

RHYTIDOSPORA AND PTERIDIOSPERMA, GEN. NOV.
(MELANOSPORACEAE)¹

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SUMMARY

Rhytidospora bispora sp. nov. is described and illustrated, from cow dung collected in Mexico, and *R. inordinata* comb. nov. (*Microthecium inordinatum* Malloch & Cain) is proposed. A key to the species of *Rhytidospora* is presented. *Pteridiosperma* gen. nov. is erected for two species of *Microthecium* possessing an unusual ornamentation on the ascospores. The combinations *P. ciliata* (*M. ciliatum* Udagawa & Takada) and *P. foveolata* (*M. foveolatum* Udagawa & Horie) are proposed. *M. hypomyces* (von Höhnel) von Höhnel, although somewhat atypical for *Microthecium*, is retained in that genus.

INTRODUCTION

Recently Jeng and Cain (1977) erected *Rhytidospora* based on *R. tetraspora* Jeng & Cain. This genus is essentially characterized by the pale cephalothecoid cleistothecia and the dark wrinkled ascospores. In addition to the type, these authors were aware of a Mexican collection which differed only in the number of ascospores. From further study of this collection, a slightly different structure of the peridial plates was observed as well as somewhat larger ascospores. In view of these differences this collection is being described here as a new species.

Our attention has also been drawn to *Microthecium inordinatum* Malloch & Cain (1972). This taxon was described as possessing wrinkled ascospores and appeared to be somewhat atypical for *Microthecium*. A study of the type material indicated that the fungus would be more naturally placed within *Rhytidospora*.

Microthecium hypomyces (von Höhnel) von Höhnel (1914), originally published by von Höhnel (1907) as *Sphaeroderma hypomyces*, was described by Udagawa and Cain (1969) as possessing wrinkled ascospores. Accordingly, we suspected a relationship with *Rhytidospora*. However, a study

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of the type revealed a different peridial structure, clavate asci, and not nearly so well defined markings on the spore wall as is found in *Rhytidospora*. It would appear that this species is more closely related to *Microthecium* than to *Rhytidospora* and, for the present, it is better retained in that genus.

In a paper on *Microthecium*, Hawksworth and Udagawa (1977) included *M. foveolatum* Udagawa & Horie. This taxon along with *M. ciliatum* Udagawa & Takada (1974) constitute a rather atypical pair of species. In both taxa the spores are ornamented with longitudinal wing-like ridges, which anastomose to form a reticulum, giving the spore a stellate appearance in section. In *M. ciliatum* the spores are wrinkled while those in *M. foveolatum* are pitted between the ridges. We feel that such ascospore ornamentations are unique enough within the Melanosporaceae, and even the Ascomycota in general, that these two taxa must be segregated into a new genus.

RHYTIDOSPORA

Rhytidospora bispora Krug & Jeng, sp. nov.

Figs. 1-4.

Ascocarpia dispersa, superficialia, non ostiolata, globosa, circa 270-330 μm diametro crassa, pallide armeniaca, glabra, e peridio membranaceo, translucenti, cephalothecoideo composita. Asci unitunicati, iodo non caerulescentes, irregulariter dispersi, bispori, globosi vel subglobosi, 14-15x10-12 μm magni, parietibus tenuibus, evanescentes. Paraphyses nullae. Ascosporae unicellulares, ellipsoideae, 12-14x7-10 μm magnae, primum hyalinae, deinde pallide brunneae vel olivaceo-brunneae, maturitate confirmata atro-brunneae, parietibus crassis, rugulosae, foramen germinale in utroque apice exhibentes. Conidia incognita.

HOLOTYPUS: In vaccarum fimo lectus est, apud Ciudad del Maiz, in San Luis Potosi provincia, in finibus reipublicae Mexicanae, 19 Sext. 1960, Cain, TRTC 36559. In Torontoensis universitatis Cryptogamarum herbario.

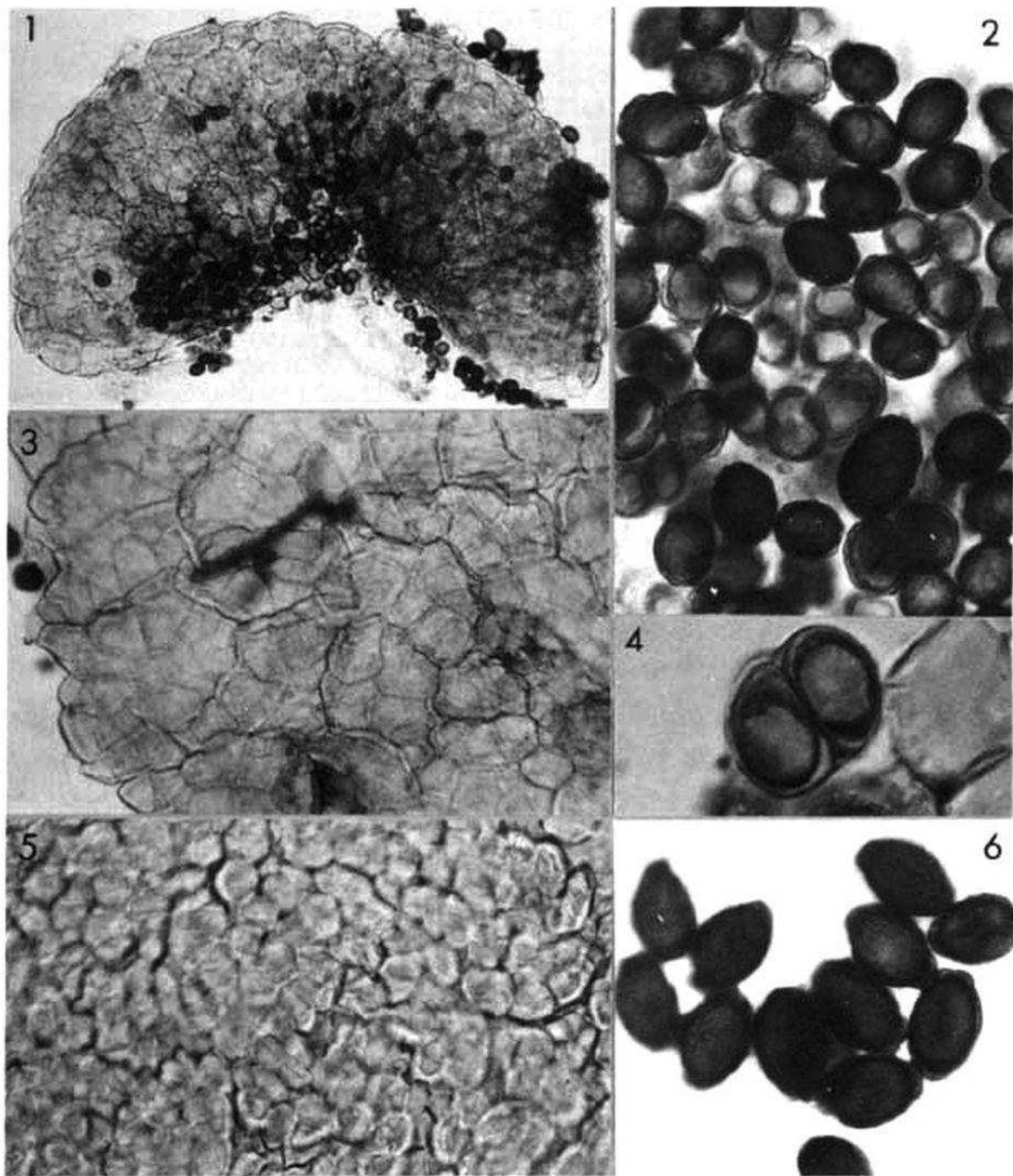
ETYMOLOGY: Latin, *bi* = two and *spora* = seed, referring to the two-spored asci.

Ascocarps scattered, superficial, non-ostiolate, globose, about 270-330 μm in diameter, light orange, glabrous; peridium membranaceous, translucent, cephalothecoid in surface view, consisting of a number of regular plates of polygonal, light orange, thin-walled cells measuring 12-24x9-15 μm . *Asci* unitunicate, non-amyloid, irregularly disposed, 2-spored, globose to subglobose, 14-15x10-12 μm , thin-walled, evanescent. *Paraphyses* lacking. *Ascospores* one-celled, ellipsoidal, 12-14x7-10 μm , at first hyaline, ranging in colour from light brown to olivaceous brown, dark brown at maturity, thick-walled, wrinkled, with a germ pore measuring about 1.5 μm in diameter at each end of the spore. *Conidia* unknown.

HABITAT: on burro dung.

SPECIMEN EXAMINED: Mexico: San Luis Potosi: Cd. del Maiz, cow dung, 19 Aug. 1960, Cain, TRTC 36559 (TRTC).

Unlike *R. tetraspora*, the peridial plate in *R. bispora* is simply



Figs. 1-4. *Rhytidospora bispora*. 1. Ascocarp. x235. 2. Ascospores. x1000. 3. Peridium in surface view, showing the characteristic dehiscence line. x385. 4. Ascus and ascospores. x1600. Figs. 5-6. *Rhytidospora inordinata*. 5. Peridium in surface view, showing the dehiscence line. x450. 6. Ascospores. x1000.

composed of several relatively large, thin-walled cells. These become thick-walled at the periphery of each plate thereby resulting in a continuous dehiscence line.

This relatively simple peridial plate and the two-spored asci are the diagnostic features of the species. It differs from *R. tetraspora* and *R. inordinata* primarily in the number of spores.

Rhytidospora inordinata (Malloch & Cain) Krug & Jeng, comb. nov.
 Figs. 5-6
 = *Microthecium inordinatum* Malloch & Cain, Can. J. Bot. 50: 64. 1972.

This taxon was first described and illustrated by Malloch and Cain (1972). In this paper they point out that *M. inordinatum* differs from all other species of *Microthecium* in having irregularly disposed asci, but otherwise it is typical of this genus. However, closer examination reveals that the structure of the peridium and the type of ascospore ornamentation are typical of *Rhytidospora*. According, *M. inordinatum* is transferred to this genus.

The peridium of *R. inordinata* is composed of numerous regular plates, which appear somewhat rugulose or reticulate under low magnification (100x). Upon closer examination each plate was seen to consist of a number of polygonal, thick-walled cells forming a dehiscence line at the periphery. These thick-walled peridial plates and the eight-spored asci are the diagnostic features of the taxon.

Key to the Species

1. Peridial plates composed of radiating and polyhedral cells; asci 4-spored; ascospores 10-13x7-9 μm .. *R. tetraspora*
1. Peridial plates of polyhedral cells only; asci otherwise2
 2. Asci 2-spored; ascospores 12-14x7-10 μm *R. bispora*
 2. Asci 8-spored; ascospores 14.5-18.5x10.5-12.5 μm
 *R. inordinata*

PTERIDIOSPERMA

Pteridiosperma Krug & Jeng, gen. nov.

Ascocarpia dispersa, sine stromate nec ostiolo, globosa vel subglobosa, flavo-aurantiaca vel flavo-brunnea, glabra aut tenue pilosa, e peridio membranaceo, luteolo, cellulis polyedricis composita. Asci unitunicati, iodo non caerulescentes, in apice late clavati, fasciculati, evanescentes. Paraphyses nullae. Ascosporae unicellulares, ellipsoideae vel fusiformes, primum hyalinae, maturitate confirmata atrobrunneae vel paene nigrae, rugulosae aut foveolatae, cristas crassas, aliformes, anastomoses, irregulariter reticulatas et foramen germinale in utroque apice exhibentes. Conidiophora erecta, simplicia, breves aut nulla. Phialides singulares, lageniformes, hyalinae. Conidia (phialosporae) unicellularia, hyalina, levia, ovata vel pyriformia, ex apice phialidium in capita, globosa, parva aggregata.

TYPUS GENERIS: *Microthecium foveolatum* Udagawa & Horie.

ETYMOLOGY: Greek, *pteridion*, dim., from *pteros* = wing and *sperma* = seed, referring to the wing-like ridges on the ascospores.

Ascocarps scattered, non-stromatic, non-ostiolate, globose to subglobose, yellowish orange to yellowish brown, glabrous or finely hairy; peridium membranaceous, pale yellowish, composed of polyhedral cells.

Asci unitunicate, non-amyloid, broadly clavate, arising in fascicles, evanescent. *Paraphyses* lacking. *Ascospores* one-celled, ellipsoidal to fusiform, at first hyaline, dark brown to nearly black at maturity, ornamented with thick, wing-like ridges frequently anastomosing to form an irregular reticulum, stellate in section, wrinkled or pitted in convex surfaces, with two germ pores. *Conidiophores* lacking or when present erect, simple, short. *Phialides* borne singly on aerial hyphae or rarely on conidiophores, lageniform, hyaline. *Conidia* (phialospores) one-celled, hyaline, smooth, ovate to pyriform, aggregated in small globose heads at the apices of phialides.

The essential distinguishing features of the genus are the ascospores, which are ornamented with longitudinal, wing-like ridges that often anastomose to form an irregular reticulum. This type of ornamentation reminds one of *Emericellopsis* van Beyma (Pseudeurotiaceae), but that genus differs in the type of peridium, asci, absence of germ pores and the *Acremonium* conidial state. Such fundamental differences clearly differentiate *Pteridiosperma*, a member of the Melanosporaceae, from *Emericellopsis*.

New Combinations

- Pteridiosperma ciliata* (Udagawa & Takada) Krug & Jeng, comb. nov.
 = *Microthecium ciliatum* Udagawa & Takada, Trans. Mycol. Soc. Japan 15:
 23. 1974.
- Pteridiosperma foveolata* (Udagawa & Horie) Krug & Jeng, comb. nov.
 = *Microthecium foveolatum* Udagawa & Horie, Trans. Mycol. Soc. Japan 18:
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