RECONSTRUCTION OF THE ENIGMATIC LATE CAMBRIAN *Climactichnites*

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Climactichnites Logan, 1860, is known only from its large trail up to 20 cm in width, a trace superficially resembling a rope ladder. Prominent lateral ridges are parallel throughout the length of the trail; they may be smooth and hemispherical in cross-section or crenulated, much like a pie crust. Between these ridges is a series of raised dune-like bars and furrows dug into the substrate. The bars and furrows show considerable individual variation between trails and also variation along a trail. Ovoid impressions are known which occur at the start of trails. The posterior of these impressions is well rounded; the anterior is triangular, and for a short distance from the impression, the trail is developed on only one side. One exceptionally preserved impression shows curved, closely spaced, fine lines parallel to the posterior.

The trails are found only in sandstone, and where they are present, they are abundant. Slightly equivocable evidence indicates a Dresbachian (early Late Cambrian) age for the occurrences in New York, Missouri, and Wisconsin; trails in Ontario and Quebec are less certainly dated. Desiccation cracks and air escape hole suggest that the trail was fully exposed to the atmosphere.

From this data, a large number of sketches were made to reconstruct an animal able to make such a trail. Each attempt produced new speculation on the morphology. In the final rendition, the animal is bilaterally symmetrical, broad and low. The integument is tough, and the sole bears a subcentral mouth anteriorward. Lateral flaps scraped and compressed damp sand to make the parallel ridges. The anterior was strongly musculated and thin. This anterior flap grasped the sediment, alternating on either side of the animal to pull the form forward when the lateral flaps were relaxed. Curved rows of cilia on the posterior moved loose sand into dunes between the furrows formed by the anterior flaps.

This reconstruction is like that of no other animal known in the Vendian or the Phanerozoic.

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