iowa (Univ. Iowa Stud. Nat. Hist. 14(1): 1-93. 1931) nor by Gardner in the check list of Iowa Homobasidiomycetes (Proc. Iowa Acad. [1947] 54: 67-97. 1948. An abundant collection on fallen white oak in Iowa City in September, 1949, which would be identified as this species by using any of the available keys, suggests certain problems.

Murrill (N. Am. Flora 9: 88. 1908) calls the fungus *Inonotus perplexus* (Peck) Murrill, basing his combination on *Polyporus perplexus* Peck (Ann. Rep. N. Y. State Mus. 49: 19. 1896). Peck says: "allied to . . . *P. cuticularis* . . . but separated by the straight margin of the pileus." This seems a trivial distinction but Lloyd (Myc. Writ. 2: Myc. Notes 28: 378. 1908) reports that Peck was familiar with *cuticularis* and believed *perplexus* distinct. Peck's type is not in existence. Later, Lloyd (Myc. Writ. 4: Letter 39: 7. 1912) reported a collection of what he regarded as the true *perplexus* from Massachusetts, and added some notes, including reference to hyaline spores, which increase the confusion. *P. cuticularis* Fries (Syst. Myc. 1: 363. 1821) is based largely on Bulliard's description and illustration of *Boletus cuticularis* (Herb. Fr. Pl. 462. 1789). Reference to that plate makes it extremely doubtful that the Iowa collection is the same.

Our only collection of *P. cuticularis* is from Tennessee, determined by Overholts. It agrees very well with the Bulliard plate. The pileus is bright red-brown, not zonate, with blackish radial streaks and black margin; the tubes 4-5 mm. in depth where well developed,

with angular and very irregular mouths mostly 2-3 to a mm.; the spores brown, averaging $7 \times 5.4 \mu$ and the fusiform, unbranched setae restricted to the tips of the skeletal hyphae at the mouths. In the Iowa collection the pileus is yellow-brown, distinctly zonate, without blackish radial streaks and with pallid margin; the tubes 2-4 mm. deep, the mouths angular and irregular but smaller, 2-5 to a mm.; the spores averaging $6.4 \times 4.9 \mu$ and the setae abundant both on the sides of the tubes and at the tips of the skeletal hyphae at the mouths, many of the latter forked or branching.

It seems clear that there are two species involved but it is impossible to distinguish them from the literature. One or the other is known from the neighboring states of Missouri (Murrill, N. Am. Flora 9: 88. 1908) and Wisconsin (Neuman, Wis. Geol. & Nat. Hist. Surv. Bull. 33. 1914; Overholts, Wash. Univ. Stud. 3: 51. 1915). I have not noted any report from Minnesota or Illinois but I have not searched carefully.

Most references refer to the substratum as dead wood of deciduous trees. In a later paper, Overholts (Penn. State Coll. Tech. Bull. 298: 23. 1923) adds "and from wounds in living hardwood trees." Where genera are mentioned (Lowe, N. Y. State Coll. For. Tech. Bull. 41: 23. 1934), *Quercus* is not included.

The only recent illustration I have found is that in Overholt's 1915 paper, which shows very little. I am therefore reproducing a photograph representing the Iowa collections.

So far as the genus is concerned, it has long been apparent that "*Polyporus*", as commonly used, is scarcely more defensible than the "*Agaricus*" of a century ago. Long since, Murrill (N. Am. Flora 9: 1-131. 1907-8) published a classification of the polypores which represented then, and still does, a more natural treatment of the genera. Probably the reason why Murrill's treatment has not been more generally followed is because he used the American Code of Nomenclature and it is not always easy to decide which of his generic names and specific epithets are valid according to the International Code. Cooke (Lloydia 3: 81-104. 1940 has published a valuable survey of the genera of the Polyporaceae and regards *Inonotus* as valid.

PLICATURA FAGINEA (Fries) Karst.

This species, usually known in this country as *Trogia crispa* Fries, was omitted from Gardner's list, but we have since found two old collections by Macbride. It cannot be very common. I collected it for the first time on a fallen oak branch in Iowa City in October, 1951.

Patouillard (Tax. Hymén. 108, 128. 1900) discusses the differences between the two genera, placing *Plicatura* in the Mérules of the Polyporaceae and *Trogia* in the Cantharellés of the Agaricaceae and in this he is followed by Rea and by Bourdot and Galzin. Murrill (N. Am. Flora 9: 163, 166. 1910) includes both in his tribe Chantereleae. Singer (Lilloa 22: 208. 1951) agrees essentially with Patouillard.

The spores of *P. faginea* are described as "cylindrical", $4 \times 1 \mu$. I find them strongly curved and should call them allantoid.

HYPERTROPHY IN *ARMILLEA MELLEAE* (Fries) Staude, Fig. 6

Irregularities in development are not uncommon in higher fungi, but striking examples are worthy of brief notice. One such is represented by a basidiocarp of *Armillaria mellea* collected October 31, 1948 after a gentle rain which followed a prolonged dry period. In addition to normal gills, the exterior surface of the pileus was covered with irregular folds bearing basidia and spores characteristic of the species. The pileus was presumably formed at the beginning of the dry period and remained dormant until the rain stimulated it.

This species illustrates the difficulty involved in writing the correct citations after the names of our common agarics. Many American authors cite Fries as the author of the segregates of the old genus *Agaricus*. But Fries merely divided the genus into "tribes" of which *Armillaria* was one. It has commonly been supposed that Quélet (Champ. Jura Vosg. 1872-'75) was the first to recognize Fries's tribes as genera. Rather recently, however, two older works have been discovered, Staude, Die Schwämme Mitteldeutschlands, 1857, and Kummer, Der Führer in die Pilzkunde, 1871, in which the same thing was done. In the fairly voluminous literature at hand, I fail to find any direct citation of the name as given above and base the reference on the statement by Donk (Bull. Bot. Gard. Buitenz. III. 18: 320. 1949) which clearly implies that Staude first made the transfer from *Agaricus*. In his recent comprehensive account of the agarics, Singer (Lilloa 22: 1-832 [1949] 1951) cites *Agaricus melleus* as the type of Karsten's genus *Armillariella*, which he includes in the tribe Clitocybeae of the family Tricholomataceae, placing *Armillaria*, typified by *A. luteovirens* (Fries) Gill., in the tribe Biannularieae of the same family, with the comment: "The genus *Armillaria* was one of the most noteworthy artificial genera of the Agaricales in the older classification." In a later paper (Schweiz. Zeitschr. für Pilzk. 29: 204-228. 1951), Singer rejects Staude's names on technical grounds, but accepts Kummer's names as validly published. He therefore writes the genus (p. 228) as

Armillaria Kummer, with *A. straminea* (Kromb.) Kummer as the lectotype. *Agaricus stramineus* Krombh. is listed by Saccardo (Syll. 5: 75. 1888) as a synonym of "*Armillaria luteovirens* Alb. & Schw." which, of course, never existed, since Albertini and Schweinitz never heard of *Armillaria* as a genus. That, however, does not alter Singer's earlier typification.

It is to be hoped that students of the agarics can come to some agreement on these matters so that some long overdue local treatments of these common and conspicuous fungi can be prepared. Until that time, it will be necessary for most of us to follow the familiar, if inaccurate, nomenclature based on Saccardo and adapted for North American forms by Peck and Kauffman.

SPOROSCHISMA SACCARDOI Mason & Hughes

At the 1948 meeting of the Academy, I reported and illustrated a *Sporoschisma* as *S. mirabile* Berk. & Br. (Proc. Iowa Acad. 58: 203 [1948] 1949). Since then, Hughes (Commonw. Myc. Inst. Paper 31: 1-34. 1949) has reviewed the genus and has shown that the fungus referred to *S. mirabile* by the European workers whom I followed was not that species, but a previously undescribed species which had been confused with it, and for which he and Mason proposed the name *S. Saccardoii*. That is the valid name for the only species thus far reported from Iowa. Mr. Hughes has examined our material and has found that it agrees with European examples.

The spore-bearing organ of this species, averaging about $240 \times 17 \mu$, may be regarded as a giant phialide, as suggested by Hughes in the paper cited. The swollen basal portion, within which the conidia are produced, and the tube-like beak from which the spores emerge in long chains, agree entirely with the definition of a phialide given by Hughes in a later paper (Commonw. Myc. Inst. Paper 45: 1. 1951) as a "cell which develops one or more open ends from which a basipetal succession of conidia (phialospores) develops without an increase in length of the phialide itself."

In the earlier note I cited two collections. It has since appeared several times in moist chambers on various substrata, notably on the bark of the common red oak and on old corn stalks.

DEPARTMENT OF BOTANY

STATE UNIVERSITY OF IOWA