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ABSTRACT BOOK

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Insights into stylophoran anatomy and taphonomy based on an exceptionally preserved mitrate from the Lorraine Group (Upper Ordovician) of New York, USA

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Several levels of the Lorraine Group (Upper Ordovician) in upstate New York (USA) have yielded low-diversity, exceptionally preserved, pyritized invertebrate assemblages dominated by the trilobite *Triarthrus eatoni*. Sedimentological and taphonomic features suggest dysoxic bottom-water conditions, with limited transport and rapid burial by distal turbidites (Farrell *et al.*, 2009, 2011). Echinoderms are extremely rare in these strata. Here we report, for the first time, the occurrence of the anomalocystitid mitrate *Enoploura* in the Konservat-Lagerstätte of Beecher's Trilobite Bed. A pyritized specimen of this stylophoran was CT-scanned and three-dimensionally reconstructed. The mitrate is laterally compressed, but its 3D-rendering provided several insights into its internal anatomy and taphonomy. The recurved position of the single feeding appendage (aulacophore) probably results from ligament-induced, post mortem contraction. This posture and the collapse of one lateral series of cover plates indicate that the individual was probably not buried alive. Nevertheless, a portion of the distal aulacophore shows clear evidence of exceptionally preserved soft parts (ambulacral system) in between two sets of slightly open cover plates and the underlying ossicles. One of the most intriguing features of this specimen is its close association with a sinuous, elongated, pyritized trace fossil, which enters the stylophoran through the mouth and disappears into the proximal aulacophore. In marked contrast with other skeletal parts of the specimen (theca and distal part of the aulacophore), the proximal rings of the aulacophore are heavily disrupted and disarticulated. Proximal rings are usually the most decay-resistant skeletal regions in stylophorans (Saleh *et al.*, in press). Therefore, close association of this disrupted region with a trace fossil that penetrates it suggests the action of an unknown infaunal scavenger. Proximal rings of the aulacophore, which housed powerful muscles in life, were likely very attractive to scavengers who could detect freshly killed benthos in the first stages of decay.

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