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The earliest annelids: Lower Cambrian polychaetes from the Sirius Passet Lagerstätte, Peary Land, North Greenland

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Apart from the Phyllopod Bed of the Burgess Shale (Middle Cambrian) polychaete annelids are practically unknown from any of the Cambrian Lagerstätten. This is surprising both because their diversity in the Burgess Shale is considerable, while to date the Chengjiang Lagerstätte which is equally impressive in terms of faunal diversity has no reliable records of any annelids. Here we describe, on the basis of about 40 specimens, *Phragmochaeta canicularis* gen. et sp. nov. from the Lower Cambrian Sirius Passet Lagerstätte of Peary Land, North Greenland. This makes it by far the oldest known polychaete, with a likely age of lower to middle Atdabanian, The body consists of approximately 20 segments, each bearing notochaetae and neurochaetae. The former appeared to have formed a felt-like covering on the dorsum, whilst the neurochaetae projected obliquely to the longitudinal axis. Apart from minor differences in chaetal size at either end there is no other tagmosis. Details of the head are obscure, and presence of palps, tentacles and eyes are conjectural. Jaws appear to have been absent. The gut was straight, and flanked by massive longitudinal musculature. *P. canicularis* was evidently benthic, propelling itself on the neurochaetae, with the dorsal neurochaetae conferring protection. Its stratigraphic position and generalized appearance are consistent with P. canicularis being primitive, but the phylogenetic relationships within the polychaetes remain problematic, principally because of paucity of relevant morphological information.

Key words: Annelida, Polychaeta, Phagmochaeta, metazoan evolution, Cambrian, Sirius Passet Lagerstätte, Greenland.

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