

A New Bog Chytrid* **

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In our studies of the Phycomycetes living in the diversity of habitats existing in the vicinity of the University of Michigan Biological Station, Douglas Lake, several chytrids have been encountered which seem characteristic of our boggy areas. One of these, *Blyttomyces helicus* SPARROW and BARR (1955) has already been described. Another, the subject of this paper, is a species of *Phlyctochytrium* which, like the *Blyttomyces*, was isolated on pine pollen.

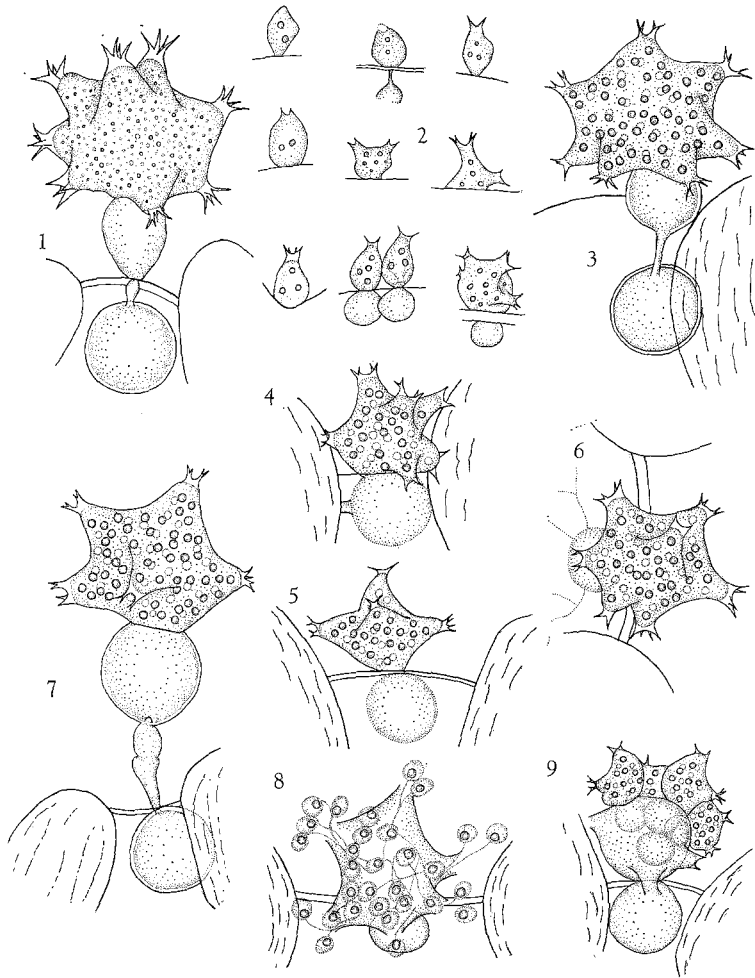
This sparkling little chytrid was obtained from soil collected in the middle of an almost dry bog now mostly given over to *Vaccinium* spp. *Larix* and *Picea*, but with residual areas of *Sphagnum*. In its distinctly stellate sporangium and conspicuous spherical, endobiotic apophysis the new chytrid was reminiscent of *Phlyctochytrium reinboldtae* PERSIEL (1959). Strikingly unlike this species, however, each of the prominent rays or arms of the sporangial rudiment terminated in two pairs of delicate, brilliantly refractive spines which were set at right angles to one another. These delicate objects imparted an aspect to the whole structure which has been alluded to earlier as "sparkling". Because of the variation in number (4—8) and placement of the rays, irregularities in sporangial shape and size are produced (Fig. 2).

Typically, the mature sporangia are sessile on the main body of the pollen grain and are 8—30 μ broad by 6—25 μ high (Figs. 4—6). The endobiotic spherical apophysis is 7—18 μ in diameter. Rarely, rhizoids can be found emerging from it after prolonged staining (Figs. 4, 6). Occasionally, sporangia may have an external as well as internal apophysis (Fig. 1) or they may terminate a clavate, sometimes distally apophysate stalk (Figs. 3, 7).

Zoospore production takes place as in other congeneric forms. The zoospores initiate motility within the sporangium and swarm violently out of pores produced at the tips of a varying number of rays upon the dissolution of the apex and teeth (Fig. 8). The zoospores are spherical, 4 μ in diameter with a single bright refractive eccentric globule and a 15—20 μ long posterior flagellum. Movement is a gliding one punctuated by

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Figs. 1—9. $\times 825$. *Phlyctochytrium furcatum* n. sp., on pine pollen. Fig. 1. Nearly mature sporangium with internal and external apophysis. Fig. 2. Various stages in growth and differentiation of sporangia and furcate spines. Fig. 3. Mature sporangium with external and internal apophysis. Figs. 4—6. More typical sporangia with only an internal apophysis; Figs. 4 and 6 show rhizoidal system on apophysis. Fig. 7. Similar to Fig. 3. Fig. 8. Discharging sporangium showing zoospores emerging from open tips of arms of the sporangium from which teeth have disappeared. Fig. 9. Sporangium parasitized by thalli of the same species ("cannibalism")

intervals of hopping. No resting spores have yet been found. Occasionally, what seem to be instances of "cannibalism" are seen (Fig. 9). Since no developmental stages were seen, the precise nature of this relationship cannot be established. Obviously, it cannot be ascribed to development of undischarged zoospores from the attacked sporangium.

The species is closely allied to *Phlyctochytrium lippsii* Lohman, *P. papillatum* Sparrow and *P. reinboldtae* Persiel in sporangial shape, but differs from these in bearing bifurcate teeth at the termini of the lobes. In its ornamentation it resembles the group of dentigerate species exemplified by *P. quadricorne* (de Bary) Schröt., *P. dentatum* (Rosen) de Wild., *P. urceolare* Sparr., *P. dentiferum* Sparr., etc. but differs from them in sporangial shape and placement of the spines.

Phlyctochytrium furcatum n. sp. Sporangium epibiotic, irregularly stellate with a variable number (2–8) of broad tapering rays each surmounted by two pairs of delicate hyaline teeth set at right angles to one another, the body including rays, 8–30 μ broad by 6–25 μ high; sessile or less commonly on a clavate stalk; endobiotic parts spherical, 7–18 μ in diameter, rhizoids emerging from all sides; zoospores spherical, 4 μ in diameter with a 15–20 μ long flagellum and single eccentric colorless oil globule, initiating motility within the sporangium and swimming out through 2–8 pores formed at the tips of one or all the rays of the sporangium; resting spore not observed.

On pine pollen "Antique Road" bog, Emmet Co. Michigan, July 20, 1965.

Phlyctochytrium furcatum, n. sp. Sporangium sessile, stellatum, 8–30 μ diam. \times 6–25 μ alt., 4 dentium solidorum apicalium bipartitorum divergentibus praeditum. Systema intramaticale ex vesicula infra-sporangiale, 7–18 μ diam. constans (?) rhizoideum ferens. Zoosporae sphaericae, 4 μ diam., globulo singulo pellucido eccentrico et flagello 15–20 μ longo praeditae, per 2–8 poras a delequescentia papillarum emittentium formatas emissae. Sporae perdurantes non obviae.

Cultus in *Pinus* granulis pollinis in Sphagno, "Antique Road", Emmet Co. Mich. U.S.A., July 20, 1965.

Bibliography

- PERSIEL, I.: Über *Phlyctochytrium reinboldtae* n. sp. Arch. Mikrobiol. **32**, 411–415 (1959).
- SPARROW, F. K., and M. E. BARR: Additions to the phycomycete flora of the Douglas lake region. I. New taxa and records. Mycologia (N. Y.) **47**, 546–556 (1955).

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