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Danish Hydrographic Investigations in West Greenland waters, 1968

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From the new research vessel ADOLF JENSEN a number of sections have been worked during the period from April to November in the West Greenland bank area. The positions of the sections are shown in Fig.1, and the temperature sections in Figs. 2-9.

The Fylla Bank section (section II) has been worked most frequently, in all 7 times between April and November.

In all the months from April to August the temperatures in the upper 500 metres were abnormal low off the western slopes of the banks. Over the shallow part of Fylla Bank the temperature was extremely low in the spring months but in June the summer heating had caused a rise in temperature to near the normal.

Table 1 shows the mean temperatures for the month of July calculated from observations in 15 years between 1950 and 1966 for the station just off the western slope of Fylla Bank (63°53'N.53°22'W.) (F.Hermann 1967). The table also shows the temperature anomalies for July 1968 from these mean values.

Table 1.

Depth interval(m)	0-50	50-100	100-200	200-300	300-400	400-500	0-500
Mean temperature	2.07	1.33	1.85	2.88	3.79	4.22	2.89
Δ t, July 1968	-1.6	-1.8	-1.6	-1.3	-1.2	-1.2	.1.4

The temperatures for July 1968 are extremely low for all water layers down to 500 m. Of the years since 1950 where temperature observations are available for July only the year 1952 showed lower temperatures.

The salinities in July 1968 for the same station has been compared with the salinities observed in July in earlier years. Table 2 gives the mean value for 1950 to 1966 and the salinity anomalies for the individual years.

As indicated in the table high negative salinity anomalies dominated in all layers down to 500 m in July 1968. This together with the prevailing low temperatures indicate a very strong inflow of polar water from the East Greenland Polar Current to the West Greenland area.

In October and November the hydrographic situation changed completely. Off Fylla Bank all water layers below 75 m are mainly influenced by the warm Irminger Current, which in the core reached a temperature of 6° in November. The abnormally strong inflow of polar water apparently has stopped. As far north as the slope of Store Hellefiske Bank the temperature exceeded 5° in the core of the Irminger Current.

Ref.: Hermann, F. Temperature variations in the West Greenland area since 1950. ICNAF Redbook 1967, IV.

Table 2. Salinity anomalies W.of Fylla Bank (station r-3) in July.

Depth m	S‰ mean	1950	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1963	1964	1965	1966	1968
0	32.96	+0.31	+0.52	-0.01	+0.14	-1.40	+0.26	-0.19	-0.06	-0.22	-0.74	+0.26	+1.03	-0.11	+0.19	+0.02	-0.90
10	33.10	+0.20	+0.38	-0.03	+0.11	-1.10	+0.26	+0.06	-0.26	-0.39	-0.26	+0.48	+0.88	-0.26	+0.11	-0.13	-0.92
20	33.24	+0.11	+0.30	-0.12	+0.04	-0.65	+0.32	+0.32	-0.25	-0.40	-0.27	+0.39	+0.68	-0.36	+0.02	-0.15	-0.70
30	33.40	+0.09	+0.14	+0.01	-0.01	-0.20	+0.17	+0.23	-0.36	-0.44	-0.20	+0.34	+0.52	-0.26	+0.02	-0.12	-0.36
50	33.52	+0.26	+0.05	+0.16	+0.01	-0.19	+0.18	+0.25	-0.28	-0.52	-0.13	+0.32	+0.48	-0.28	-0.07	-0.17	-0.24
75	33.65	+0.35	+0.10	+0.22	-0.04	-0.17	+0.19	+0.19	-0.30	-0.43	-0.14	+0.23	+0.30	-0.23	-0.09	-0.15	-0.22
100	33.80	+0.34	+0.02	+0.26	+0.11	-0.11	+0.20	+0.16	-0.41	-0.49	-0.15	+0.15	+0.21	-0.25	+0.12	-0.18	-0.25
150	34.01	+0.33	-0.11	+0.30	+0.21	-0.29	+0.24	+0.34	-0.36	-0.42	-0.15	0.00	+o.05	-0.07	-0.09	-0.05	-0.30
200	34.20	+0.29	-0.19	+0.27	+0.20	-0.21	+0.30	+0.06	-0.27	-0.37	+0.09	-0.11	-0.04	-0.03	+0.07	-0.04	-0.19
300	34.58	+0.19	-0.41	+0.07	+0.20	-0.05	+0.12	-0.02	+0.05	-0.16	+0.03	-0.14	-0.20	+0.08	+0.14	+0.08	-0.20
400	34.76	+0.10	-0.51	+0.10		+0.02	+0.02	-0.04	+0.11	+0.14	+0.08	-0.03	-0.12	+0.07	+0.12	+0.11	-0.24
500	34.85	+0.04	-0.16	+0.04		-0.02	+0.01	-0.07	+0.07	+0.06	-0.01	-0.05	+0.08	+0.05		+0.07	-0.16

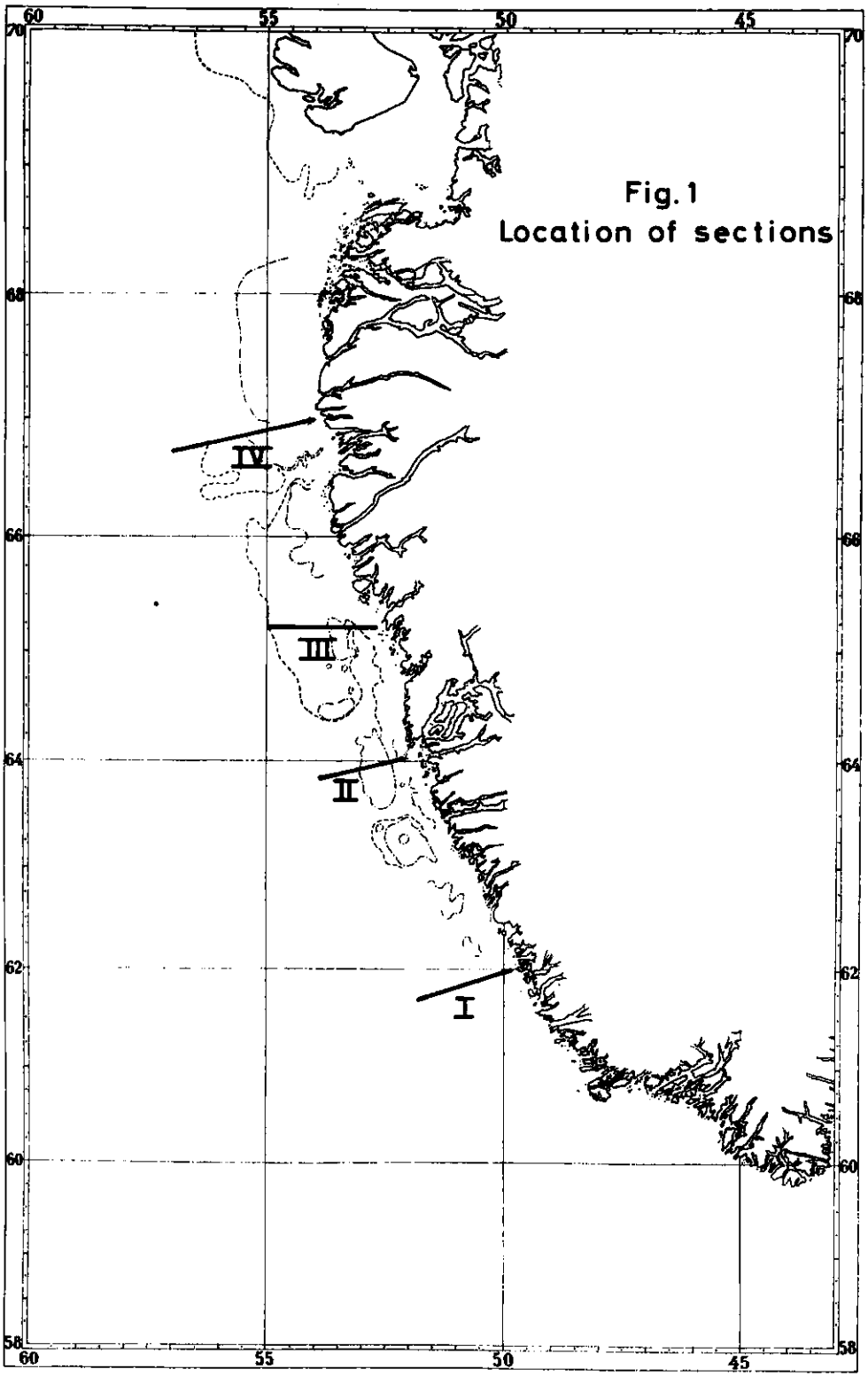

Fig. 1
Location of sections

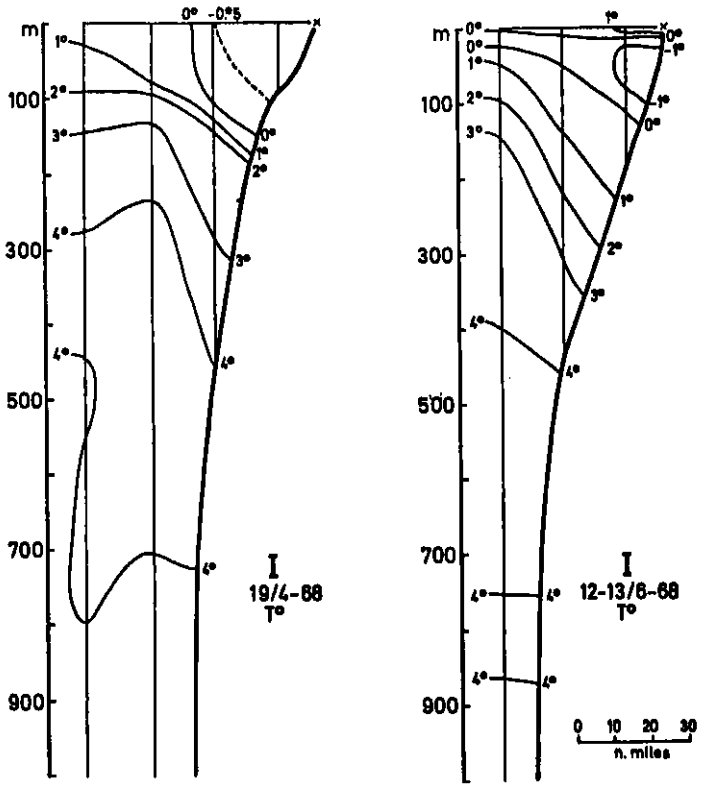

Fig. 2. Temperature sections off Frederikshåb in April and June.

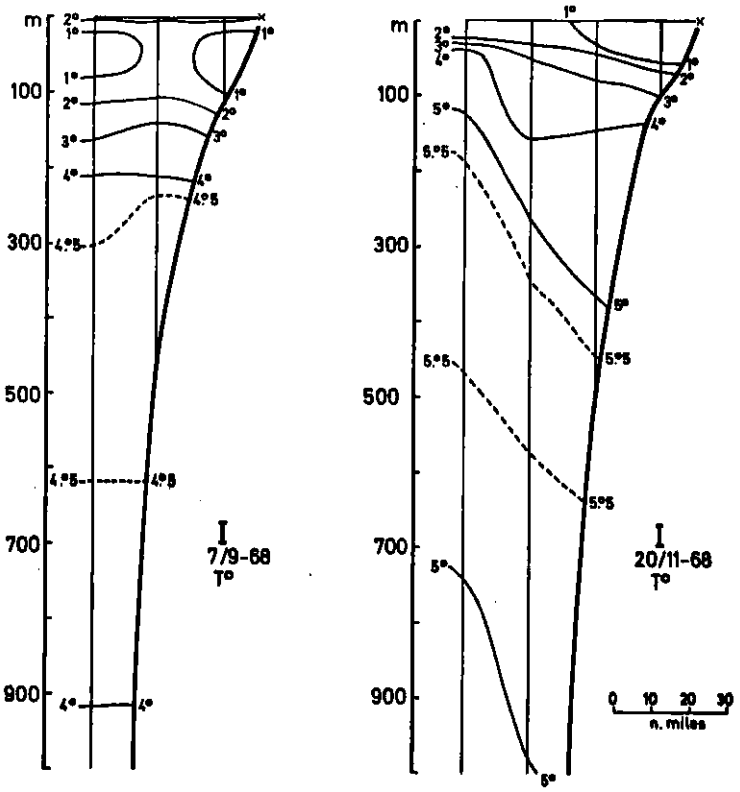

Fig. 3. Temperature sections off Frederikshåb in September and November.

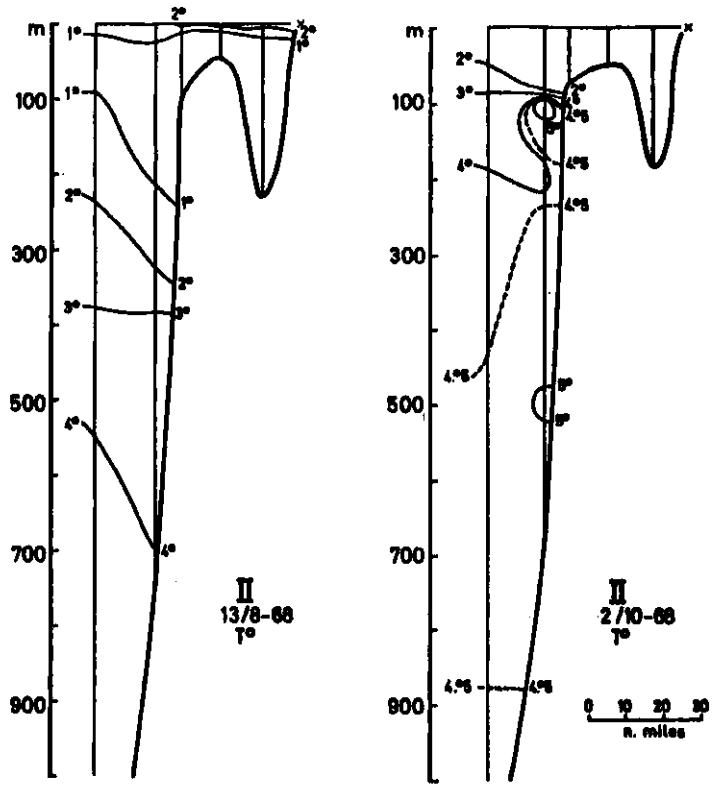

Fig. 6. Temperature sections over Fylla Bank, August and October.

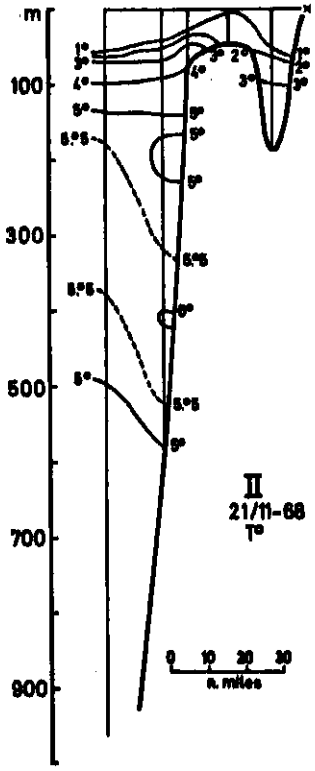

Fig. 7. Temperature sections over Fylla Bank, November.

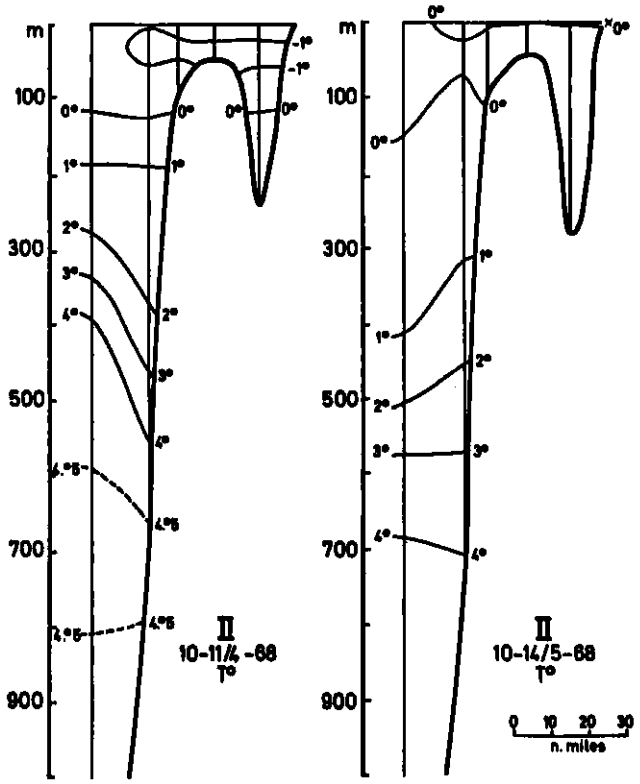

Fig. 4. Temperature sections over Fylla Bank, April and May.

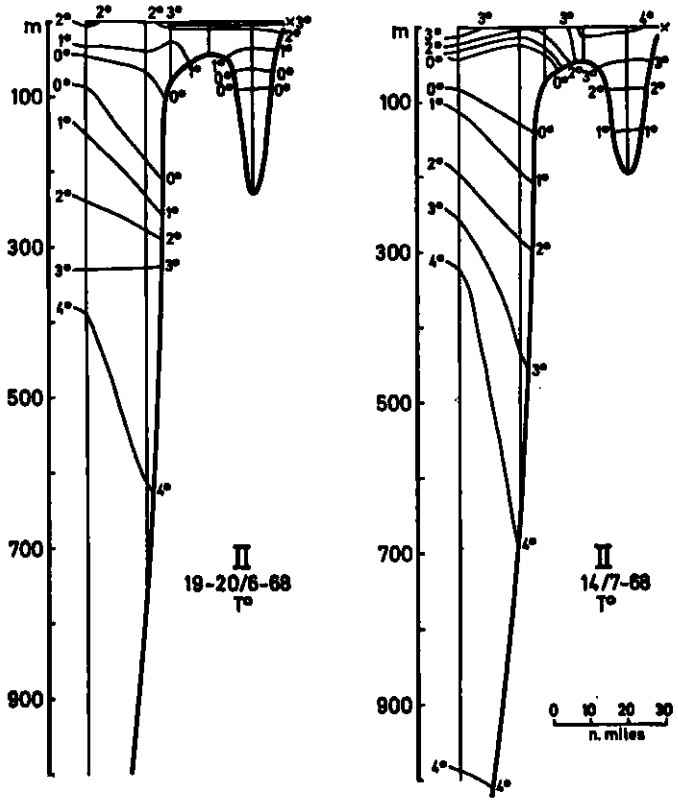

Fig. 5. Temperature sections over Fylla Bank, June and July.

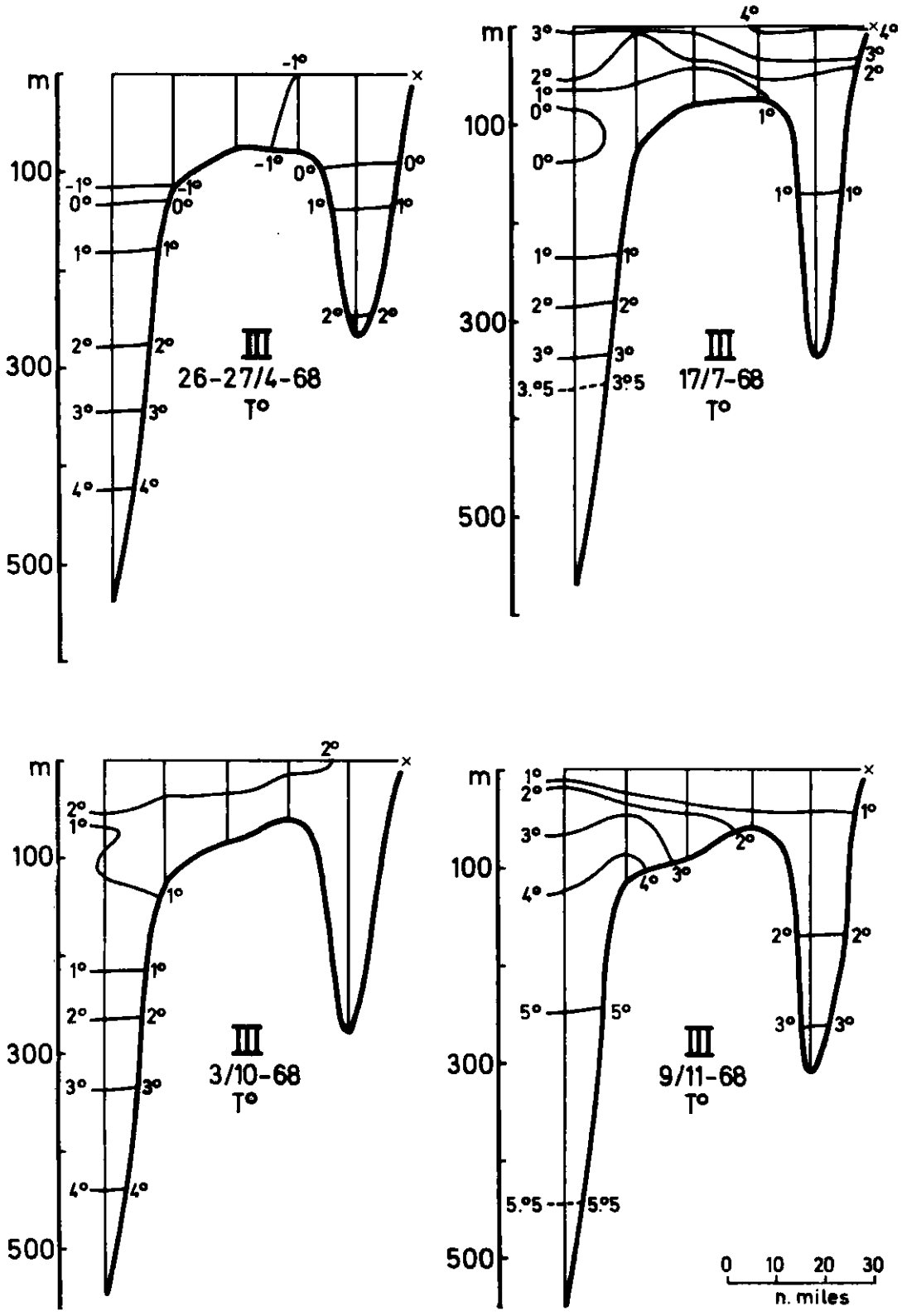

Fig. 8. Temperature sections over Lille Hellefiske Bank, April, July, October, November.

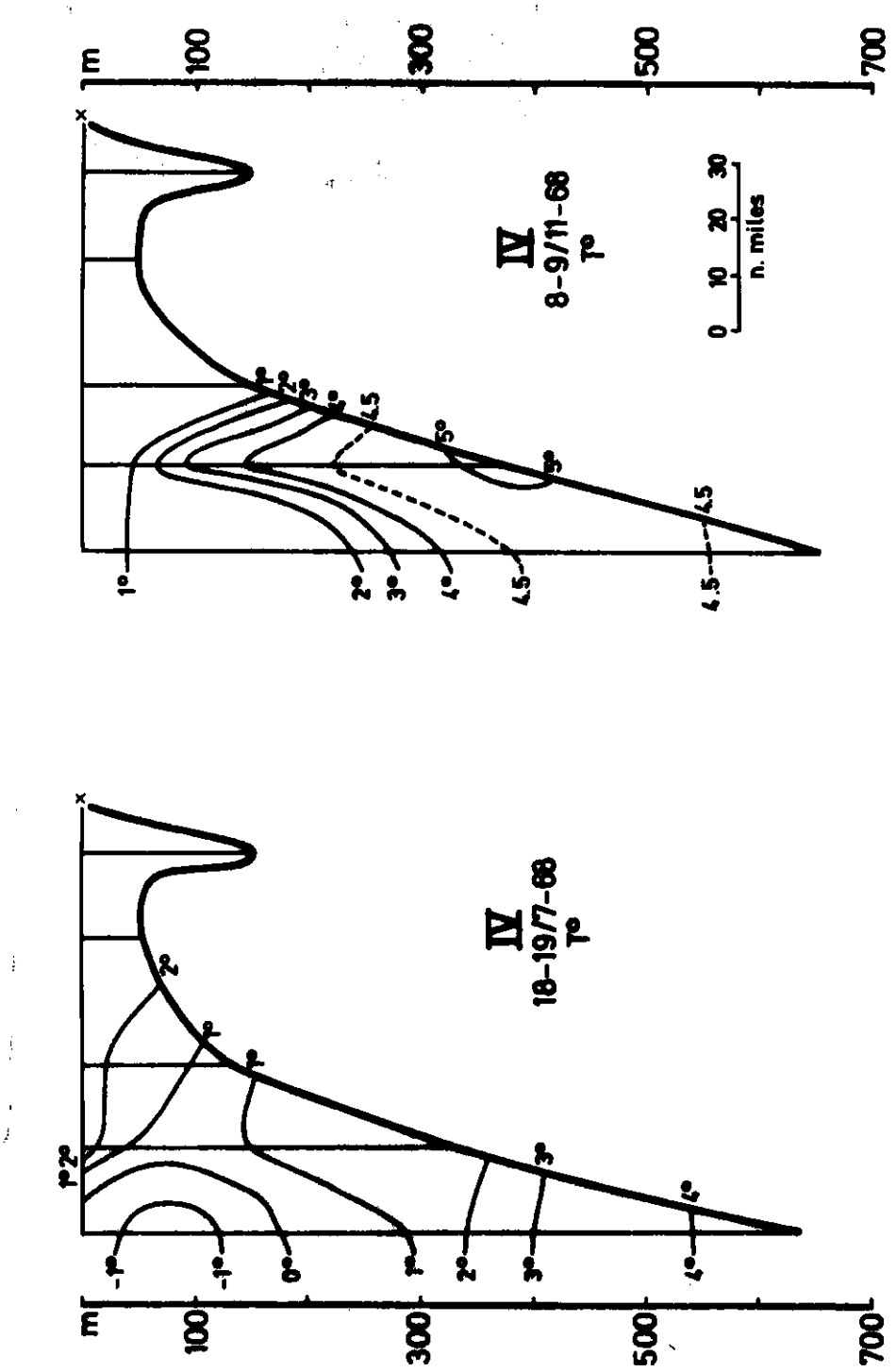

Fig. 9. Temperature sections over Store Hellefiske Bank, July and November.