

Opportunities were provided for field orientation and familiarization by the drive or light plane flight between Whitehorse and Lake Kluane, overflights of the environmental spectrum of the St. Elias Mountains and adjacent periglacial regions, and local walks.

Richard H. Ragle
Arctic Institute of North America
Charles S. Houston
Department of Community Medicine
The University of Vermont

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University of Colorado: 1971 Summer Field Season in East Baffin Island

Research was continued by University of Colorado faculty and graduate students in the area of Cumberland Peninsula, Baffin Island, Northwest Territories. The work was divided into four main phases: 1) studies on the glacial chronology of the Penny Ice Cap and local mountain ice caps; 2) the mass balance of the Boas Glacier; 3) air-sea interactions using ground stations, instrumented aircraft and satellite data; and 4) evaluation of climatic trends. These various activities were supported by grants from the National Science Foundation #GV-28220, GV-28218, and GA-28003 and the U.S. Army Research Office, Grant DA-ARO-D-31-124-71-G80.

1) Four two-man parties were involved in Quaternary geological investigations in the following areas: Maktak Fiord and the trough between Maktak and Narpaing fiords; the fiord system centred on Nedlukseak Fiord; Okoa Bay; and raised marine cliffs consisting of interbedded tills and fossiliferous marine strata extending between Quajon and Narpaing fiords. The relationship in terms of response of the Penny Ice Cap and

the local ice caps and valley glaciers is one primary research topic. A lichen curve has been developed for *Rhizocarpon geographicum* that allows dating back to approximately 7,000 BP. Results indicate that the Early Wisconsin ice was the most extensive of the Wisconsin glaciations and that the late-Wisconsin ice only extended a limited distance down fiord. Numerous samples were collected for radiocarbon dating.

2) The mass and energy balance of the Boas Glacier was the subject of detailed investigation in 1970¹; a more limited study was carried out in 1971. The general characteristics of cirque basins with and without glaciers are being investigated and a total of approximately 500 cirque basins have been delimited on the Okoa and Cape Dyer map sheets. A computer program has been developed by L. Williams, University of Colorado² which takes into account the topographic shadowing effect on slope receipts of clear-sky global radiation. Results indicate that there is a small but significant difference, on average, between the global radiation being received in present ice-free and ice-filled cirques. Using the same program, attention is currently being focused on the magnitude of the Milankovitch variations. Indications are that they may be quite significant for this area. After the very positive mass balance year of 1969-70, the 1970-71 balance year resulted in an average winter mass balance of approximately 25 cm. water equivalent. Heavy melt was experienced during the summer and preliminary results suggest that all the 1970-71 snow was ablated, but that much of the 1969-70 accumulation was not affected.

3) In late May 1971 a program of airborne measurements at elevations of 100 to 1,000 feet was carried out over the Davis Strait east of Cape Dyer using a Queenair of the National Center for Atmospheric Research in Boulder (which is supported by the National Science Foundation). Instrumentation included a vertically-mounted time lapse camera, PRT-5 airborne infrared thermometer, Eppley pyranometers, a Swisstecco linear net radiometer and temperature and dew point sensors. Attention was focused on variations in energy budget over sea and ice surfaces. Profile measurements were made during each flight over a micro-meteorological station operated on the ice in Sunneshine Fiord. The primary aim of this program is to investigate the applicability and resolution of satellite data for determining synoptic energy budgets in the eastern Arctic. From June to August 1971 a micro-meteorological

program was operated on the fast ice and at a shore station on Broughton Island. In this area break-up is characterized by melt and puddling rather than primarily by mechanical action as in the Davis Strait. A climatological station, established near sea-level at Broughton, has been in continuous operation since 4 June 1971. Its purpose is to provide a basis for comparisons with the hill-top DEW-line stations which supply almost all of the meteorological data for the East Baffin region.

4) Climatic data from weather stations on Baffin Island are currently being analysed in terms of a) summer temperatures, b) winter temperatures, and c) winter precipitation, and these are being compared to the longer term West Greenland records. Prominent climatic trends are apparent from these records.

John T. Andrews

Roger G. Barry

Institute of Arctic and Alpine Research
University of Colorado, U.S.A.

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Tundra Cleanup Group*

Geophysical industry personnel recognize the desirability of environmental cleanliness. Beginning in the fall, 1969, geophysical crews operating on the Arctic Slope of Alaska have done an excellent job cleaning up their litter and debris. However, the industry also recognized that the accumulation of barrels and litter left by geophysical operations prior to the fall, 1969, remained on the Arctic Slope. In order to remove this debris, the Prudhoe Bay Environmental Subcommittee encouraged Atlantic Richfield Company to initiate such a program.

Subsequently, on 13 March 1971, Atlantic Richfield's Anchorage Geophysical Department submitted a letter to prospective companies proposing to clean seismic industry litter from a designated portion of the North Slope of Alaska. In response, 21 companies formed the 1971 Tundra Cleanup Group. At

*Introduction to Final Report 1971.

an organizational meeting 16 April 1971, Atlantic Richfield Company was elected operator.

The intent of the group was to gather and stack barrels and other debris which had been left on the tundra by geophysical operations in past years. The area selected extends from the Colville River east to the Canning River, and from the shore of the Beaufort Sea south to 70° latitude. The operators of the Prudhoe Bay Unit are responsible for cleanup within the Unit boundaries; therefore, the Prudhoe Bay Unit, containing about 440 square miles within the area, was excluded. The area selected for cleaning contains about 2,300 square miles.

Twenty-fifth Anniversary of NARL

The twenty-fifth anniversary of the Naval Arctic Research Laboratory (NARL) will be observed as a special feature of the twenty-third annual Alaska Science Conference. The Conference will be held from 15 to 17 August 1972 at the University of Alaska. It is being sponsored by the Alaska Division, American Association for the Advancement of Science, and is being planned by the Institute of Social, Economic and Government Research, under the Conference chairmanship of Dr. Gordon Scott Harrison. The theme, "Science and policy in the North", will bring focus to the relationship between scientific research and policy issues in circumpolar regions. The program will include special symposia which will bring together scientists and policy-makers to discuss such critical northern problems as oil, telecommunications, alcoholism, bicultural education, regional organizations and governments, environmental protection, and others. In addition, there will be sections devoted to the presentation of contributed papers in the social and natural sciences.

Papers are invited and should be submitted to the following, who may also be contacted for further Conference information:

Dr. Gordon Scott Harrison
Chairman, Alaska Science Conference
Institute of Social, Economic and
Government Research
University of Alaska
Fairbanks, Alaska 99701

NARL's anniversary celebrations, cosponsored by the Office of Naval Research, U.S. Army Research Office, the University of Alaska, and the Arctic Institute of North