Organic sediment load in modern glaciers, Bylot Island, Northwest Territories

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Intact to deformed masses of young organic sediment comprise an important part of the englacial sediment load in glaciers on the southwest side of Bylot Island, opposite the town of Pond Inlet, N.W.T. Based on physical characteristics and on palynological analyses, these sediments can be placed into one of three groups: (l) A 1 m by 50 cm raft comprising

undeformed mosses and associated tundra vegetation in growth position on cross-stratified pebble gravel and sand was preserved and completely enclosed by ice approximately 30-40 m above the base of Camp glacier (B-7, of glacier inventory area 46201). The sediment was evidently recently incorporated (^{14}C age of 120 + 120 years; GSC-2529), probably by being frozen onto the base of the glacier from outwash in a lateral meltwater channel; (2) One-metre high mounds of putrid-smelling, gyttja-like sediment melted out of a 20 cm(+)-thick, dyke-like sheet along an apparent thrust plane on top of and about 1 km up-ice from the snout of Aktineq glacier. The sediment consisted largely of macerated, unidentifiable organic debris with sparse, degraded pollen and no algal remains, mixed with noncalcareous silt and sand. The deposit is thought to contain mostly bird (probably goose) feces. It has an essentially modern date (150 + 130 years; GSC-5116) and is thought to represent glacially reworked lake-bottom sediment from an ice marginal lake about 6.5 km up ice from the outcrop; (3) Near the snout of Sermilik glacier, we observed several vein-like exposures of organic debris composed of silt, fetid organic matter with sparse, degraded pollen, and abundant remains of the black-coloured algae *Ancylonema nordenskioidii*, which grows preferentially on the glacier's surface. The vein-like occurrences of organic debris are interpreted to be a mixture of wind-blown silt, bird feces and algal detritus, washed or blown into open crevasses in a zone of extensive flow just up-ice from collection sites. The crevasses have closed and are disrupted by thrust faults in the zone of compressive flow near the glacier's snout, where they are marked by differential meltout of organic debris at the glacier's surface and on the sides of a 40 m-deep supraglacial meltwater channel.