A GEOPHYSICAL STUDY OF THE TERMINI OF THE MOUNT COOK NATIONAL PARK GLACIERS

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Master of Science with Honours.

BY

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ABSTRACT

Despite much work on the shape of valley glaciers, little is known about the shape of their termini (the lower end of a glacier). A geophysical investigation was carried out on the termini of the Tasman, Murchison, Mueller and Hooker Glaciers to determine the shape of the termini and to determine whether any ice existed under the outwash gravels.

Using the gravity and resistivity techniques it was found that glacial ice ended at the terminus of each glacier, none extending out under the outwash gravels. The Murchison Glacier was found to be 230 m (± 50 m) thick 2 - 3 km upstream from the terminus. The Tasman Glacier was found to be 600 m (± 90 m) thick 10 km upstream from the terminus thinning to 200 m 2 km from the terminus. The Hooker Glacier has a thickness of 150 m 1.5 km upstream from the terminus.

Overall melting (ablation) of the termini of these glaciers is continuing, mainly by basal melting. Continued ablation of the terminus of the Tasman Glacier will result in the formation of one large melt-lake within the next 10 - 20 years (i.e. by 1990)

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FRONTISPIECE: Terminus of Tasman Glacier. Photograph taken in early February 1982 from S829351 (NZ yard grid) looking South-east.