CLIMACTICHNITES IN THE WIND

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Yochelson and Fedonkin (1993) interpret the paleobiology of *Climactichnites*, a Late Cambrian littoral animal known only from tracks it made on damp sandy surfaces temporarily above water during low tide. [Hereafter, read Yochelson and Fedonkin,1993,Smithsonian Contributions to Paleobiology Number 74, for Y&F and *Climactichnites* for *C*.] A spectacular set of *C* tracks is at the entrance to the fossil exhibit in the National Museum of Natural History. These tracks from the edge of a shallow epicontinental sea are preserved in such fine condition according to the following hypothesis: Strong offshore winds at low tide depressed water level and blew sand from beaches and dunes out over the moist tracks, burying them intact, prior to their submergence under the incoming tide. Wind-blown sand is usually fine and well-sorted, a quality needed to make good molds, and because of limited time the wind-blown sand deposit would be relatively thin, a quality desirable for museum specimens. This wind hypothesis is consistent with Y&F, which has approximately 36 photographs of museum rock specimens (excluding field, plaster, latex, and drawings), of which about 20 (56%) are of molds, the underside of the rock overlying the actual tracks. The photographed molds are usually sharper than the photographed tracks in Y&F.

Some *C* tracks start at oval impressions, and some rocks show air escape structures. Fig 34 contains an oval impression within which there are concentric markings surrounding a hole, implied to be an impression of the *C* animal mouth (p 65). However, the hole with concentric markings could be an air escape structure. I recently observed air escape holes on a beach after a storm, each surrounded by a concentric ring of foam. An alternate explanation of Fig 34 is that water surface tension supported a film of dry, wind-blown sand above the air escape hole, and the escaping air pushed the sand film radially outward producing sand rings with no biological help.

The *C* trail resembles tracks made by a tire whose characteristic tread is a backward-pointing chevron. Often the tracks are bounded by parallel ridges, between which may be a medial marking. Y&F interpret the parallel ridges as due to feeding, and the intermittant medial marking as a relatively fine fecal string. The medial marking often does not coincide with an apical line through the points of the chevrons, e.g., on the lectotype. A wind-aided explanation of the wandering medial line, consistent with the Y&F interpretation, follows: The proposed *C* animal vaguely resembles a slug (Fig 58). Without prejudice to the phylum of the *C* animal, slug behavior and morphology suggest that the *C* animal extended its posterior while traveling, and raised it to secrete the fecal string, at which time the posterior acted as a sail in the wind. When the *C* animal moved in the same direction as the wind, the sail jibed from side to side, causing the wandering medial line, but when the *C* animal went across the wind, the sail stayed on the down-wind side of the track. Such an interpretation is consistent with Fig 18, the type slab, which has the best display of wandering medial markings in Y&F, provided that the wind blew from bottom to top of the photo. Ripples in the upper part of Fig 18 suggest that shallow water waves came in from the top of the picture prior to low tide exposure, which means that the winds from the bottom blew offshore, as the hypothesis of this abstract requires.