

A POSSIBLE ARCHAOPRIAPULID TRACE FOSSIL FROM THE MIDDLE CAMBRIAN STEPHEN FORMATION, BRITISH COLUMBIA

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It is generally accepted that the extraordinary preservation of fossils in the Burgess Shale is at least partly due to the exclusion of large metazoan scavengers through rapid burial in an inimical environment. Disruption of individual organisms appears to have been largely the result of mechanical processes and/or microbial decay. The absence of bioturbation through much of the classic section, including Walcott's Phyllopod Bed, supports these arguments. However, macroscopic traces are known from other horizons within the Burgess Shale section and from lateral equivalents in the Stephen Formation a short distance south of the main locality.

The sparse ichnoassemblage includes bedding-plane exposures of portions of compacted, parallel-sided burrows containing skeletal debris comprising fragmented and disarticulated hyoliths, small trilobites, and brachiopods. Walcott originally figured one such trace as Planolites sp. ? and noted, but offered no evidence for, an association with the archaeopriapulid Ottoia prolifica. This notion was subsequently rejected by Conway Morris.

A recently collected specimen, from talus south of the main locality, contains a poorly preserved but recognizable body fossil of Ottoia within the outline of a "Planolites". Although this juxtaposition may be accidental, a number of features of the association, and a consideration of the burrowing behaviour of modern priapulids, suggest that Ottoia could have been the generator of "Planolites"-like traces.