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## A POSSIBLE ENDOGONACEOUS FUNGUS FROM THE TRIASSIC OF ANTARCTICA

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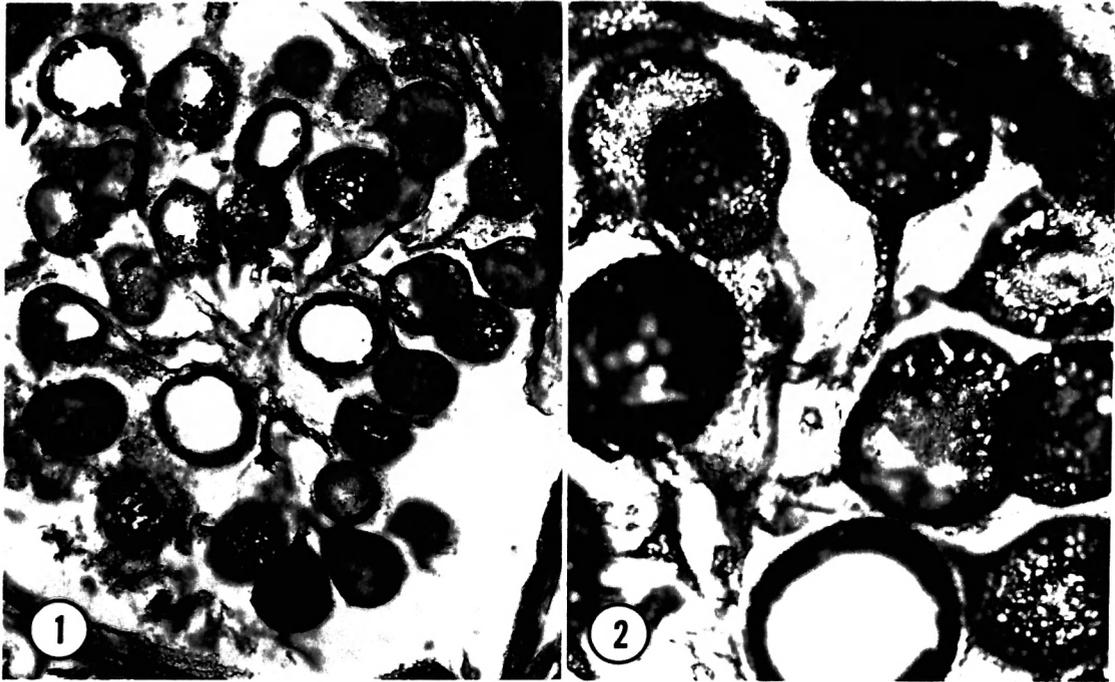
A possible endogonaceous fungus has recently been discovered in a silicified matrix from the Triassic of Antarctica. Material was collected from the Fremouw Peak Formation near Fremouw Peak in the Beardmore Glacier region of Antarctica in conjunction with the Byrd Polar Research Center at The Ohio State University. The matrix is early-middle Triassic (Collinson *et al.*, 1980). Specimens bear collection numbers 17,442–17,451 in The Ohio State University Paleobotany Collection.

The fungus is represented by a single specimen (FIGS. 1, 2) that consists of a nonseptate thallus with approximately thirty terminal, radiating chlamydo-spores. At its widest point the specimen is 0.35 mm diam. Chlamydo-spores are obovate-subspherical ( $54\text{--}57 \times 40\text{--}54 \mu\text{m}$ ) or elongate ( $30 \times 70 \mu\text{m}$ ), and lack any internal contents. Although chlamydo-spore walls are thicker than hyphal walls, there is no evidence that they are laminate. Stalks are  $3.5\text{--}6.5 \mu\text{m}$  wide and unbranched. All areas of the fungus show a distinctive surface pattern that is most prominent on the chlamydo-spores (FIG. 2). Because this pattern is similar to that on the surfaces of associated pollen grains and on the walls of plant cells, it is assumed to be an artifact of degradation. The fungus lies free in the matrix, but is closely associated with decaying plant debris, particularly bisaccate pollen grains, stems, and roots.

Although this fungus is well-preserved, it is incompletely known and its affinities are obscure. Several mycologists have noted similarities

between the fossil and the extant endogonaceous species, *Sclerocystis rubiformis* Gerdemann and Trappe (1974) (Reynolds, pers. comm.; Barr, pers. comm.; Trappe, pers. comm.). *Sclerocystis* Berk. and Broome was established for a fungus having elongate chlamydo-spores arranged in a single layer and radiating from a central plexus of hyphae (Gerdemann and Trappe, 1974). *Sclerocystis rubiformis* differs from other species of the genus in that it includes those specimens that lack a peridium. Like *S. rubiformis*, the Antarctic fungus has terminal, generally ovoid, radiating chlamydo-spores and lacks a peridium. The fossil specimen, however, is considerably less compact than extant *S. rubiformis* (see Gerdemann and Trappe, 1974, Fig. 23), although sporocarps of *S. rubiformis* open somewhat as they age (Trappe, pers. comm.). The fossil also differs in producing relatively thin-walled, non-laminated chlamydo-spores that are smaller than those typical of *S. rubiformis* (Trappe, pers. comm.). Furthermore, the central plexus of hyphae characteristic of the genus *Sclerocystis* is apparently very poorly developed in the fossil (FIG. 1). It may be that these variations in morphology reflect developmental differences. On the other hand, it is also possible that with its looser organization, smaller, non-laminated chlamydo-spores, and simple central region, the fossil may be a distinct organism different from any endogonaceous taxon known today.

Permineralized representatives of the Endogonaceae are known from the Devonian through-



FIGS. 1, 2. *Sclerocystis*-like fungus. 1. Loosely arranged sporocarp with nonseptate hyphae and multiple terminal chlamydospores. 10,023A #20,  $\times 230$ . 2. Higher magnification of FIG. 1 showing chlamydospores and attached hyphae. 10,023A #20,  $\times 535$ .

out the Triassic (Wagner and Taylor, 1982; Stubblefield and Banks, 1983; Stubblefield *et al.*, 1985; Stubblefield, Taylor, and Trappe, 1987). To date, all previously described Paleozoic and Mesozoic endogonaceous fungi resemble *Glomus*. Unlike that material, however, the present fossil is more *Sclerocystis*-like in organization. If further findings confirm its endogonaceous nature, this specimen will be the first reported non-*Glomus*-like representative of the group from Paleozoic or Mesozoic sediments.

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