THE SIRIUS PASSET FAUNA, AN EARLY CAMBRIAN LAGERSTÄTTE FROM NORTH GREENLAND

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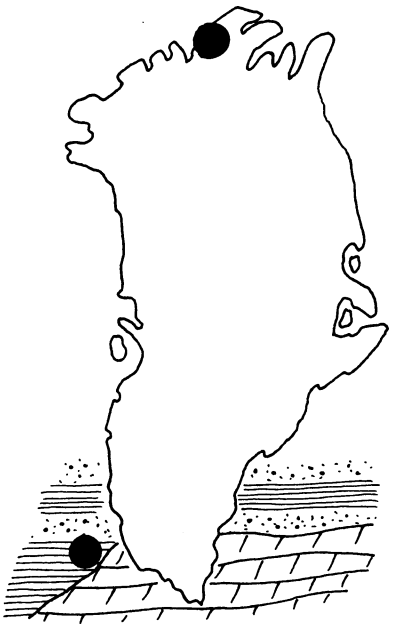

The Sirius Passet Fauna of North Greenland is one of the oldest Cambrian lagerstätten from the North American continent. It is known from a single locality in Peary Land (83°N, 40°W), on the shores of the Arctic Ocean, where outer shelf mudstones from the lower part of the Buen Formation (Early Cambrian) yield a rich assemblage of mainly poorly skeletised organisms with preserved soft parts. The steeply-dipping fossiliferous mudstones occur in close proximity to horizontally-bedded platform carbonates of the underlying Portfjeld Formation (Early Cambrian) in a structurally complex terrane. The boundary between the fossiliferous mudstones and the platform carbonates apparently defines the original northern margin of the carbonate platform and is not, as previously suggested, a structural feature, although some minor tectonic modification can not be excluded. Thus, the fossiliferous mudstones were apparently deposited in a transitional slope setting basinward of the shelf edge.

As currently known, the Sirius Passet Fauna comprises about 40 species, based on a collection of almost 5,000 slabs collected during brief visits to the isolated locality in 1989 and 1991. Arthropods dominate, with bivalved bradoriids and the trilobite *Buenellus higginsi* Blaker, 1988 being the numerically most abundant taxa. Weakly skeletised *Naraoia*-like and *Sidneyia*-like arthropods often preserve limbs and gills, as do bivalved arthropods similar to *Waptia*. *Choia* is the most common of several sponges. Worms include both priapulids and polychaetes, with a large palaeoscolecidan being conspicuous.

Fully articulated specimens of halkieriid worms, clad in an armour of hundreds of individual sclerites, are most notable amongst several problematic taxa. Rare specimens of possible onychophorans are also present, while brachiopods, hyoliths and other shelly fossils are rare or absent.

The Sirius Passet Fauna seems to show little taxonomic similarity to the Middle Cambrian Burgess Shale of western Canada or the Chengjiang Fauna from the Lower Cambrian of China at the generic level. Together with the latter fauna, however, it confirms both the general picture of Cambrian life presented by the Burgess Shale, and the existence of this great diversity of weakly skeletised arthropods already in the Early Cambrian.

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