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Hydrographic conditions on Hamilton Inlet Bank (Div. 2J) in the fall of 1975

by

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Introduction

During the groundfish survey by R/V ANTON DOHRN from 23 November - 8 December 1975 in ICNAF-Divisions 2J and 3K (north of 51°N) standard hydrographic work was done on each fishing station, consisting of Nansen casts and BT-records. In addition the Standard ICNAF Oceanographic Section Seal Island-Cape Farwell was completed across Hamilton Inlet Bank. The location of this section as well as the fisheryoceanographic stations are given in Fig. 1.

Horizontal distribution of temperature and salinity

Temperature- and salinity observations of the Nansen casts were used to plot the horizontal distribution of both parameters in the area under investigation (Fig. 2 to 5). As for the bottom-distribution of T, and S all measurements within 10m above the bottom were taken, whereas the near surface condition is based on the 10m-depth level.

Comparing the results of 1975 with the hydrographic situation in late fall 1974 (*ICNAF Res. Doc.75/29*) an increase in temperature is visible: The amount of temperature variation is 1,5°C in the near surface layer and 1°C in the bottom layer. In late fall 1975 the arctic component of the Labrador Current was less cold than in the previous year!

Vertical distribution of temperature and salinity

No negative temperatures were found on the Hamilton Bank section in fall 1975 (Fig. 6). A comparison with the hydrographic data obtained since fall 1969 by *R/V WALTHER HERWIG* and *ANTON DOHRN* respectively yields the following results (Table 1).

The bottom temperature on the Hamilton Bank was up to 1°C wormer than in late fall 1974; no obvious change in salinity was recorded on the bank. Major variations in salinity were only observed on the deeper part of the section, indicating a more saline Intermediate Water in the Labrador Sea. Whereas in 1974 the boarder between the *Labrador Shelf Surface Water* ($T \leq 0^{o}C$; $S \leq 33$ o/oo) and the *Labrador Sea Intermediate Water* ($T \geq 3.6^{o}C$; $S \geq 34.78$ o/oo) was situated in the middle of the Hamilton Bank (2°C - isotherme) it was shifted to the outer edge of the bank in fall 1975. Thus the arctic component of the Labrador Current dominated the whole bank area. Compared with the mean temperatures (see Table 1) the hydrographic condition on the Hamilton Bank was up to 0.65°C warmer than normal. Except two major discrepancies (St. 58) the temperature measurements in late fall 1975 indicated in all water layers a warmer arctic Component of the Labrador Current.

Acknowledegements

I am grateful to Dr. H. Neumann for the achievement of the oceanographic measurements as well as for the preparation of the raw data material.

Table 1: Mean temperature ($\bar{t}$ = average 1969-75, excl. 1970) and mean temperature differences in degrees centigrade as compared to 1975 ($\bar{t} - t$) in distinct water layers on the Hamilton Bank section in late fall.

station / layer		50	51	52	57	58	61
0-50m	$\bar{t}$	0.34	0.21	0.13	0.23	0.53	2.65
	$\bar{t} - t$	0.01	-0.21	-0.26	-0.12	0.03	-0.65
50-200m	$\bar{t}$	0.37	-	-	0.88	1.64	3.39
	$\bar{t} - t$	-0.51	-	-	-0.33	0.37	-0.30
0-200m	$\bar{t}$	0.35	-	-	0.72	1.34	3.20
	$\bar{t} - t$	-0.41	-	-	-0.27	0.27	-0.39

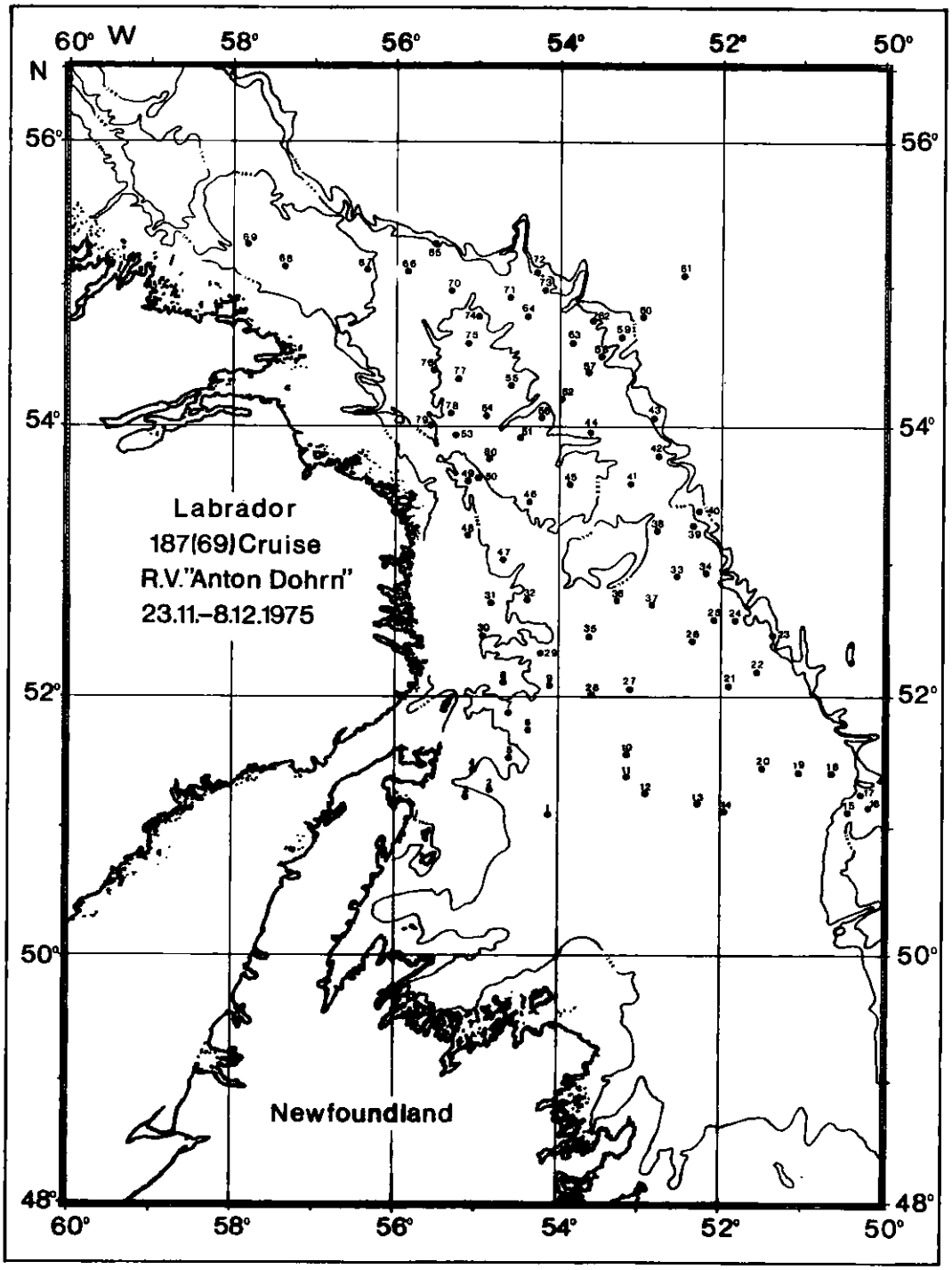

Fig. 1 Location of hydrographic stations

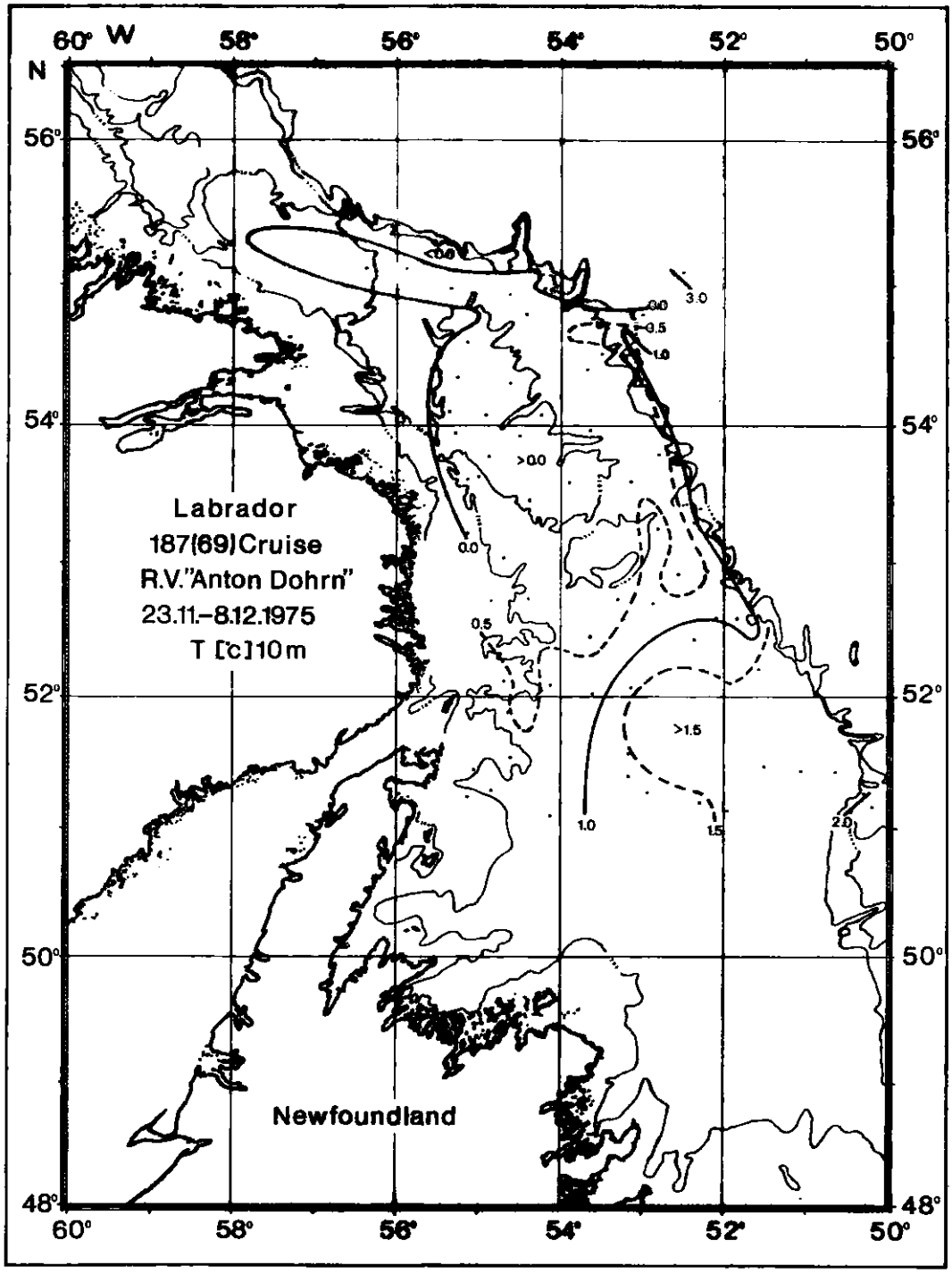

Fig. 2 Temperature at 10m depth

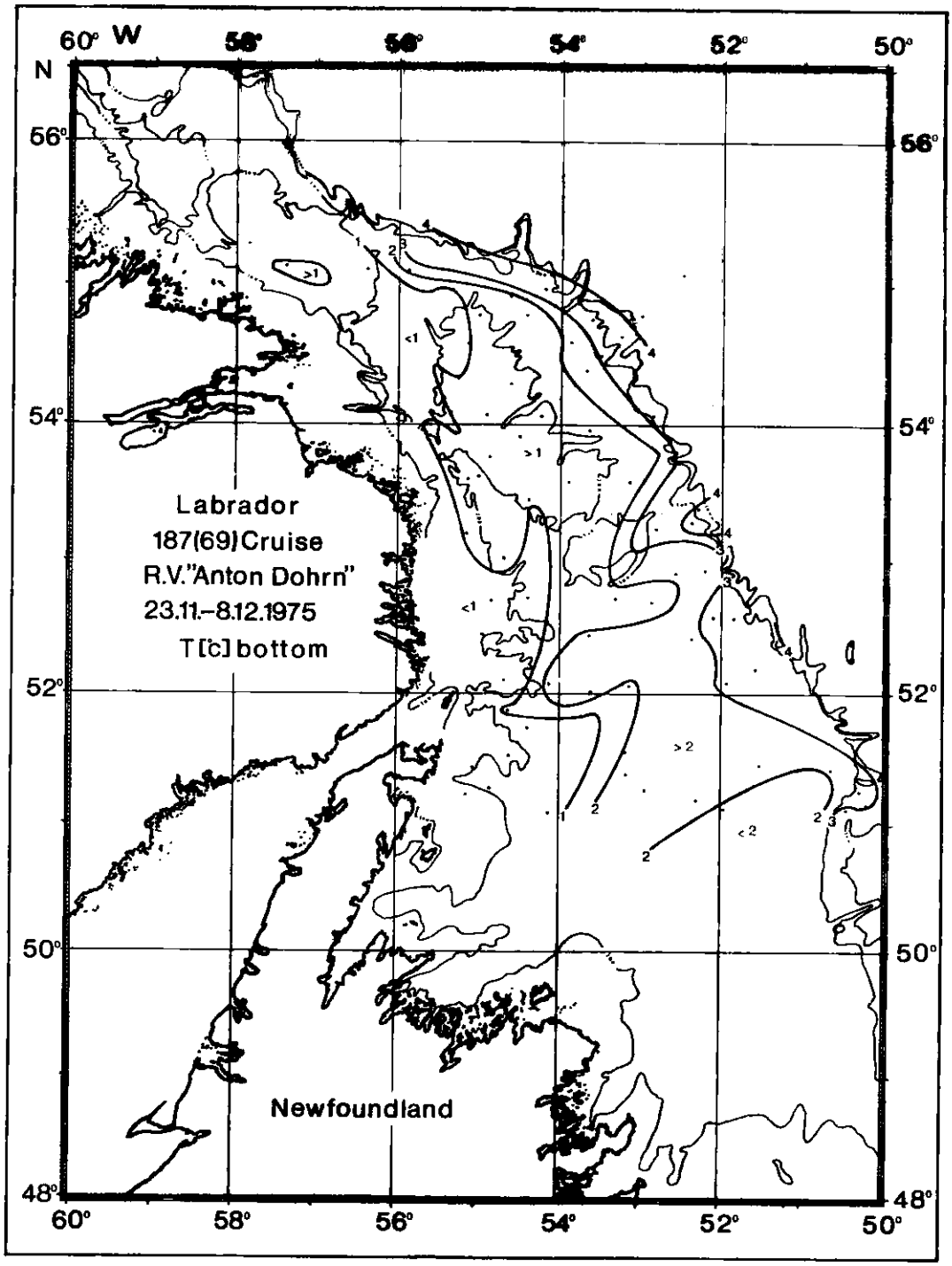

Fig. 3 Bottom temperature

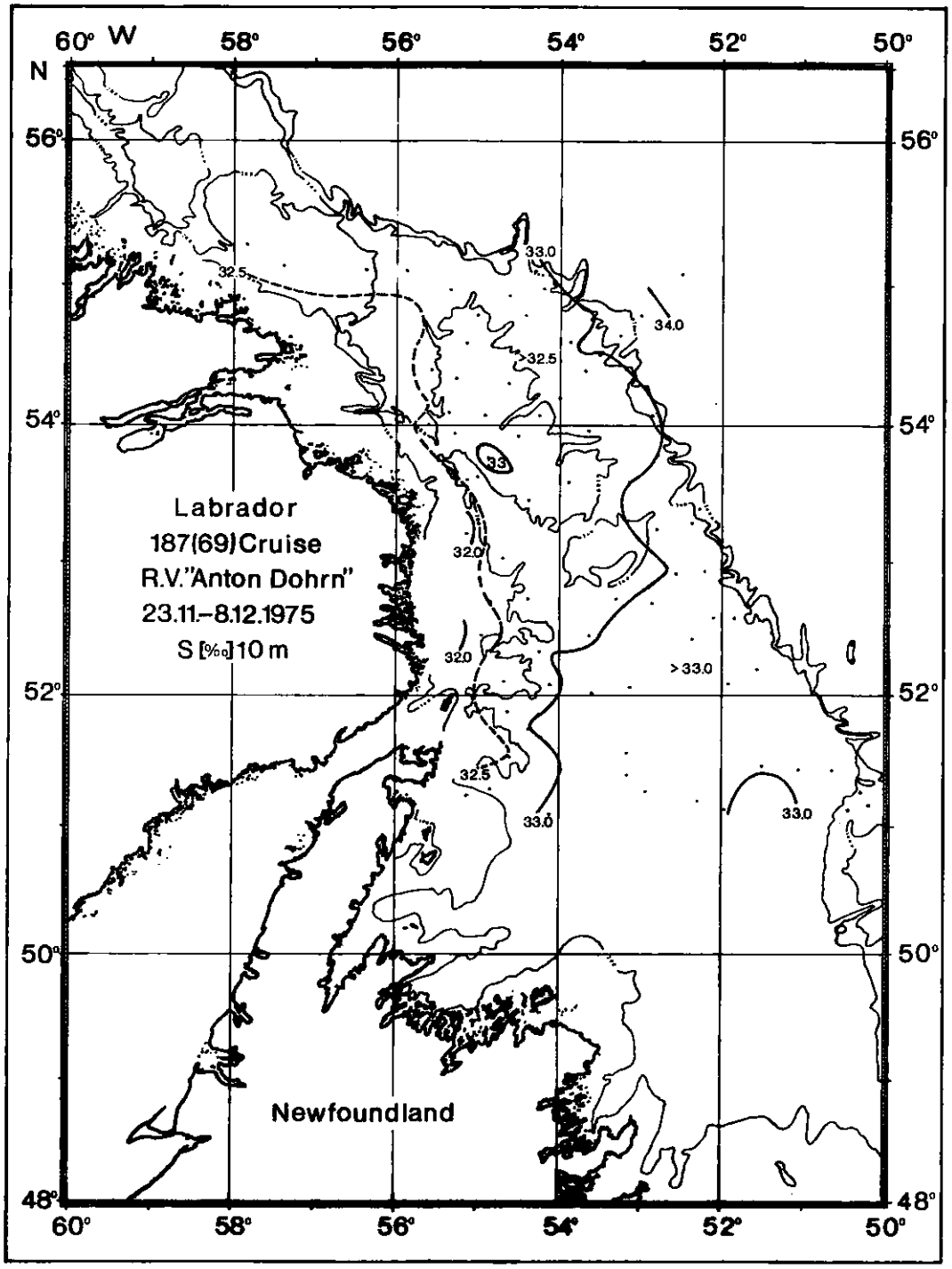

Fig. 4 Salinity at 10m depth

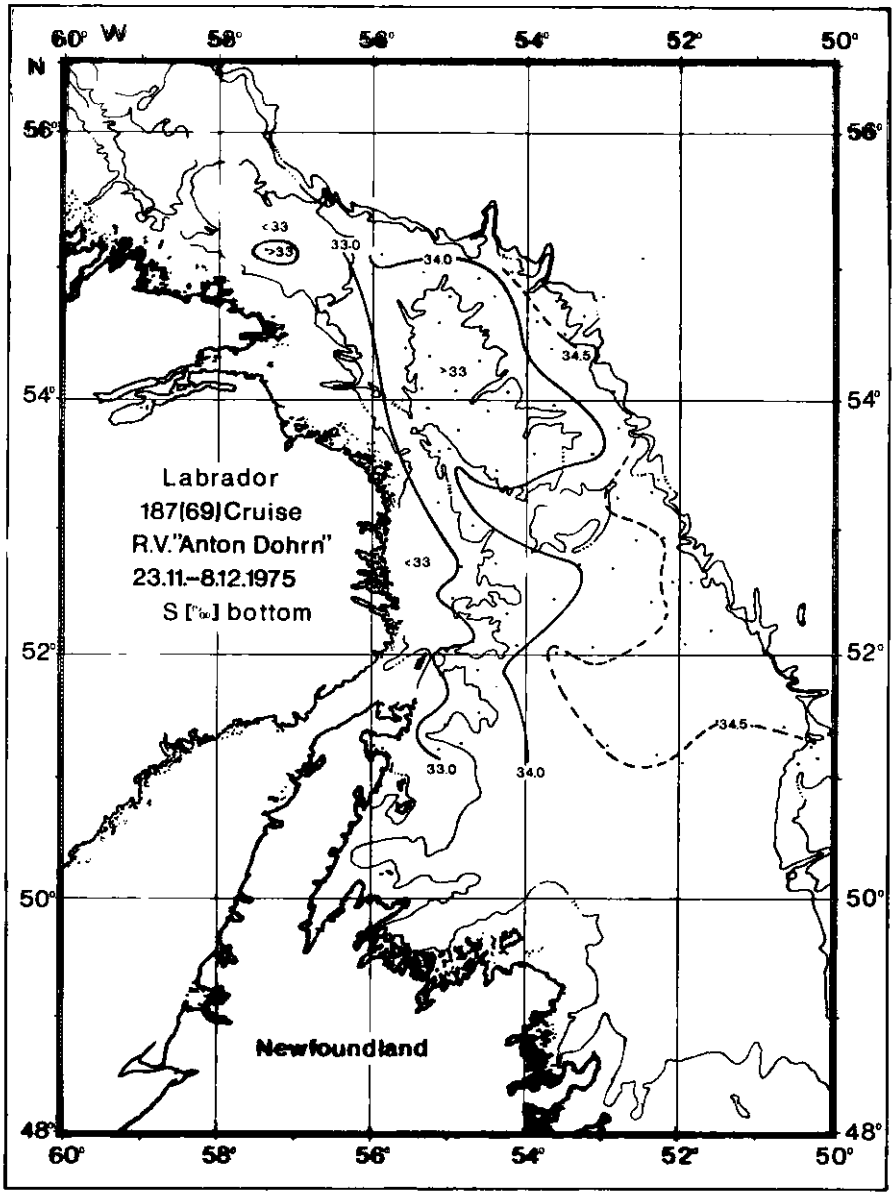

Fig. 5 Bottom salinity

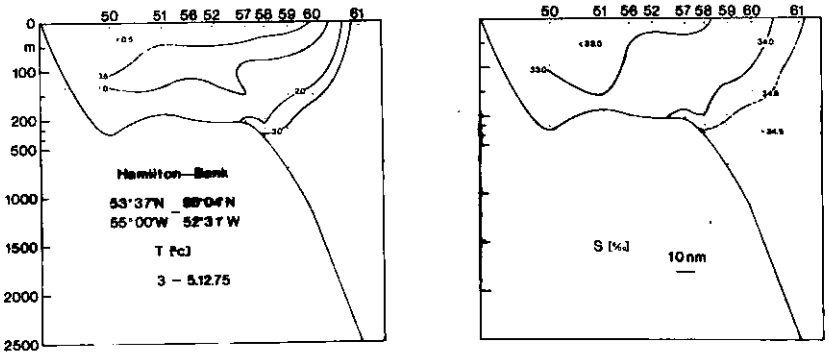

Fig. 6 Temperature and salinity section across the Hamilton Bank