

Fossil Loricæ, Holdfasts & Trophy, Possibly Belonging To The Euglenoids and/or Rotifers, from the Lower Barnett Shale

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Loricæ are the protective envelopes that surround the protoplast of a number of different organisms, especially the euglenoids and rotifers. Loricæ appear to be composed of an organic substance similar to the exinite and sporinite of pollen and trilete spores. In transmitted illumination (white light) they commonly appear as hyaline circular, ovoid, or flask-shaped (cornucopia-like) structures.

Euglenoids thrive in fresh waters enriched (polluted) with organic matter or on the muddy surfaces associated with those waters. They are generally rich in chlorophyll, free swimming or attached to other surfaces by a holdfast (i.e., structures that attach a thallus or filament to the substratum). Many rotifers resemble euglenoids in color and appearance. They are considerably different however, in the distribution of their ciliation and the possession of trophy (masticating apparatus). While the majority of rotifers occur in fresh water, some species are confined to brackish and marine waters. Like the euglenoids, some rotifers, also, have holdfasts (i.e., referred to as a foot and toes). The vast majority of rotifers are solitary although some do form colonies. They generally fall into two groups, planktonic (i.e., free-moving) and sessile (i.e., permanently attached to plants).

To our knowledge, no loricæ of fossil euglenoids or rotifers have ever been reported from sediments of Mississippian age. Fossil loricæ and holdfasts from the lower Barnett Shale are often found infused, in part, with silica and/or calcium carbonate. We believe that these fossil types may ultimately prove to be an important key in helping to unlock the complex depositional history of the lower Barnett Shale.

In addition to being excellent environmental indicators, loricæ, holdfasts and the trophy of fossil euglenoids, and/or rotifers, may prove to be equally important as biomarkers. Although the authors have only examined two wells, the T.U. Blakely No. 1 and Mitchell T.P. Sims No. 2, these particular fossil types, especially the loricæ, make their first appearance (as observed in our samples) at the top of the lower Barnett Shale. At present, we have not observed fossil loricæ in the upper Barnett Shale or the Forestberg Limestone sections of the T.U. Blakely No. 1 well.