

University of Colorado 1975 Field Season on Baffin Island

Eight individual research programmes were carried out by graduate students and one faculty member of the University's Institute of Arctic and Alpine Research (INSTAAR) during the 1975 field season. They were concentrated around the settlements of Broughton Island and Pangnirtung as well as the DEW line station at Cape Dyer. Field operations were facilitated by an early break-up which permitted of sea travel by canoe.

PANGNIRTUNG

Two investigations were carried out from this settlement. The first concerned the Holocene climate of the area. A large number of Neoglacial moraines were studied and dated by lichenometry. In addition, one lake was cored near the junction of Pangnirtung Fiord and Cumberland Sound. The core was sampled in the field for future palaeomagnetic studies on inclination, declination and intensity. Samples were also taken for pollen analysis and for radiocarbon dating. A deep peat section near Windy Lake, Pangnirtung Pass, was revisited and the peat excavated down to a depth of 210 cm, or nearly 90 cm below a level radiocarbon dated to about 3,800 B.P.

The other study involved the surveying of ten moraine systems fronting individual cirque glaciers. The volume of the ice core and surficial and englacial till was measured. The figures obtained will be used in a study of contemporaneous rates of glacial erosion in these subpolar glaciers.

CAPE DYER

The first of two research projects based around Cape Dyer was a study of the Quaternary geology of the area between Sunneshine and Moonshine Fiords. An outer limit for the Wisconsin glaciation was mapped and is demarcated by large lateral moraines. Shells incorporated in the till are being amino-acid dated. Above this limit occasional erratics might testify to an older and more extensive glaciation. A fossiliferous marine unit was visited north of the DEW line station. Shells of *Portlandia arctica* occur in the lower strata, but fragments of *Chlamys islandicus* occur higher in the section. Shells are being dated by the rate of amino acid diagenesis and by radiocarbon.

The second programme involved a study of the elevational limits of various types of "lichen-free" areas, varying from trimlines around glaciers to extensive areas on plateaus that were once mantled by a permanent

or semi-permanent snow cover. Dating of the onset and disappearance of snow cover was carried out by lichenometry, and samples of dead vegetation (*Salix*) were collected for radiocarbon dating.

BROUGHTON ISLAND

Field programmes in Quaternary geology, plant ecology and palynology, limnology and fast-ice studies were carried out.

Studies of glacial and marine chronologies were concentrated around Broughton Island and the immediate mainland. Exploratory cruises were also carried out north to Kivitoo and south into Canso Channel. Surficial wave-cut cliffs were visited, sampled and described. A relative chronology was developed using differences in soil development of sites of similar topography, vegetation and parent material as well as the variation in the rate of surface boulder weathering.

Vertical vegetation sampling transects were carried out at various locations on Broughton Island, on the immediate mainland and south to Canso Channel. The vegetation was described and a major effort was directed toward plant collection. The flora of the Broughton Island area now amount to slightly over a hundred species. At each site moss polsters were collected in order to study the vertical and lateral variations in the modern pollen fall-out. Additional polsters were collected (and have been analysed) in a transect through the Pangnirtung Pass.

Studies of water temperature and other standard measurements were carried out at several lakes. Planktonic hauls were made, and a study performed, on the effect of light on plankton levels.

Field measurements on surface energy budget components were completed. They were designed to assist in improving INSTAAR's fast ice melt-stage model. The local measurements at Broughton Island were supplemented by several flights in the Canadian Ice Reconnaissance Patrol over Davis Strait.

ACKNOWLEDGEMENTS

The field work of these various parties was greatly assisted by several people from the local Inuit communities, and by personnel of Parks Canada and the DEW line.

Research was supported by grants from the U.S. National Science Foundation (GA-41562 and GV-28218) and by grants to individuals from the Arctic Institute of North America, the American Alpine Club, the Explorers Club and Sigma Chi.

John T. Andrews
Associate Director, INSTAAR
University of Colorado
Boulder, Colorado 80309
U.S.A.