SURGE OF TWEEDSMUIR GLACIER, BRITISH COLUMBIA, CANADA

Tweedsmuir Glacier (59° 50′ N; 138° W), largest glacier in British Columbia, was photographed on 11 September 1973 by Austin Post of the U. S. Geological Survey. At that time, the 70 km long glacier was found to be surging.

The advance of the glacier threatens to block the Alsek River which flows from the Yukon Territory out to Dry Bay, Alaska. The consequences of this: (a) the formation of an ice-dammed lake, and (b) the subsequent generation of a flood wave, are both being examined.

In September 1972, Post's photographs show the glacier to be still in the quiescent stage, after last having suffered a surge in 1952-54. Recent enquiry has disclosed the fact that on 7 August 1973, a Geological Survey of Canada reconnaissance party that flew past the glacier considered by its appearance that it might be surging, but they did not report this observation until much later. On 14 and 15 October, G. Holdsworth and M. Alford flew into the glacier, established a baseline and took photographs using the Wild P-30 phototheodolite. They found the frontal advance to be confined to the northern third of the frontal lobe, and established the September-October advance rate. The southern part, characterised by heavy moraine and medial loops, is blocked by an extensive rock sill which protects the river. A line of cairns was established in front of the glacier to enable advance rates to be determined at future dates.

On 8 and 9 November Holdsworth and Alford revisited the glacier, repeated the photography, and remeasured the position of the snout. As a result of the ice front hitting a critically located bluff, the river (flow 890 cusecs; 8 November) had backed up 1—1.5 km, and was diverted through a higher channel on the east side of the bluff. (See photograph on page 13.)

From these data it has been established (using a surge response curve) that (1) the surge is a relatively weak one, (2) it began in April or May 1973, accelerating up to July-August (peaking at 6 m per day), (3) it is now in the deceleration stage (2.4 ± 0.3 m per day) and could grind to a halt as early as September 1974 or as late as February 1975, depending on the erosional effects of the river.

If the glacier proceeds as predicted, then the present spillway could be overwhelmed by August or September 1974. But the erosional capability of the Alsek River on the ice front has not been fully accounted for; the peak flow, estimated to be in excess of 20,000 cusecs in August, may prevent closure. However, if there is damming it is likely to occur only once, and the lake could be breached the following spring or summer (1975). Observations, including the interpretation of ERTS imagery, are being continued.

G. Holdsworth

THE REMOTE SENSING SOCIETY

Following a series of meetings in the United Kingdom, the Remote Sensing Society is to be formed. The initiative for this has come from a body of scientists, technologists, and administrators deeply interested in methods of measuring and managing the Earth's resources and environment. The Society is to be supported by members from the earth sciences (geography, geology, botany, etc.) as well as by members from the technological sciences (physics, engineering, computer science, photo-interpretation, etc.).

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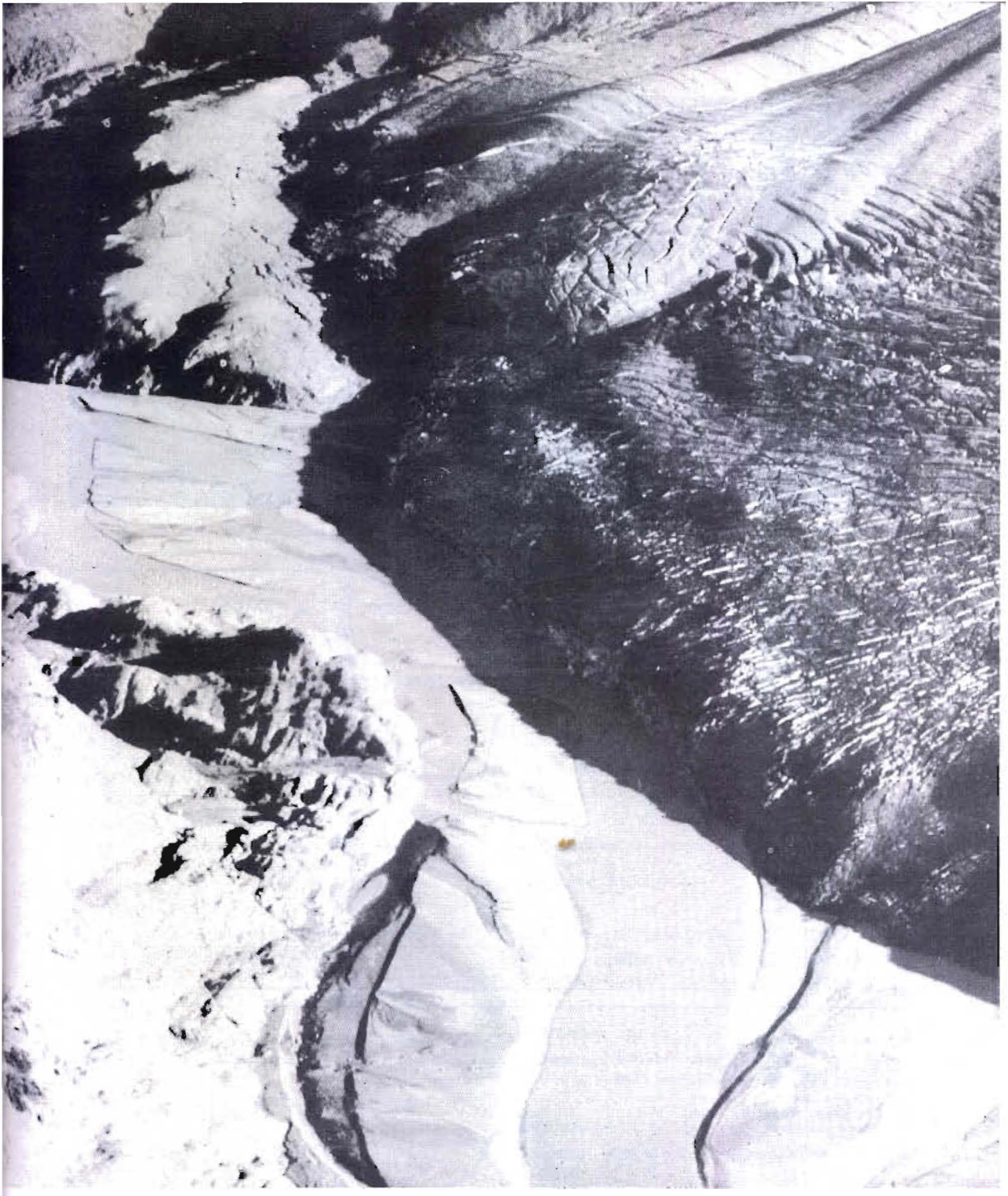

View of Tweedsmuir glacier snout near critical bluff
Distance to ice from base of bluff 70 ± 10 m (Austin Post, Sept 11, 1973). See report on page 23