

THE GLACIOLOGICAL STUDIES OF THE BAFFIN ISLAND EXPEDITION, 1950

By P. D. BAIRD, W. H. WARD and S. ORVIG

GLACIOLOGICAL studies were an important feature of the Baffin Island Expedition, 1950 of the Arctic Institute of North America. A particular study was made of the Barnes Ice Cap,* situated about latitude 70° N., inland from Clyde Post. The ice cap, first sighted from a distance during J. M. Wordie's expedition to Melville Bay and North-East Baffin Land in 1934, was occupied from 27 May to 29 September 1950.

The ice cap party consisted of:

P. D. Baird, who, in addition to his task as leader of the whole expedition numbering twenty persons, spent most of his time on the ice cap.

W. H. Ward, who was generally responsible for the glaciological work on the ice cap.

S. Orvig, meteorologist.

J. D. C. Waller, mechanical engineer assistant.

C. A. Littlewood, gravimetrist.

In addition, R. P. Goldthwait spent some five weeks studying the geomorphology around the ice cap and gave the glaciologists valuable assistance. Several other members of the expedition came to help for short periods.

The party depended almost exclusively for distant transport on the willing service of the late J. M. King, pilot of the Arctic Institute's Norseman aircraft working first on ski-wheels and later in the season on floats.

The glaciological work is to be described in a series of articles in this Journal; the first two (Parts I and II) appear below.

Part I: METHOD OF NOURISHMENT OF THE BARNES ICE CAP†

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ABSTRACT. The Barnes Ice Cap on Baffin Island, N.W.T., Canada, was investigated during the summer of 1950. This ice cap, some 6000 sq. km. in extent, appears to have an approximately balanced budget, and yet there is no firm on its surface. It is postulated that its nourishment is by superimposed ice due to immediate refreezing of much of the melt water of summer. It is further inferred that a similar process nourishes many Arctic glaciers and ice caps where elevation, precipitation and temperature are all low. The name "*Baffin Type*" is proposed for these in the classification of glaciers.

RÉSUMÉ. Nous avons étudié pendant l'été 1950 la calotte de glace Barnes à Baffin Island. Cette calotte, d'environ 6000 km. carrés, possède apparemment un budget presque équilibré, mais il n'y a pas de névés à sa surface. On peut affirmer que l'alimentation de la calotte provient de la surimposition de la glace née du regel immédiat de l'eau de fusion de la neige. On peut inférer qu'un grand nombre de glaciers arctiques croissent d'une façon similaire là où l'altitude, les précipitations et la température sont toutes basses. Nous proposons pour ceux-ci la classification "*Type Baffin*."

It was obvious from a study of the aerial photographs taken by the Royal Canadian Air Force in 1948 and 1949 that the Barnes Ice Cap had some unique features. Its area was approximately 6000 sq. km., and it was entirely surrounded by bare ground of no great elevation. It was not

* Name adopted by the Canadian Board on Geographical Names after the late Professor H. T. Barnes of McGill University who carried out much ice research.

† Paper read at a meeting of the International Commission on Snow and Ice, Brussels, August 1951.