tion, since variations in the dynamic height were of the same order of magnitude as errors in their determination and it was, moreover, impossible to obtain a consistent reference level for dynamic computations.

CONCLUSIONS

While it is not possible to draw quantitative conclusions from the small amount of available information, it appears that the deep vertical distributions of temperature and salinity in central and southeastern Baffin Bay and Davis Strait may not undergo significant seasonal variation. Observed near-surface variations may be accounted for qualitatively by a combination of winter cooling, freezing and convective mixing and summer meltwater addition.

The apparent constancy of flow through Davis Strait is of particular interest. It has been demonstrated[2] that for sufficient heat to be present in the water column for prevention of ice formation in the open lead in northern Baffin Bay known as the North Water, northerly flow of warm water ($> 0°C.$) would have to be greater than observed during the summer months. That this does not appear to be the case strengthens the hypothesis, most recently advanced by Dunbar[4], that the open water is due to a southward advection of ice by winds and currents rather than by heat from the water column preventing formation of the ice.

ACKNOWLEDGEMENTS

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Robin D. Muench
Institute of Marine Science
University of Alaska
H. E. Sadler
Defence Research Establishment
Ottawa

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On the Oceanography of Makinson Inlet

On completion of observations in Nares Strait from the CCGS *Louis S. St. Laurent* during August 1971, the opportunity arose to make a quick reconnaissance in Makinson Inlet. This inlet, which provides a sea-level passage from the North Water area through the coast range of eastern Ellesmere Island, has recently been the object of some interest because of possible commercial and strategic developments. However, nothing was known of its bathymetry or oceanography except for a line of soundings run by CCGS *Labrador* in 1966. Since all of the oceanographic party with the exception of the author had already left the ship, the investigation could only be superficial, but with the assistance of Dr. Fritz Müller, and Mr. Ken de la Barre of the Institute, a few preliminary observations were made.

The ship entered the inlet (see Fig. 1) at 0800 local time on 2 September 1971 after working through a belt of loose polar pack about 3 miles wide which lay north-south off the entrance. Within the inlet only small, scattered floes were seen, due possibly to the strong westerly winds which continued the whole time the ship was in the area. On the way up the inlet a line of soundings was maintained and a series of shoreline photographs was taken. The ship reached Swinnerton Point, where the inlet divides into 2 arms, at about 1100 local time but no investigation of the arms was made since the survey barge was not available. On the way down the inlet, 4 oceanographic stations were occupied and Knudsen bottle samples were taken for temperature, salinity and dissolved oxygen content. Bathythermograph slides were also obtained.

Since there is no sill in the main section of the inlet the classic fiord structure cannot develop and the results obtained indicate that the inlet, from the fork seaward, is from the oceanographic point of view merely a section of northern Baffin Bay. The T-S curves in Fig. 2 show that there are two main layers, one below 300 m. and a second between 100 and 200 m. These layers match

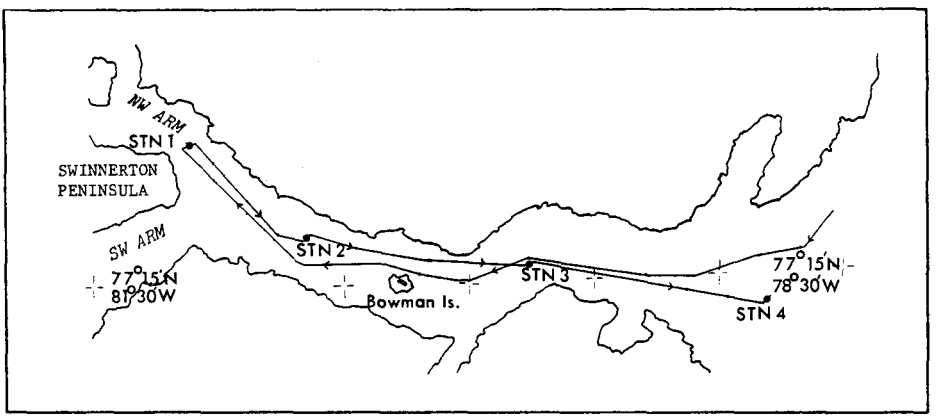

FIG. 1. Track chart in Makinson Inlet, showing stations occupied on 1 September 1971.

those in northern Baffin Bay described by Muench[1]. Above these in the upper 75 m. or so the effects of melt water are apparent. Since the fresh water input is distributed down the full length of the inlet, the salinity at 10 m. actually decreases to seaward by 0.8‰ between Stations 1 and 4, but the gradient reverses when the salinity is integrated over the upper 75 m. (Fig. 3).

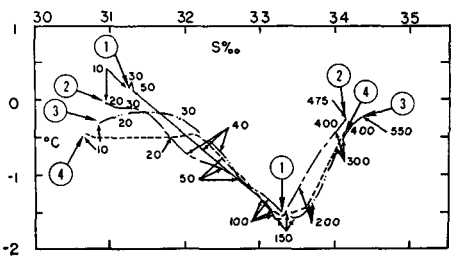

FIG. 2. Temperature-salinity curves for 4 stations in Makinson Inlet on 1 September 1971.

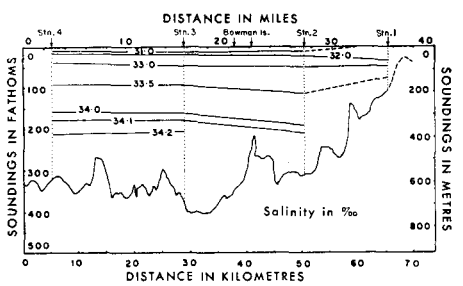

FIG. 3. Longitudinal salinity profile of the water in Makinson Inlet. The bathymetry is drawn from the echo-sounder record obtained from CCGS *Louis S. St. Laurent*, September 1971.

It must be stressed that the melt water effect is very short lived with the bulk of the run-off coming in a period as short as 2 weeks. The dissolved oxygen content remains high (> 6 ml./L) right to the bottom, another indication of identity with the water in Baffin Bay.

A great deal of work is still needed to provide the comprehensive view of the oceanography of this inlet which is necessary before any regular use by shipping.

The details of water exchange with Baffin Bay, the amount and duration of fresh water input from the numerous glaciers, the existence of a sill in the entrance to the North West Arm and the possibility of stagnant water behind it are some of the obvious lines of investigation in the future.

In conclusion I must thank Captain Fournier and his crew for their co-operation and assistance, particularly the Coast Guard Cadets who helped to make the observations.

H. E. Sadler
Defence Research Establishment Ottawa
National Defence Headquarters
Canada

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