

Norwegian Hydrographical Investigations in the Barents Sea during
The International Geophysical Year.

by

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The plan.

According to the plan our vessel should on two cruises (one in spring and one in autumn) work a program illustrated in Fig. 1. It is mainly 5 sections running northwards from the Finnmark-Murmansk-Coasts. On the spring cruise one should work as much of this program as the ice conditions would permit.

The cruise in spring.

This cruise was carried out by the research vessel "G.O.Sars" in the period March 31. to April 22. The station net is given in Fig. 2. The pack ice border is indicated.

The cruise in autumn.

In the period September 20. to October 27. the research vessel "G.O.Sars" worked the program shown in Fig. 3.

Because of a Soviet-Russian naval manoeuvre, the Eastern Barents Sea was at that time reported as dangerous area, and we were therefore prevented from working a part of the planned program.

Material.

On these cruises the following measurements were made:

1. Temperature, salinity, oxygen and phosphate were observed at usual standard depths on all the stations taken, and at the same time the ordinary meteorologic observations were made, viz.: air temperature, wind direction and force, cloudiness and sea roughness.

2. The surface temperature was recorded along the track of the ship by means of a thermograph.

3. On the second cruise (autumn) some Bathythermograph recordings were made at those positions which are indicated on the figure 3.

Preliminary results.

The material has as yet been far from fully analysed, but some main feature may be seen from a series of horizontal and vertical section charts which shall be presented in the following:

A. The Horizontal Charts illustrated in Fig. 4-7, show the surface temperature and salinity in spring and temperature at 150 metres, spring and autumn.

The influence of the north-south going Central Ridge at about 35°E is clearly seen from the charts, especially from those showing the temperature conditions. The temperature is changing quickly east-west above this ridge, only in about 71°N a tongue of warmer water penetrates eastwards across the Central Ridge, indicating inflow from west.

B. Vertical sections. Conditions west and east of the Central Ridge are illustrated by means of two sections worked in spring, one from each side of the ridge.

The North Cape section is taken to show the vertical distribution of temperature (Fig. 8), salinity (Fig. 9), oxygen (Fig. 10) and phosphate (Fig. 11) in the western basin.

The southern part of the section is generally warmer, less saline and have also slightly lower percentage of oxygen and content of phosphate, compared to the northern part.

Conditions east of the Central Ridge are represented by the section running north from the Sem Islands. The mentioned inflow of warmer water across the ridge in about 71°N is visible from the temperature section chart (Fig. 12). The northern part of this section is mostly occupied by water with temperature below zero. Near bottom north of 73°N the temperature is even below -1,50 with -1,90 as observed minimum. The salinity of this cold water (Fig. 13) is about 35,03 ‰. Water of nearly the same temperature and salinity (-1,77 and 35,01 ‰) was found at the surface on the Central Bank (st. 114, in position 75°N and 35°E).

The oxygen percentage of the water in this section is always above 95 % (Fig. 14) and high values of phosphate were found especially in the northern part (Fig. 15).

The vertical distribution of temperature, salinity, oxygen and phosphate in the North Cape Section based on observation made in the autumn, are shown in Fig. 16-19.

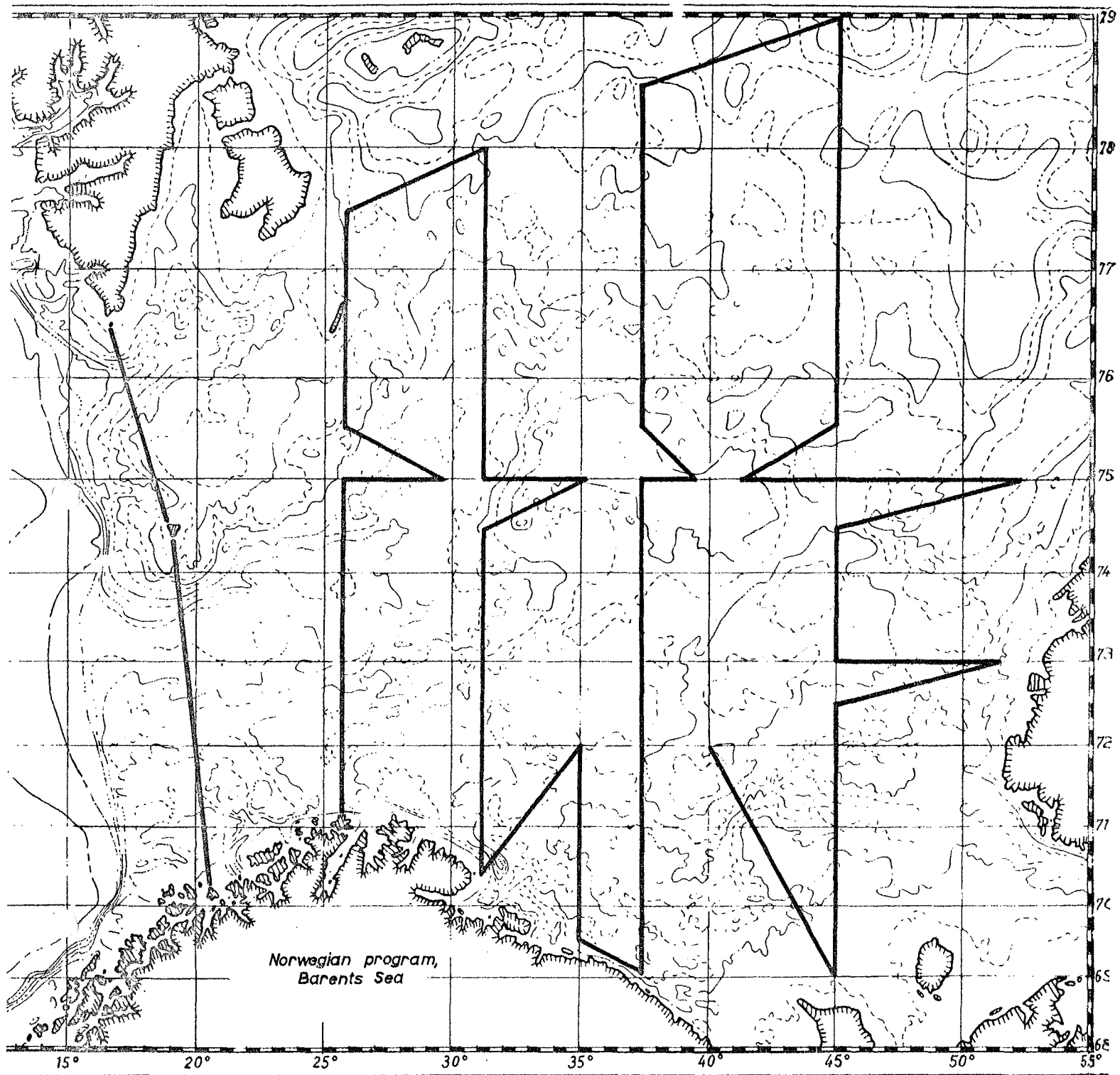
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Generally the temperature in the section has increased since spring. Only close to bottom north of 73°N a temperature decrease has taken place.

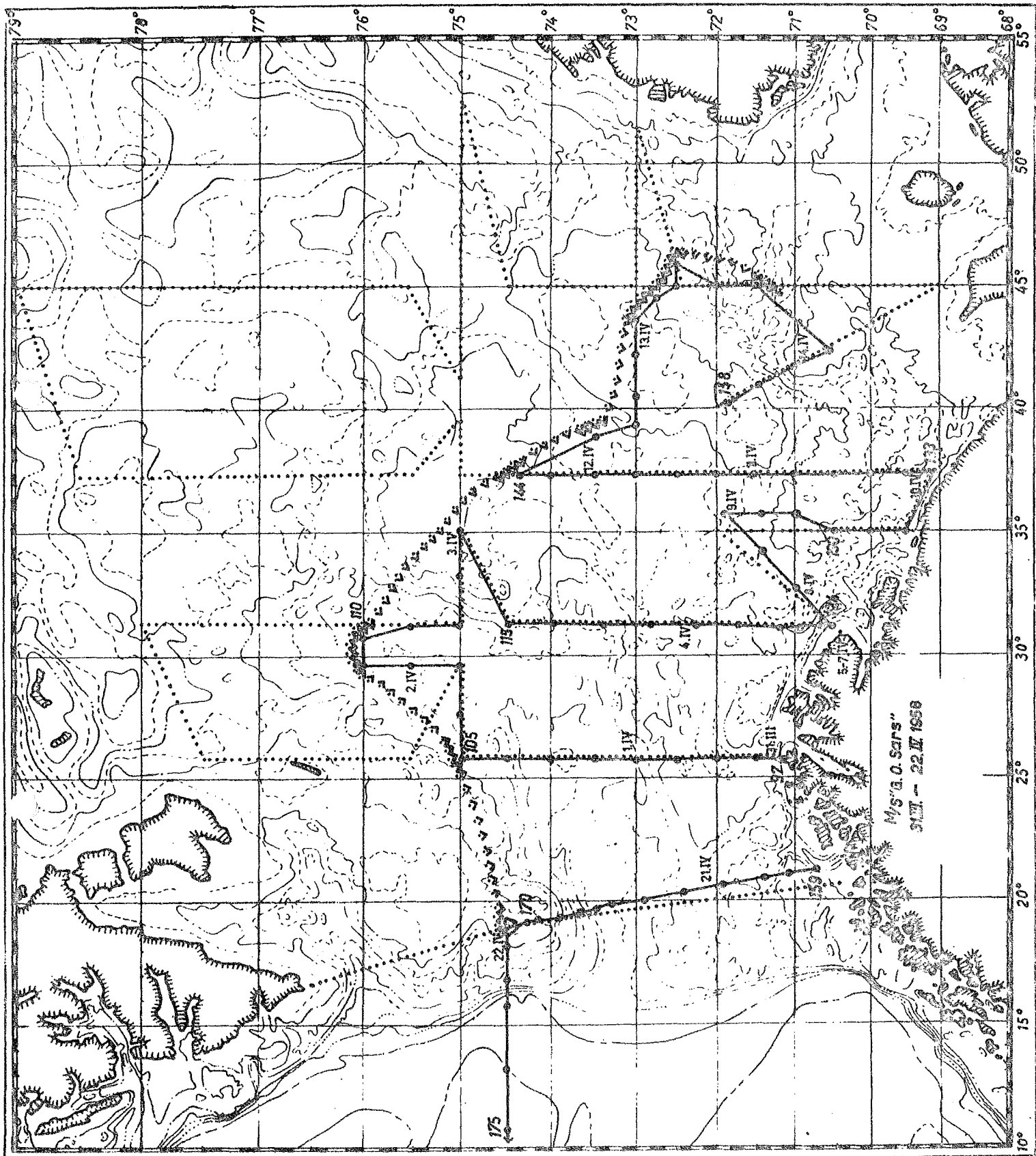
The influence of ice melting in the northern part of the section is demonstrated in the salinity section.

The oxygen observations indicate a slight decrease of oxygen in the deep water since spring.

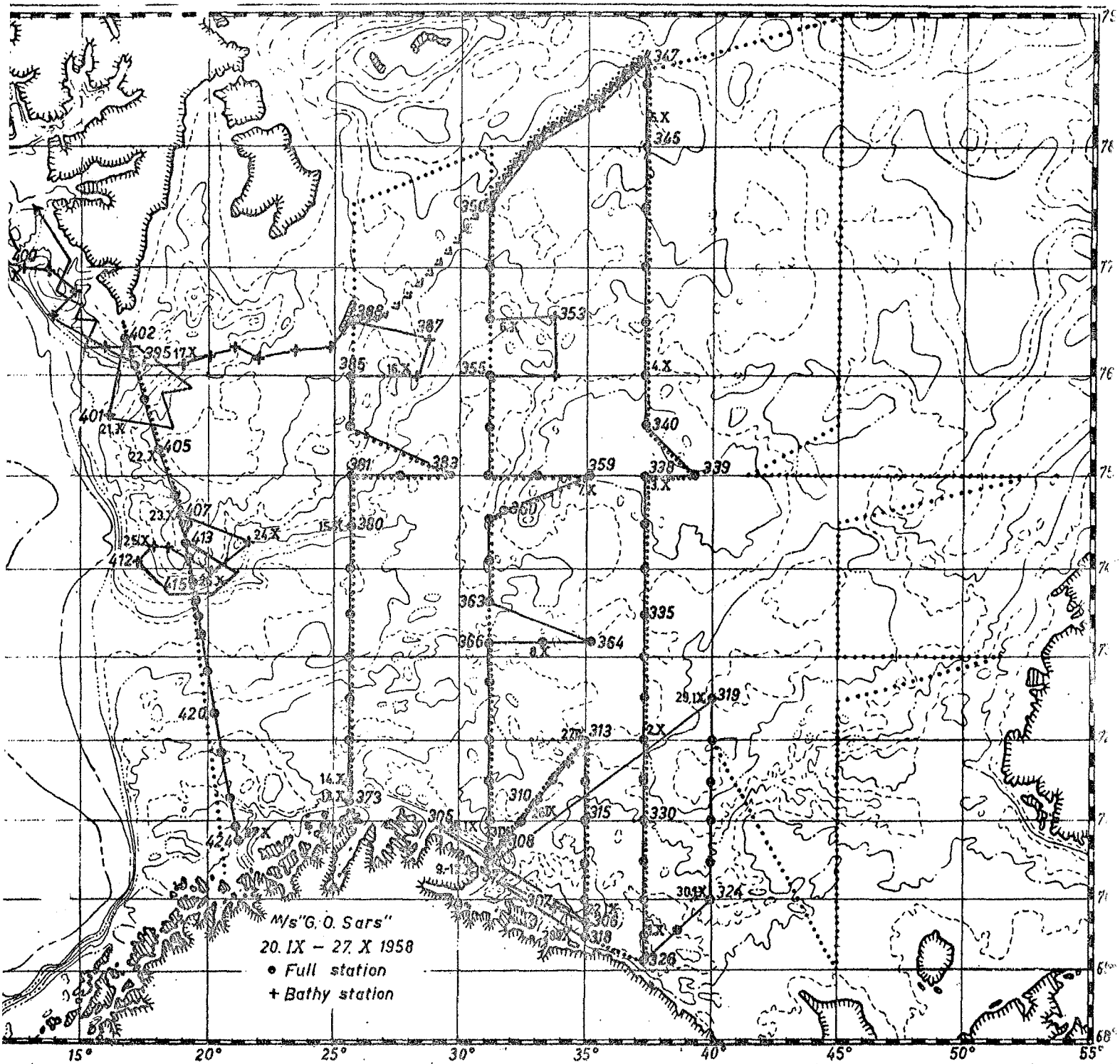
In the surface layer there is a marked decrease in the content of phosphate.



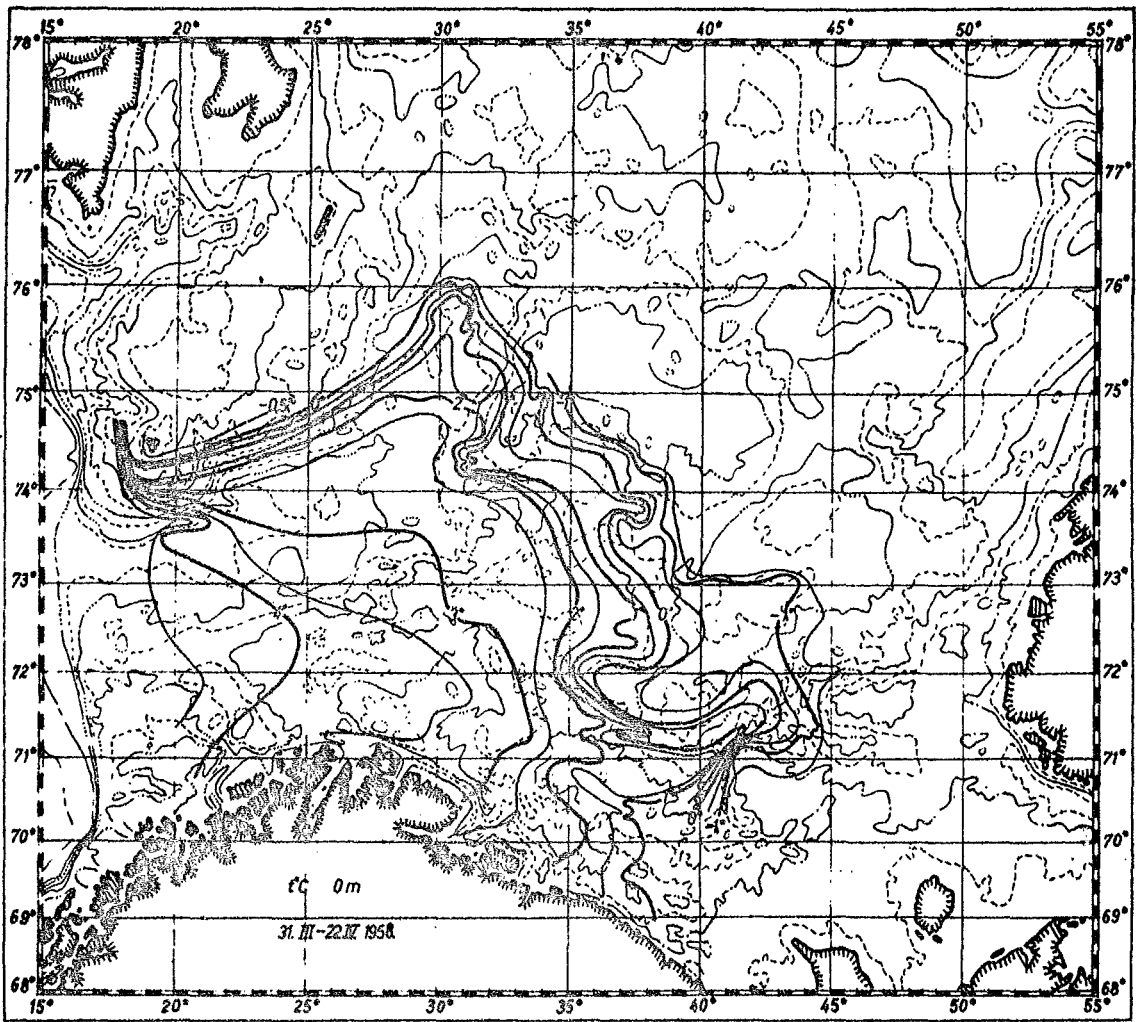
The planned program.



Worked program, spring.

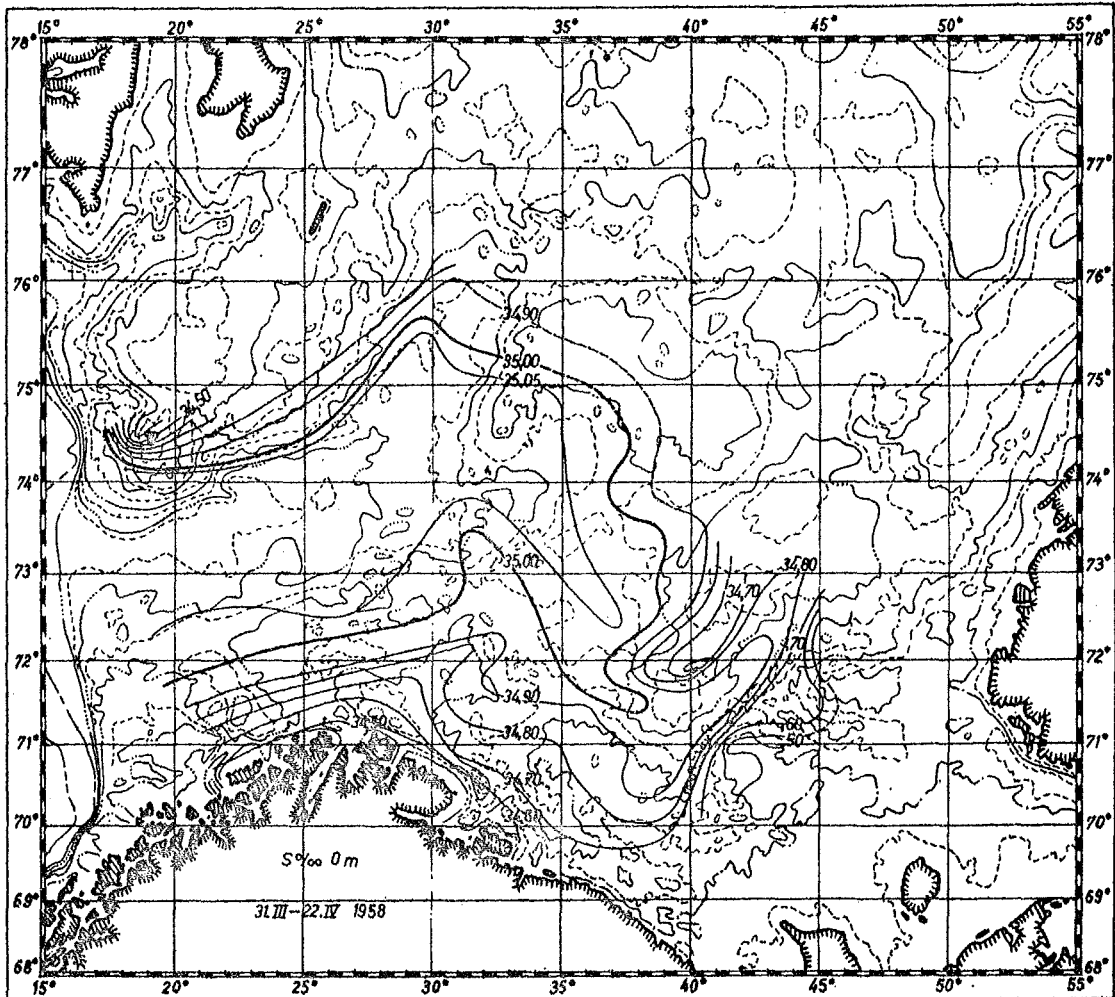


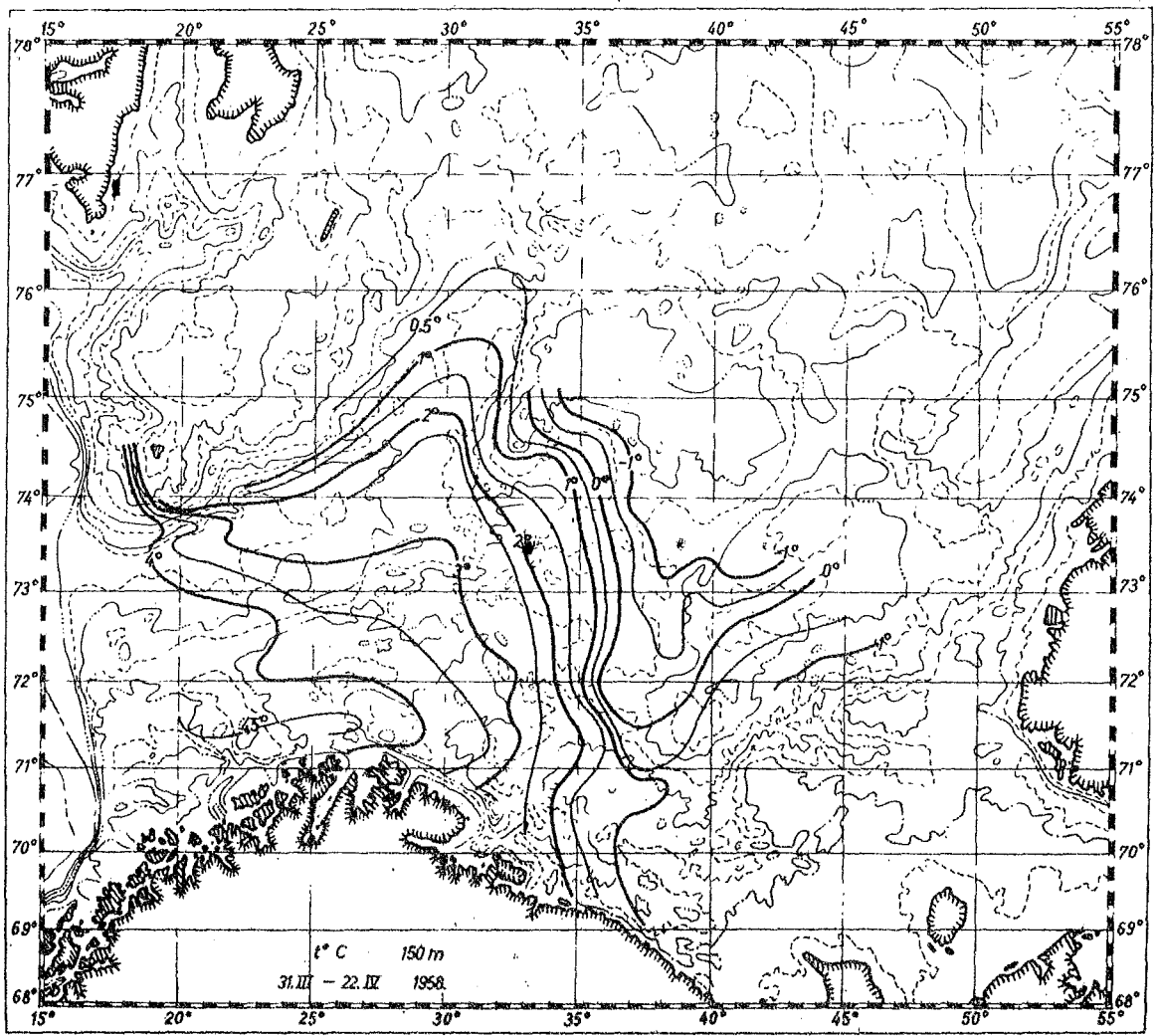
Worked program, autumn.



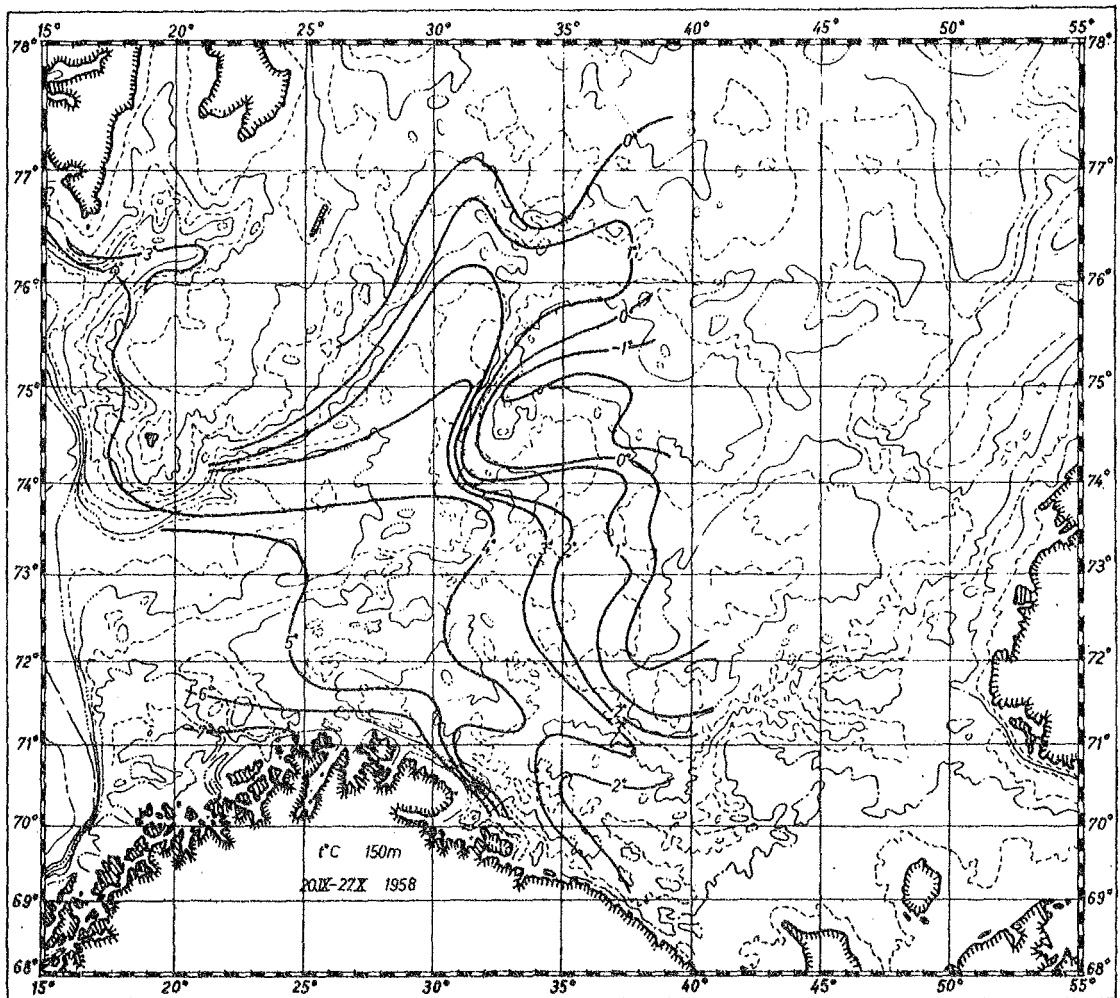
Surface temperature, spring.

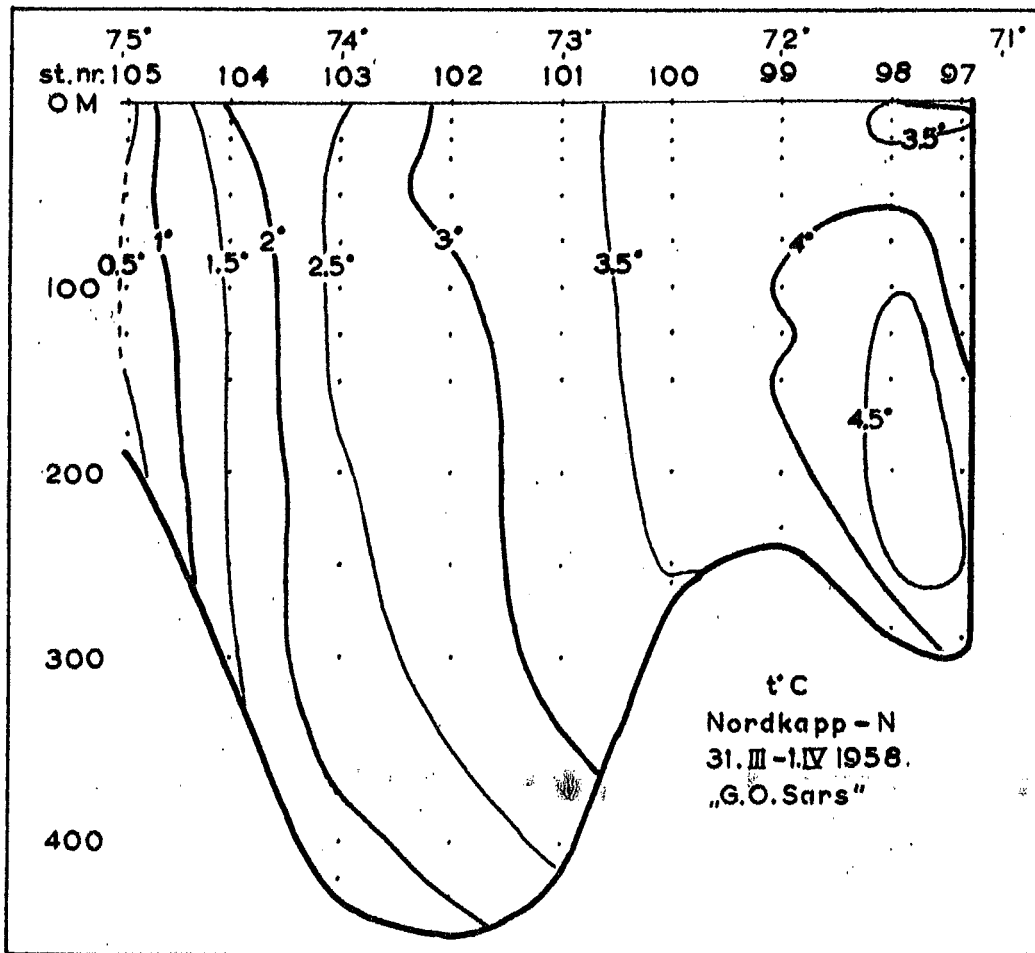
Surface salinity, spring.



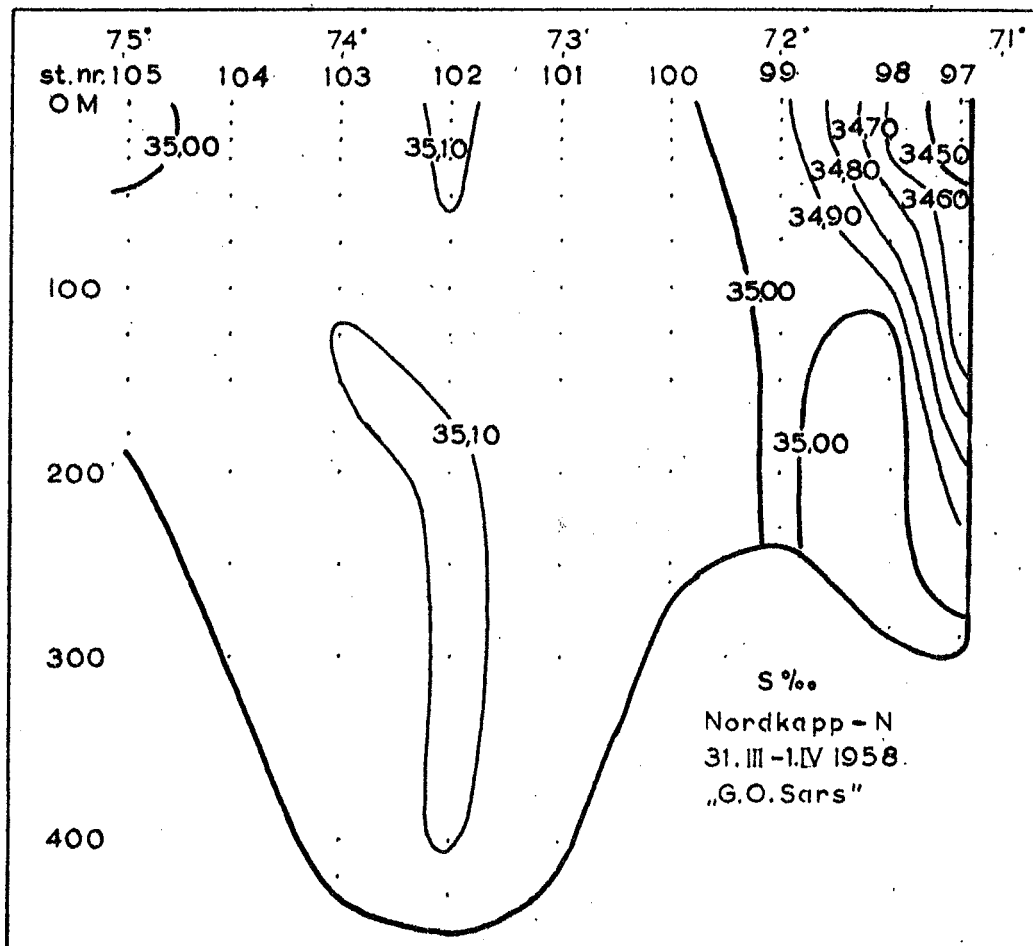


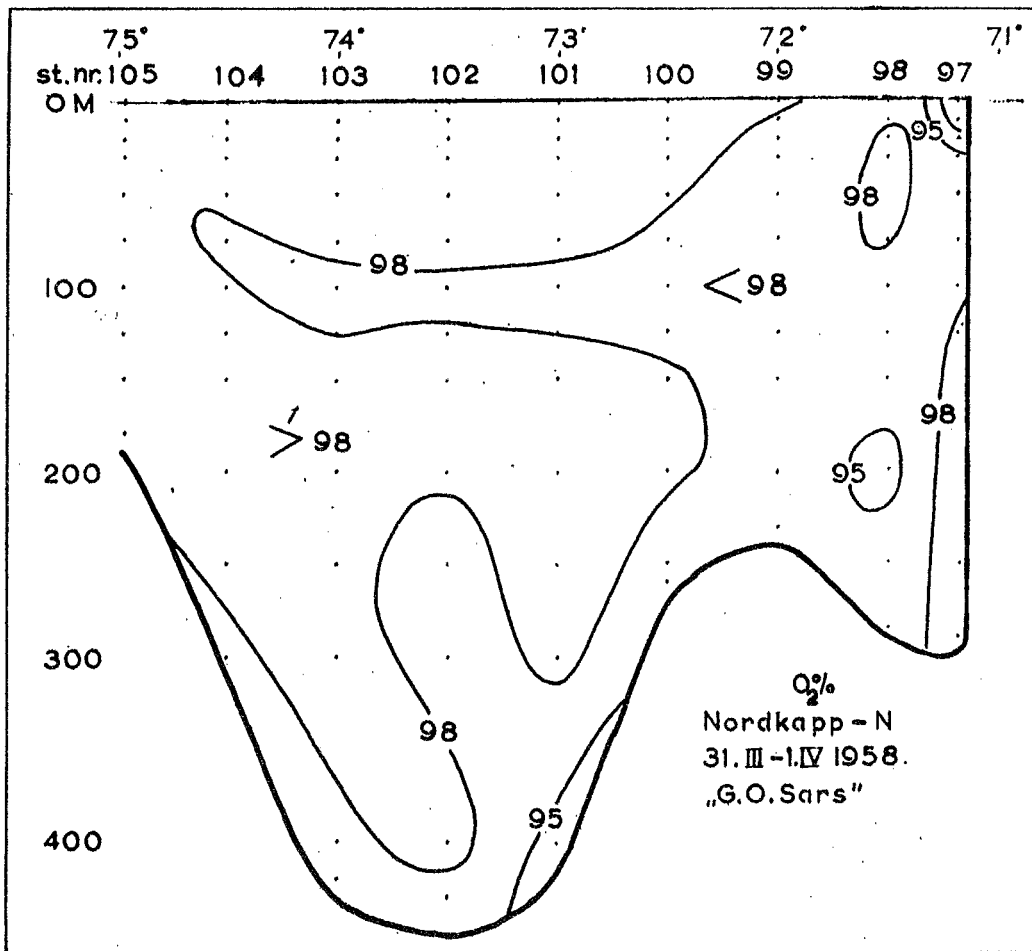
Temperature at 150 m, spring.
 Temperature at 150 m, autumn.



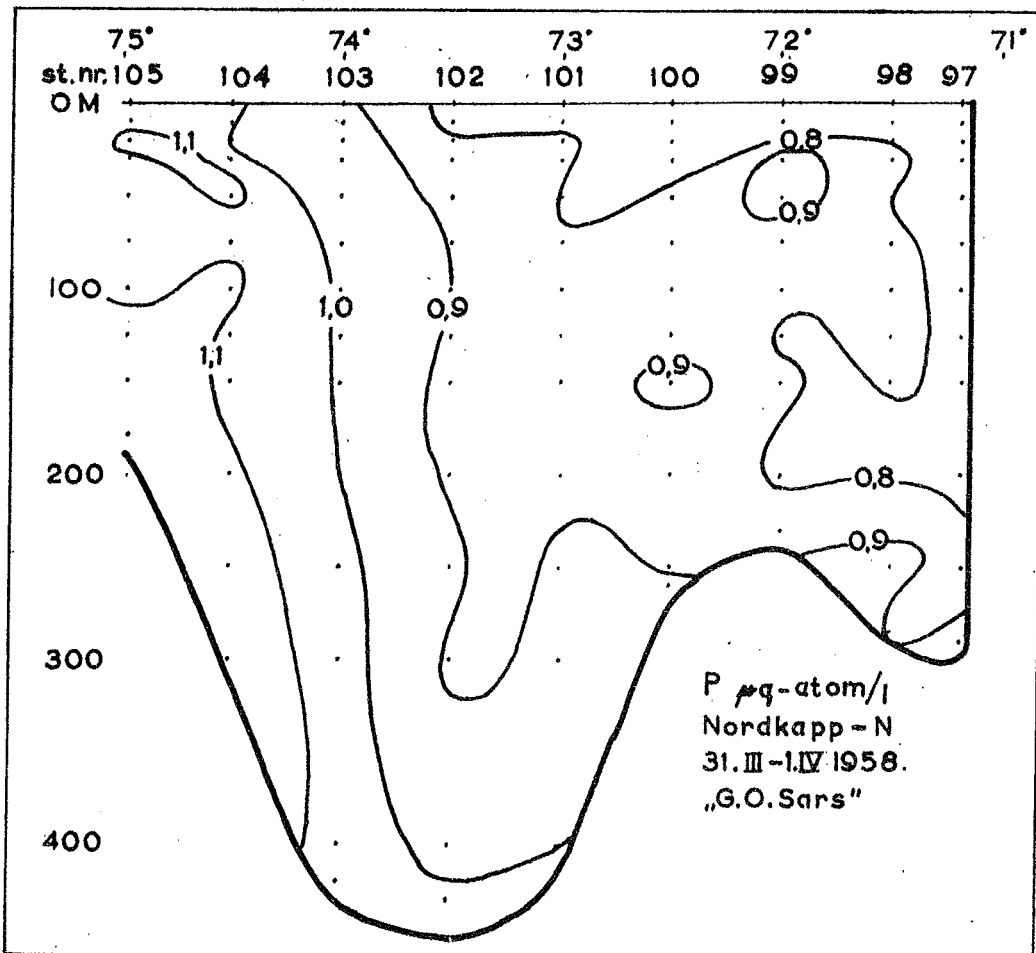


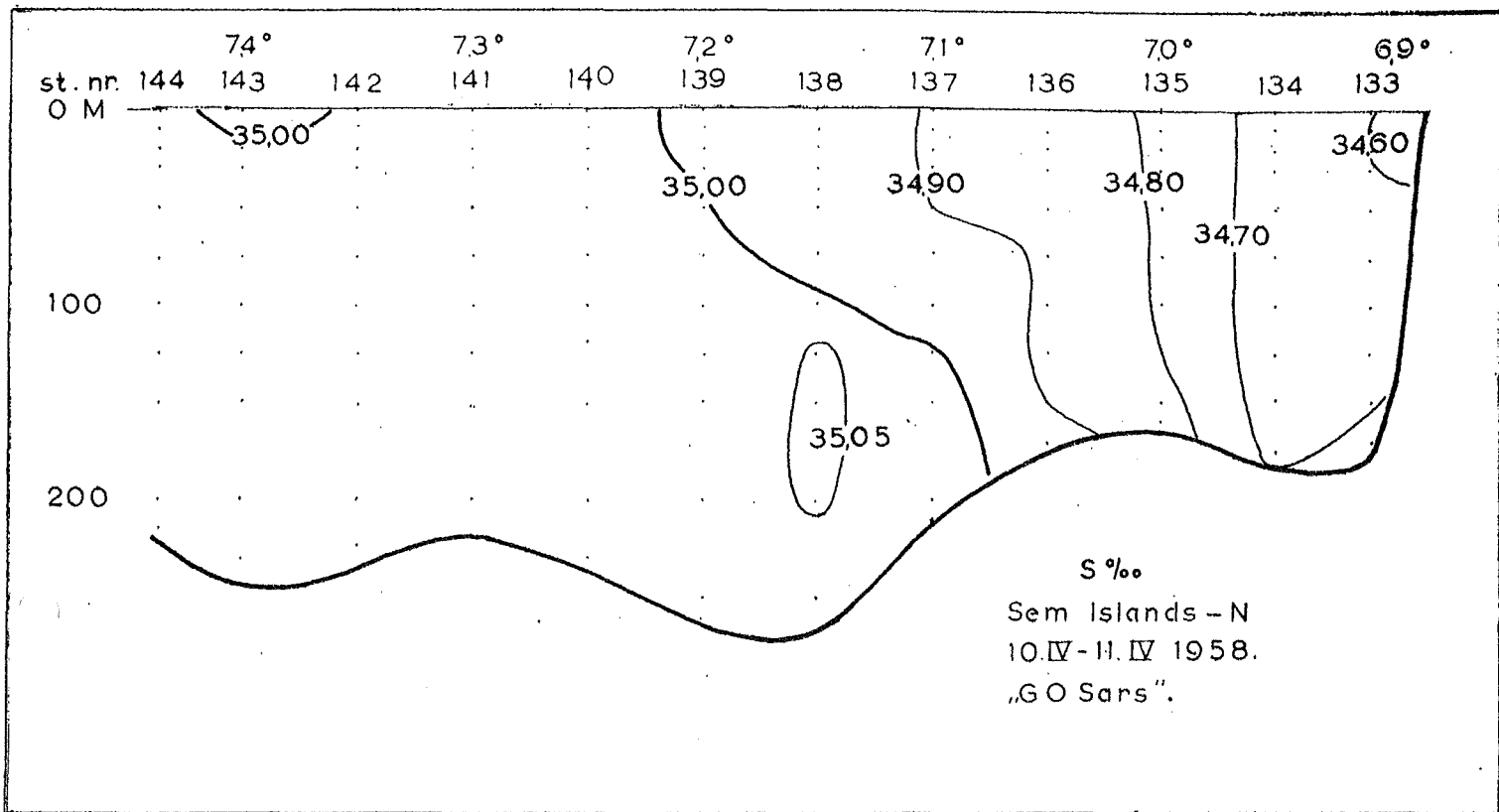
Temperature in section North Cape-N, spring.
Salinity " " " " "



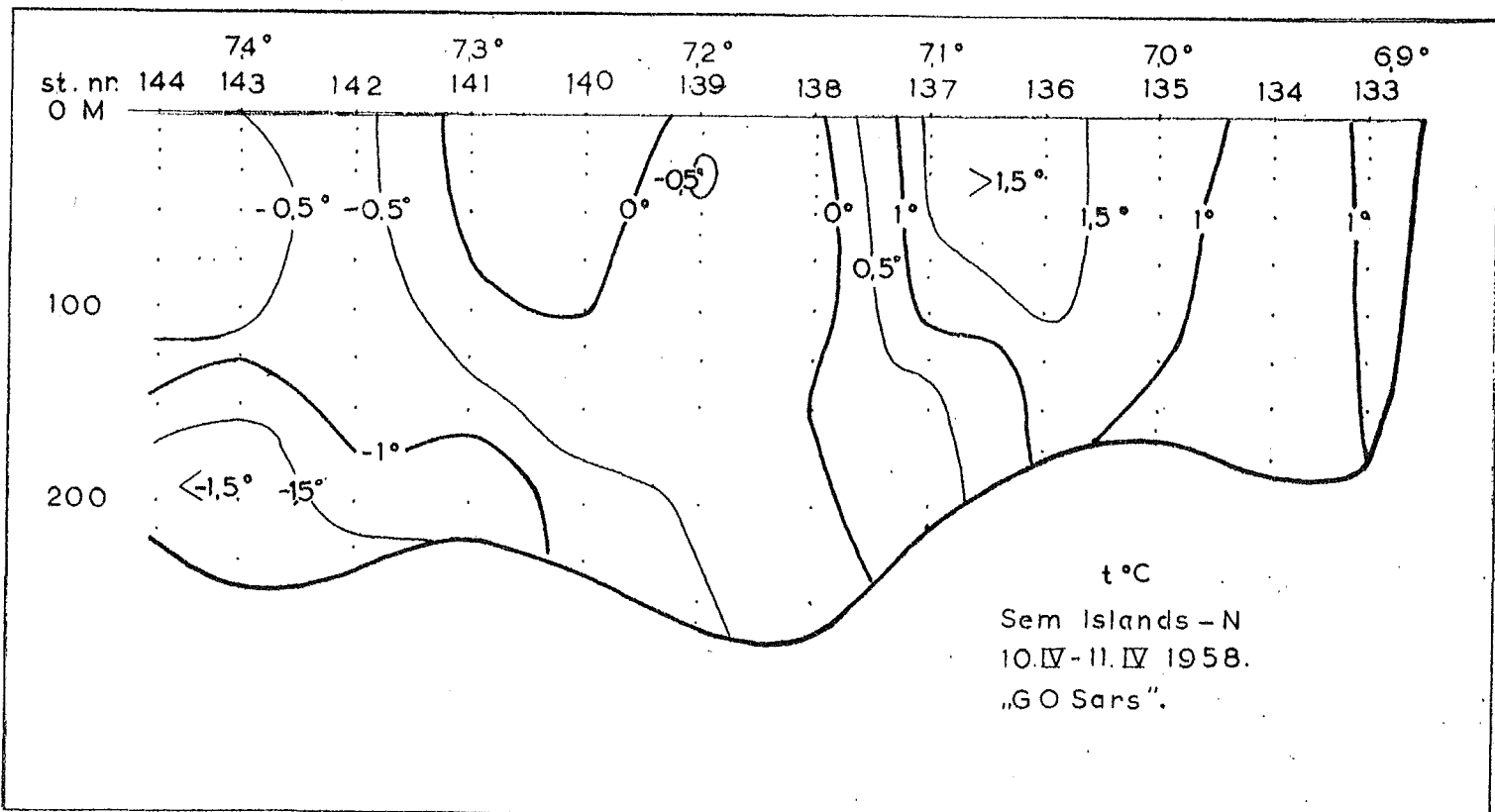


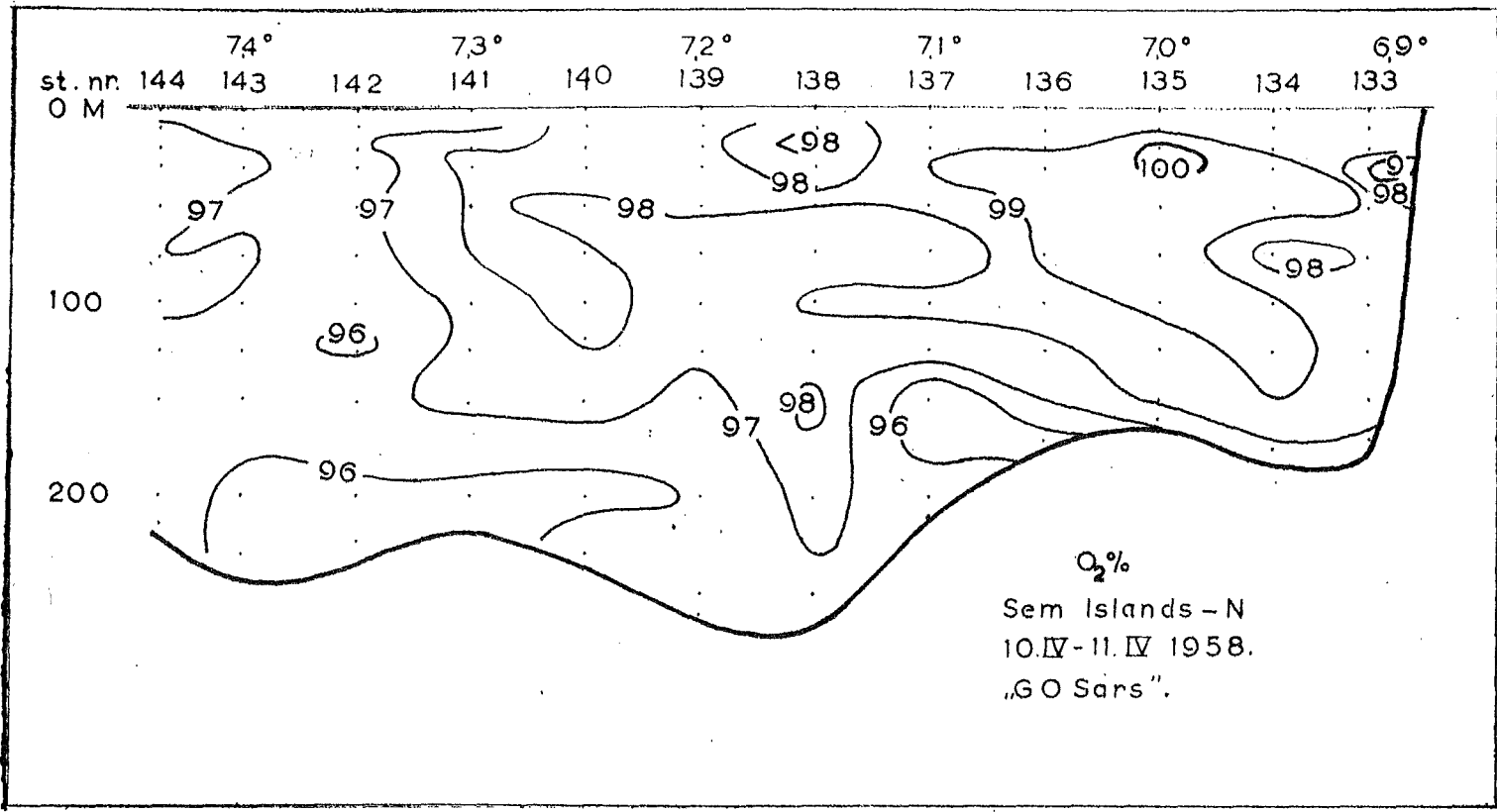
Oxygen in section North Cape-N, spring.
 Phosphate " " " " " "



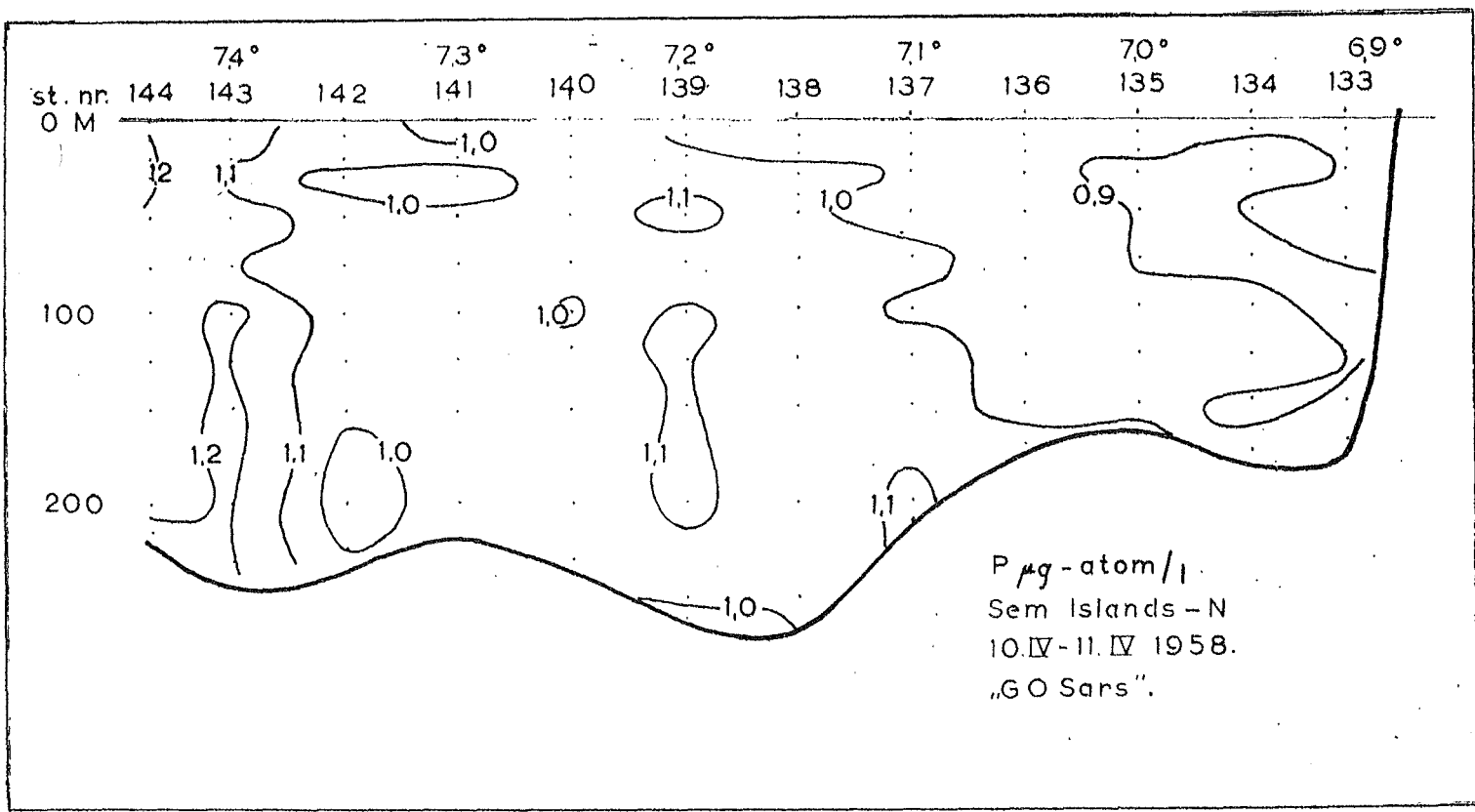


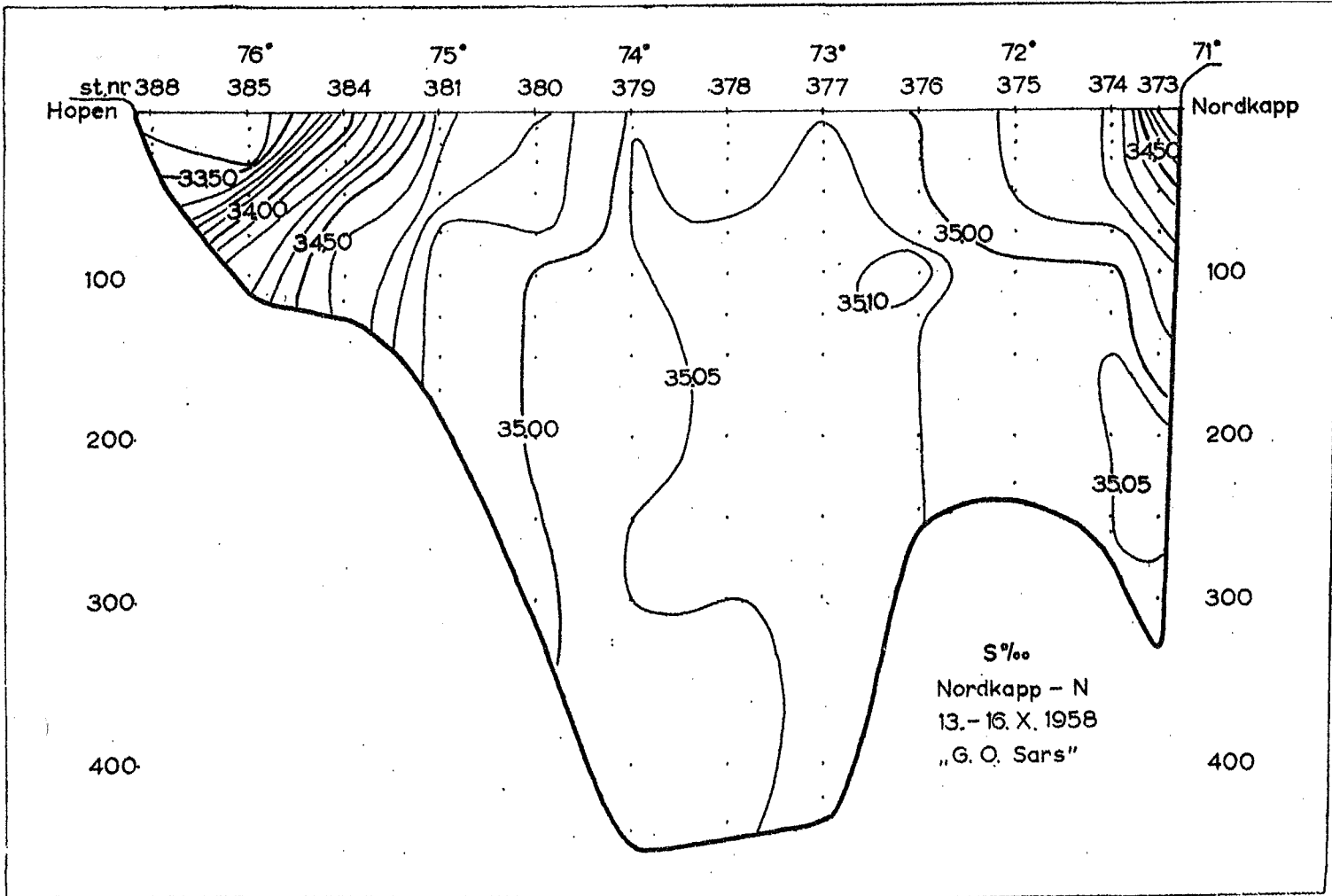
Temperature in section Sem Islands-N, spring.
Salinity " " " " " "



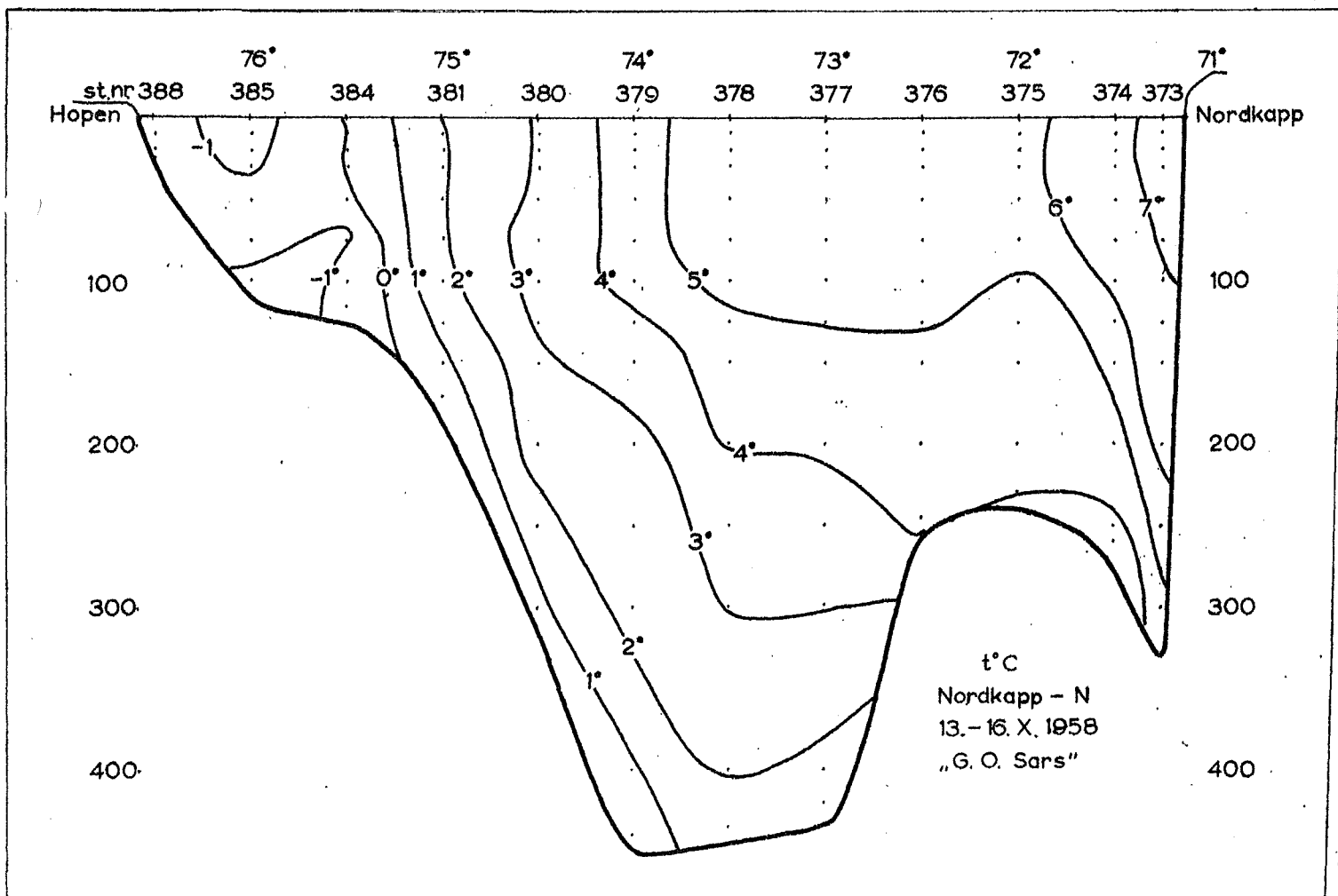


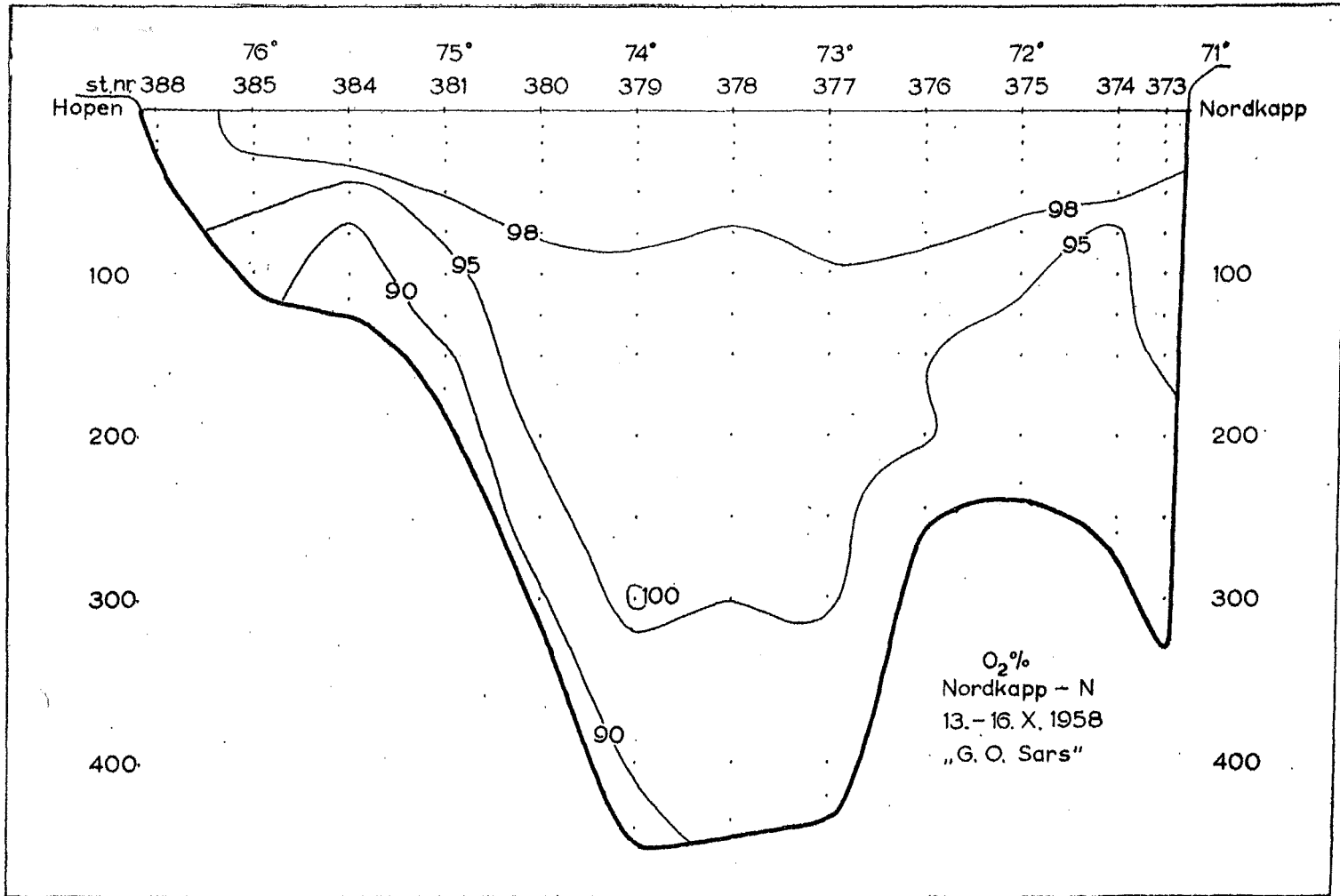
Oxygen in section Sem Islands-N, spring.
 Salinity " " " " " "



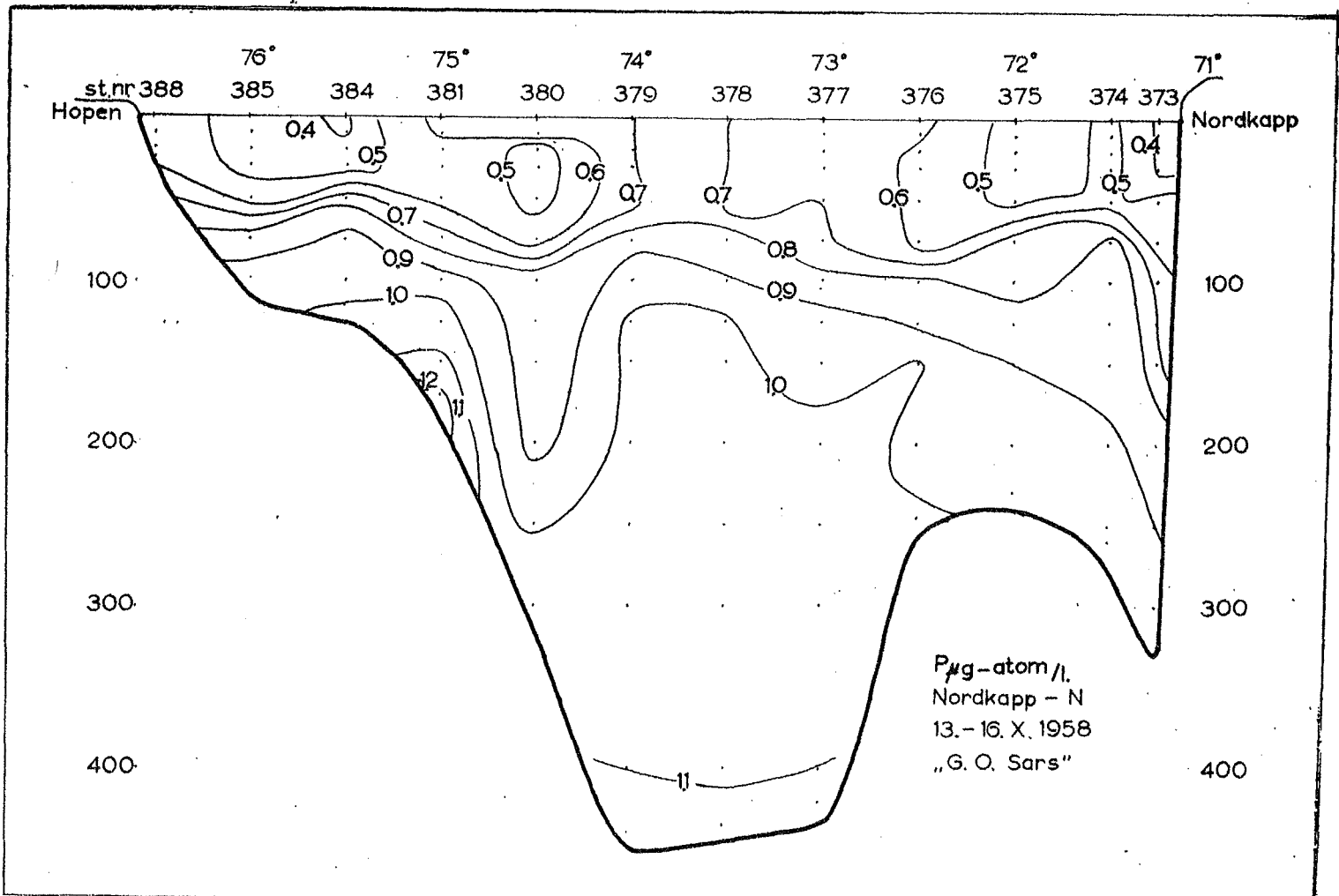


Temperature in section North-Cape-N, autumn.
Salinity " " " " " "





Oxygen in section North-Cape-N, autumn,
Phosphate " " " " " "



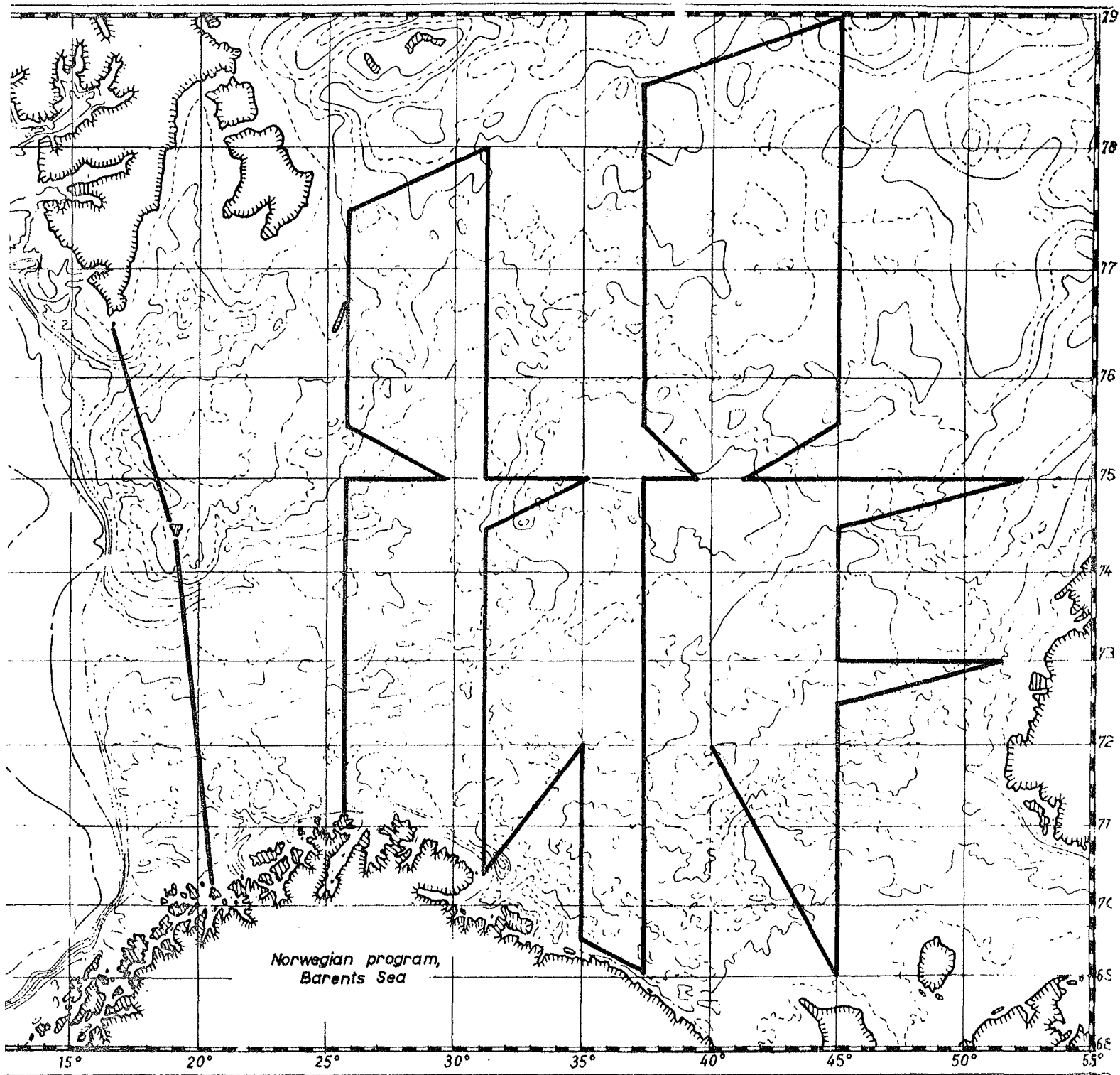


Fig. 1 The planned program.

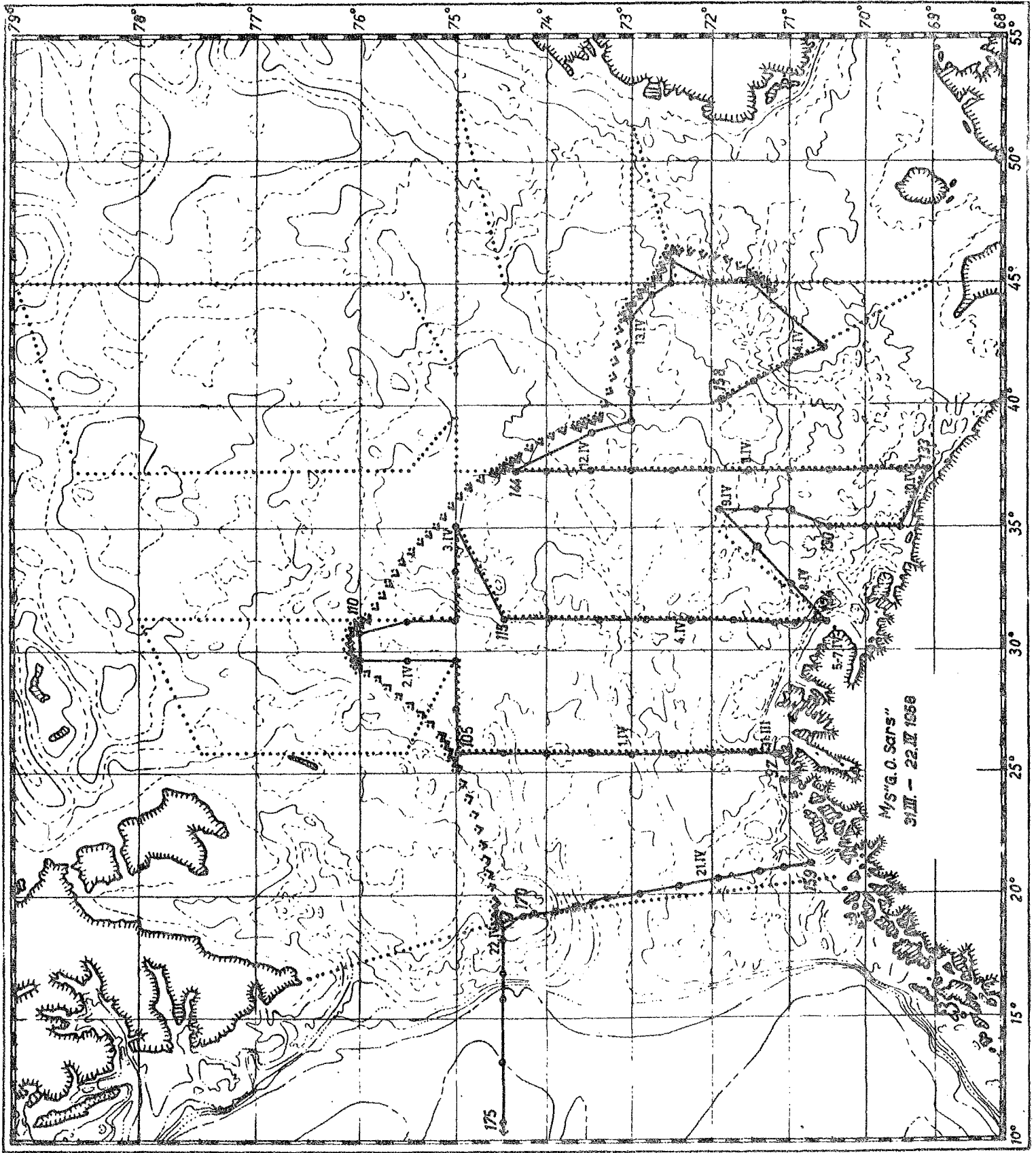


Fig. 2 Worked program, spring.

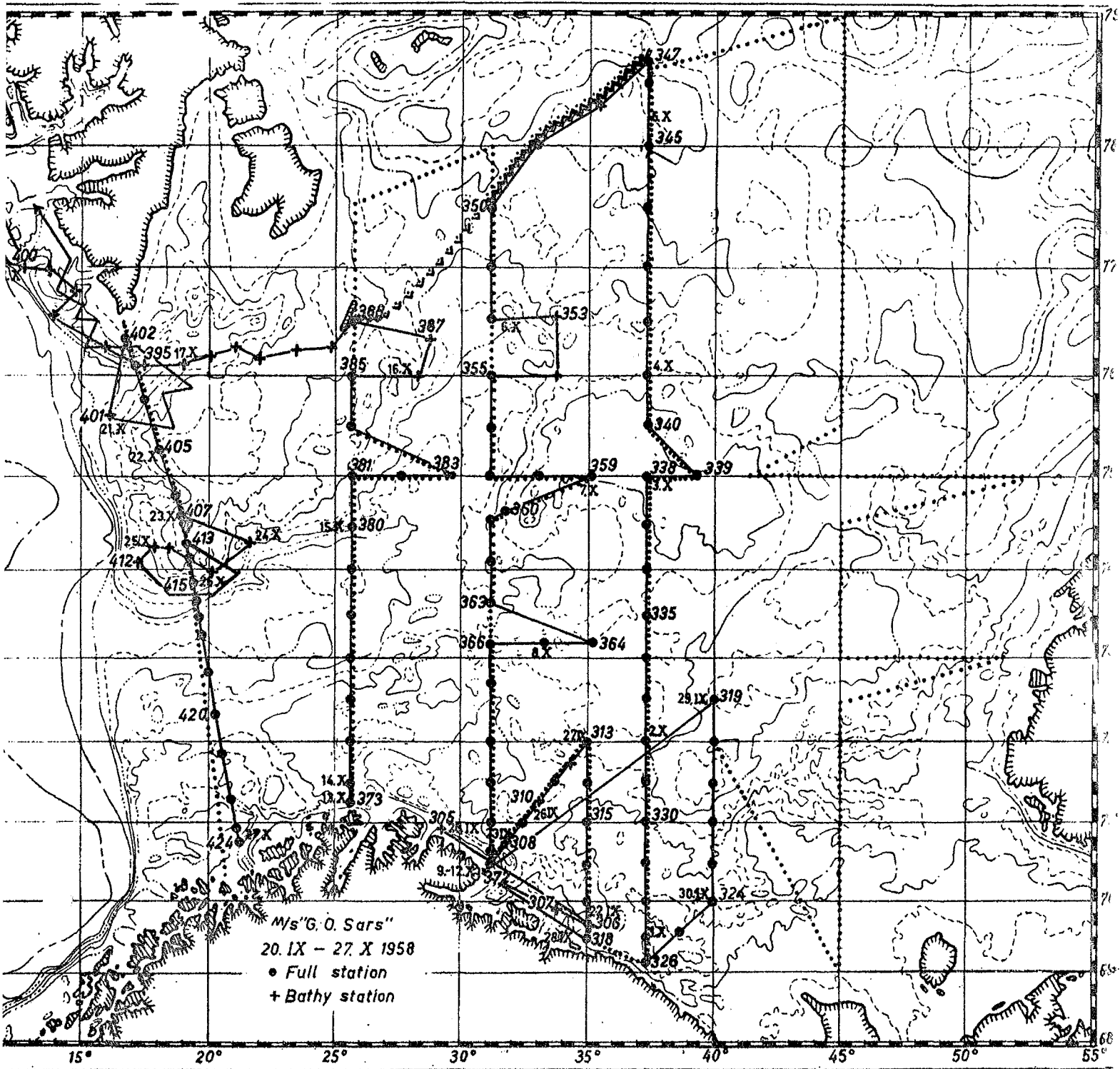


Fig. 3 Worked program, autumn.

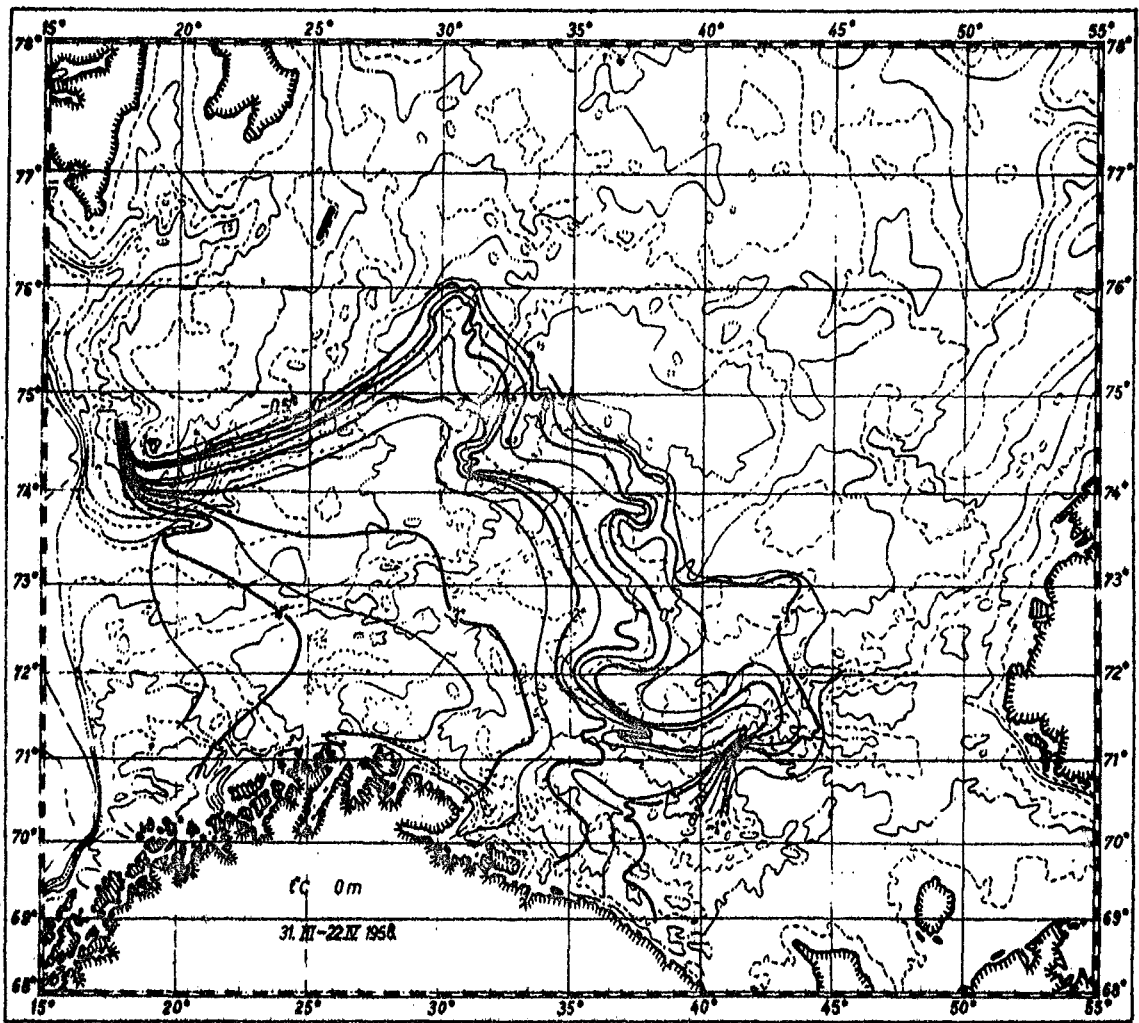
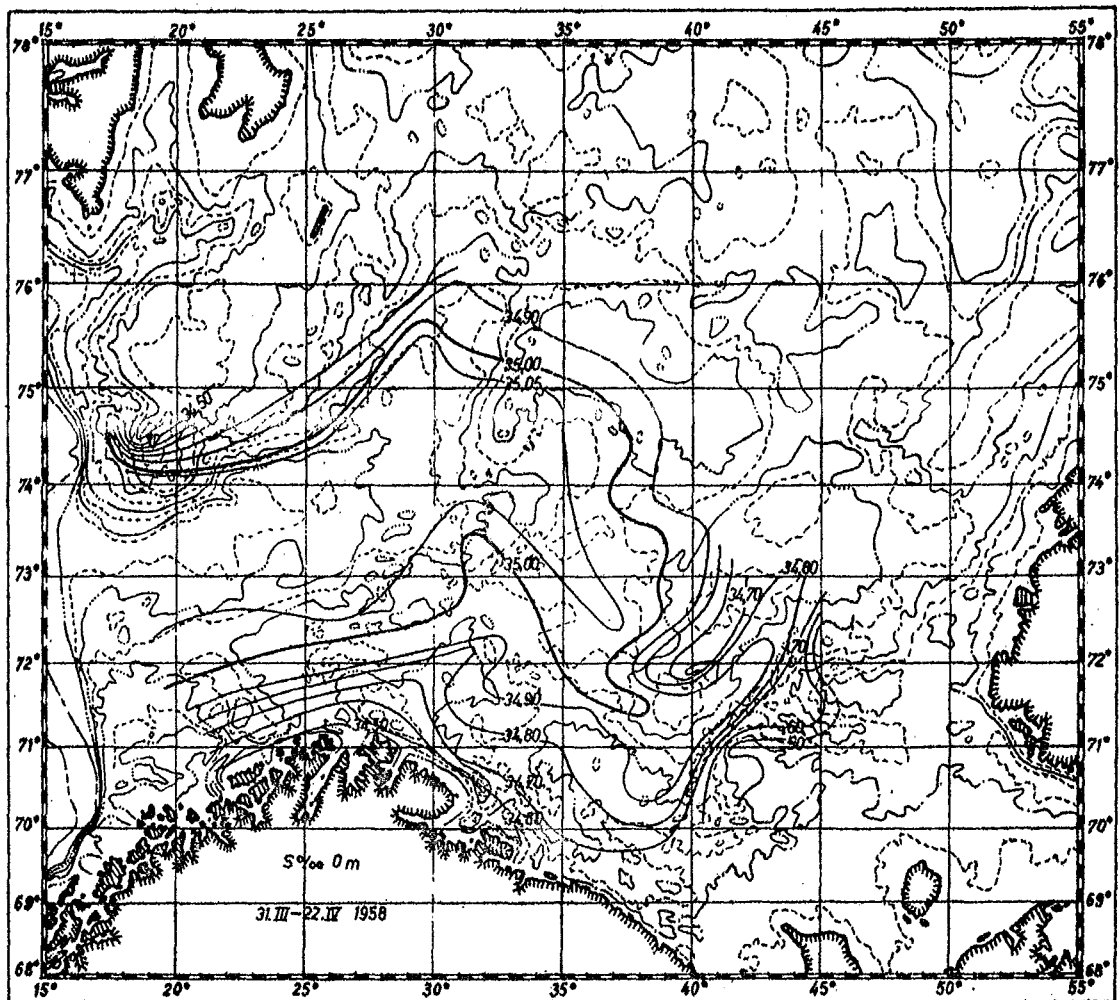


Fig. 4 | Surface temperature, spring.
 Fig. 5 | Surface salinity, spring.



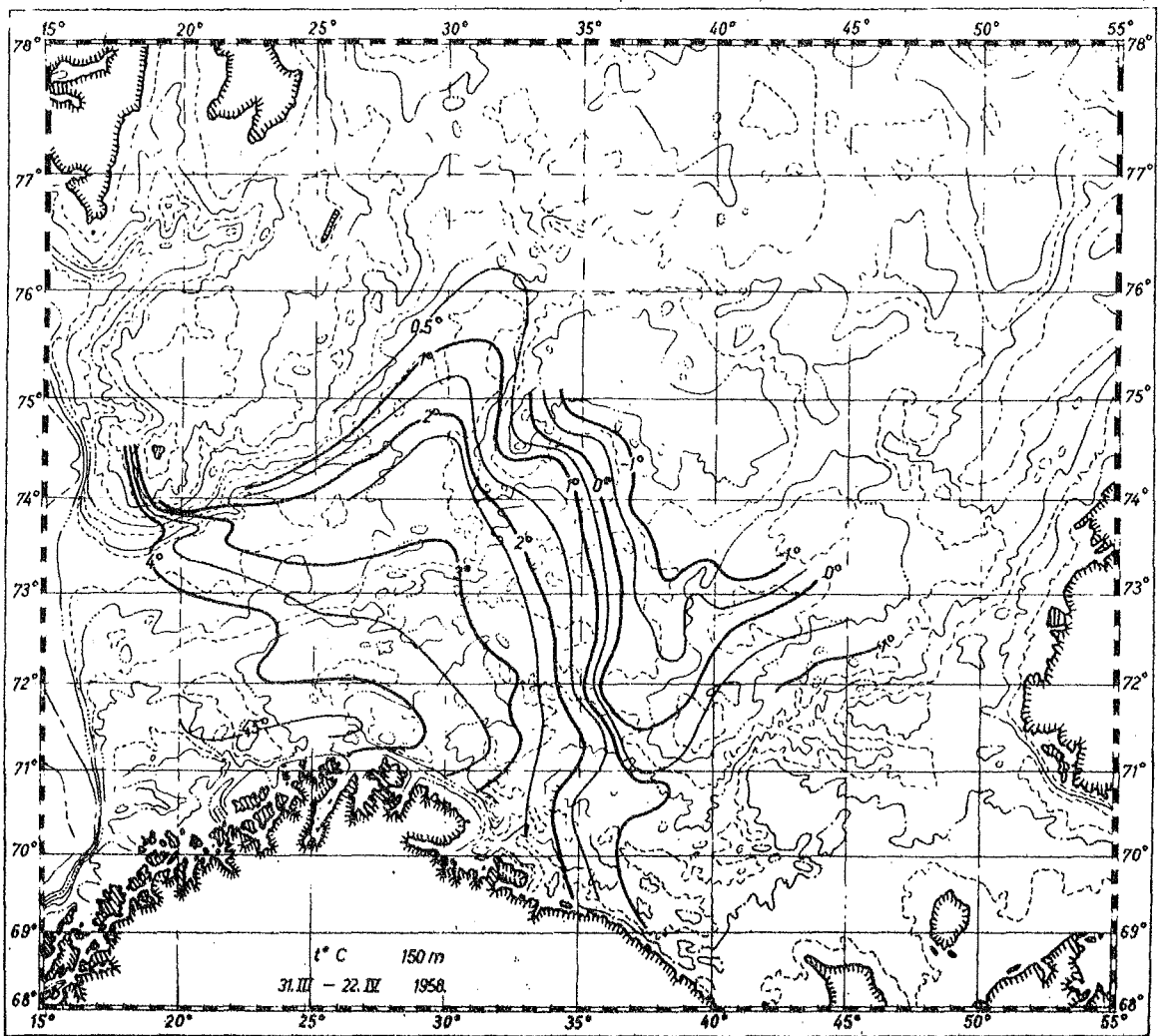
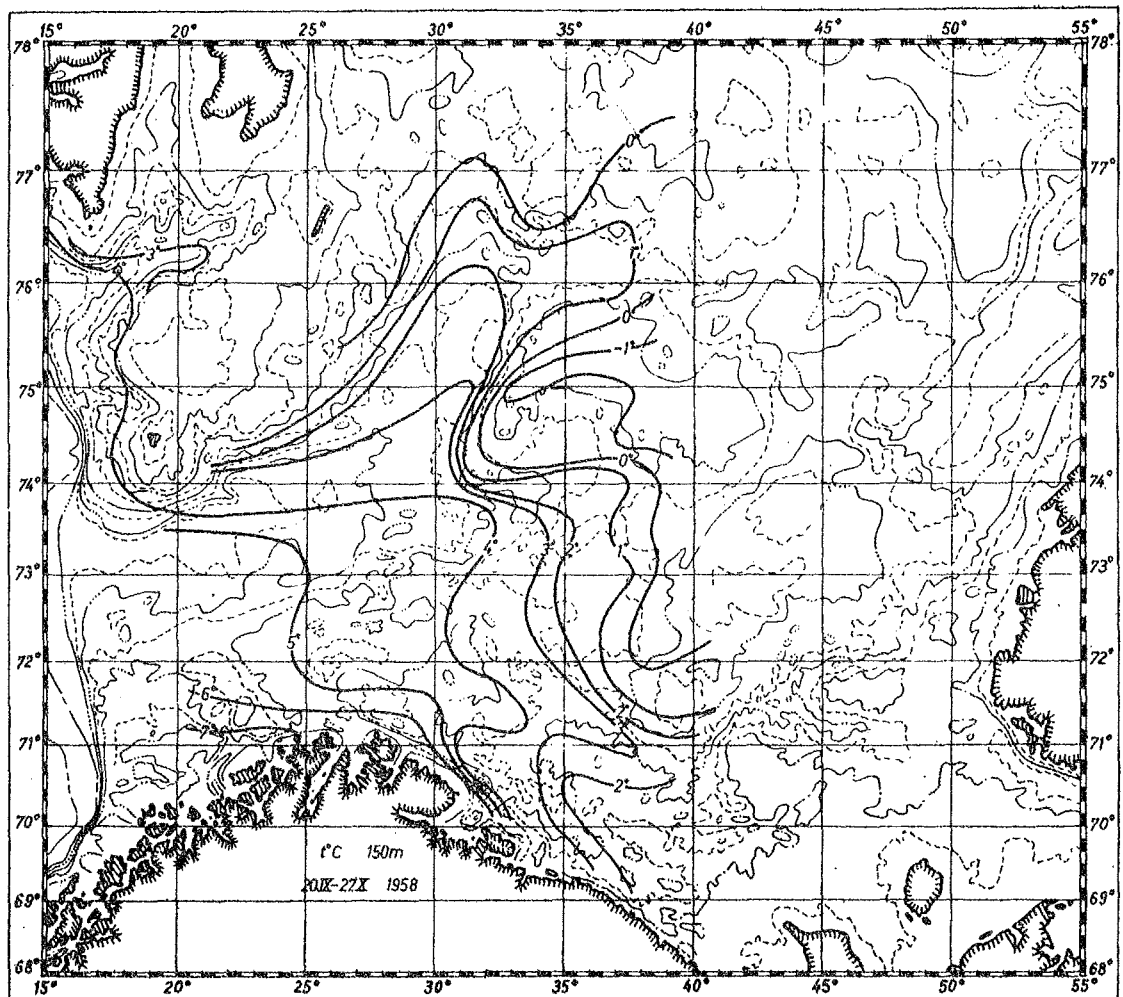


Fig. 6 Temperature at 150 m, spring.
 Fig. 7 Temperature at 150 m, autumn.



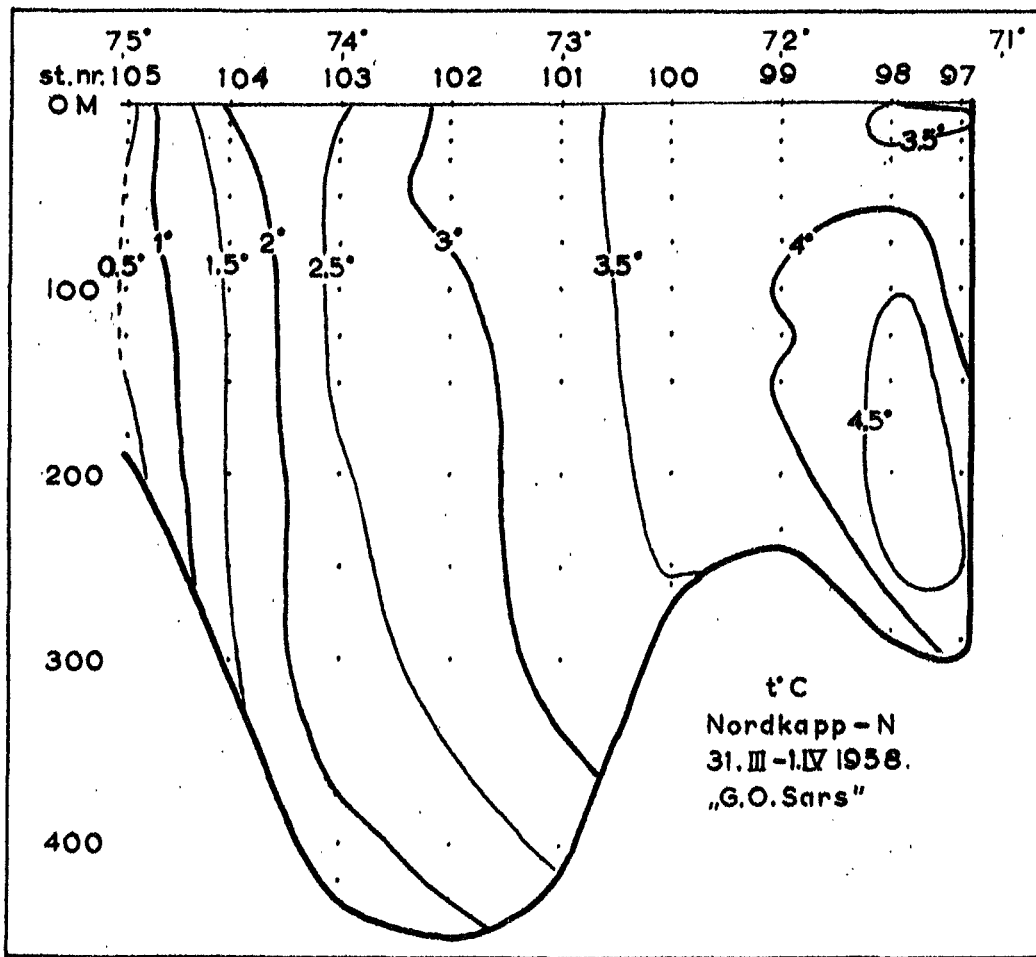
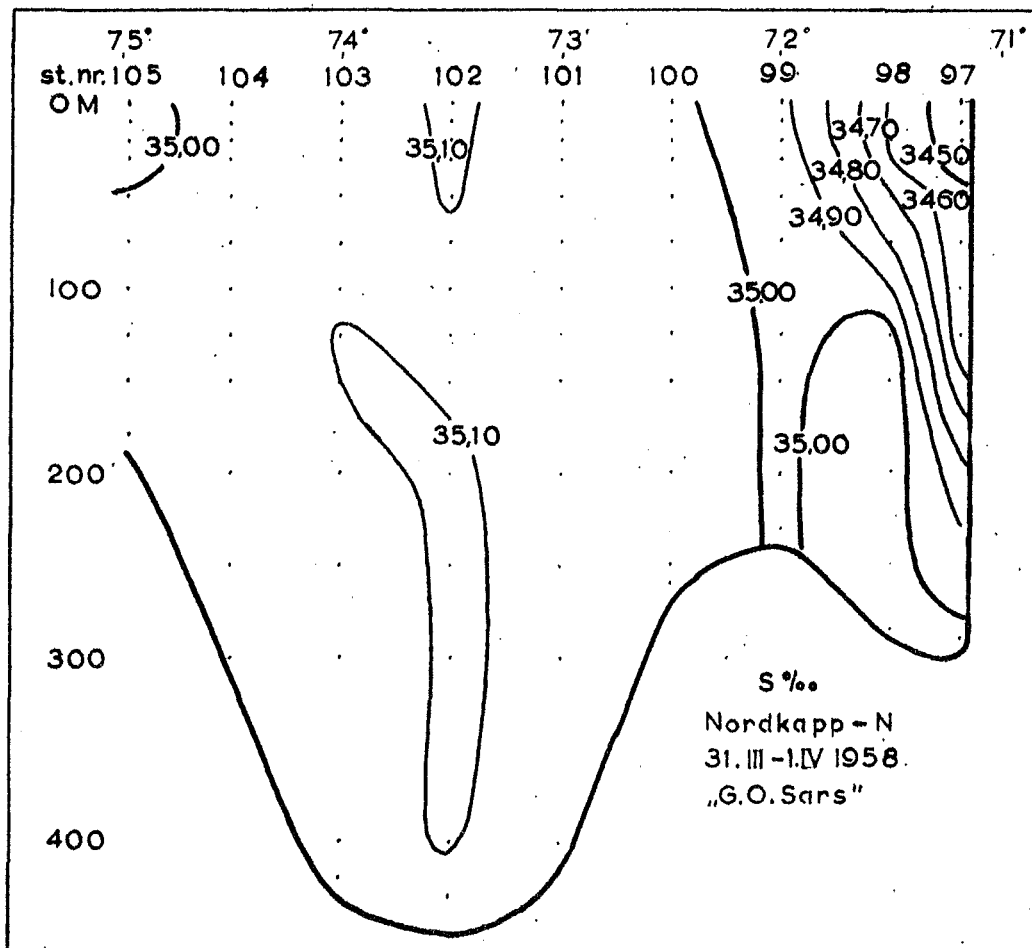


Fig 8 | Temperature in section North Cape-N, spring.
 Fig. 9 | Salinity " " " " "



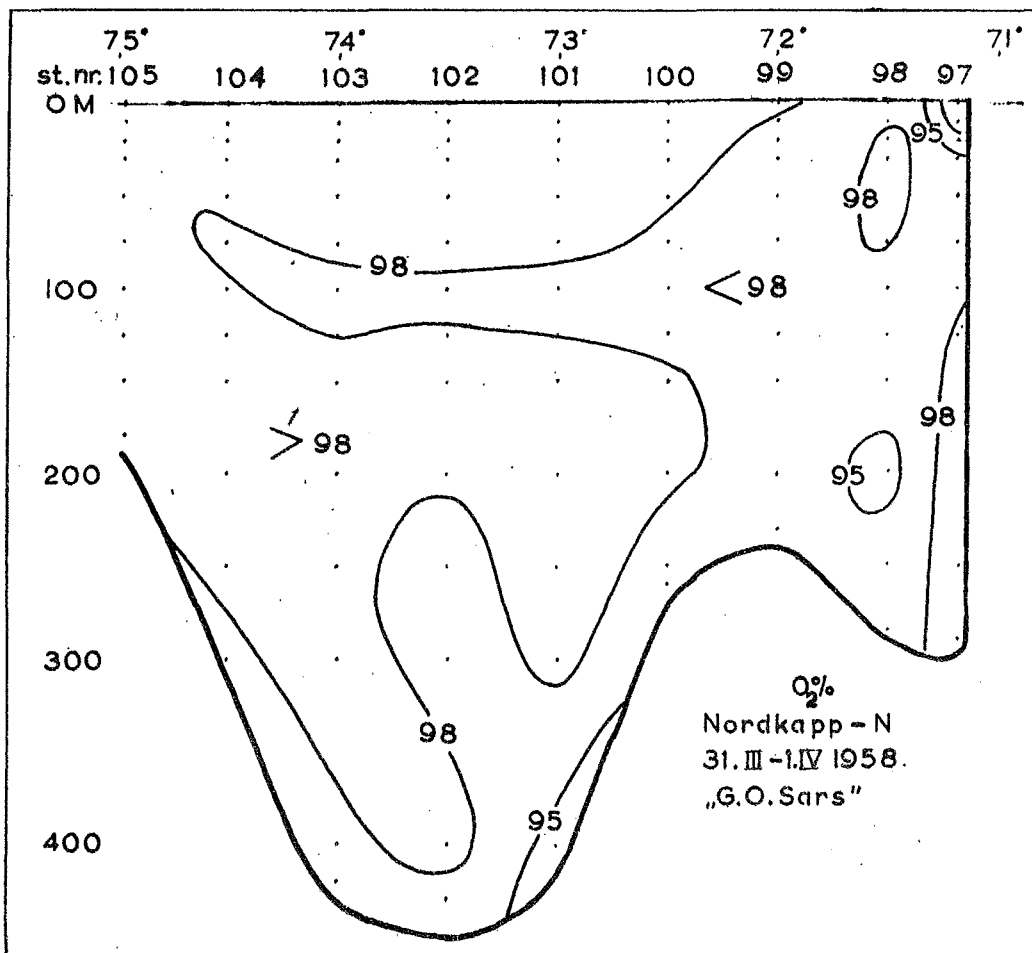
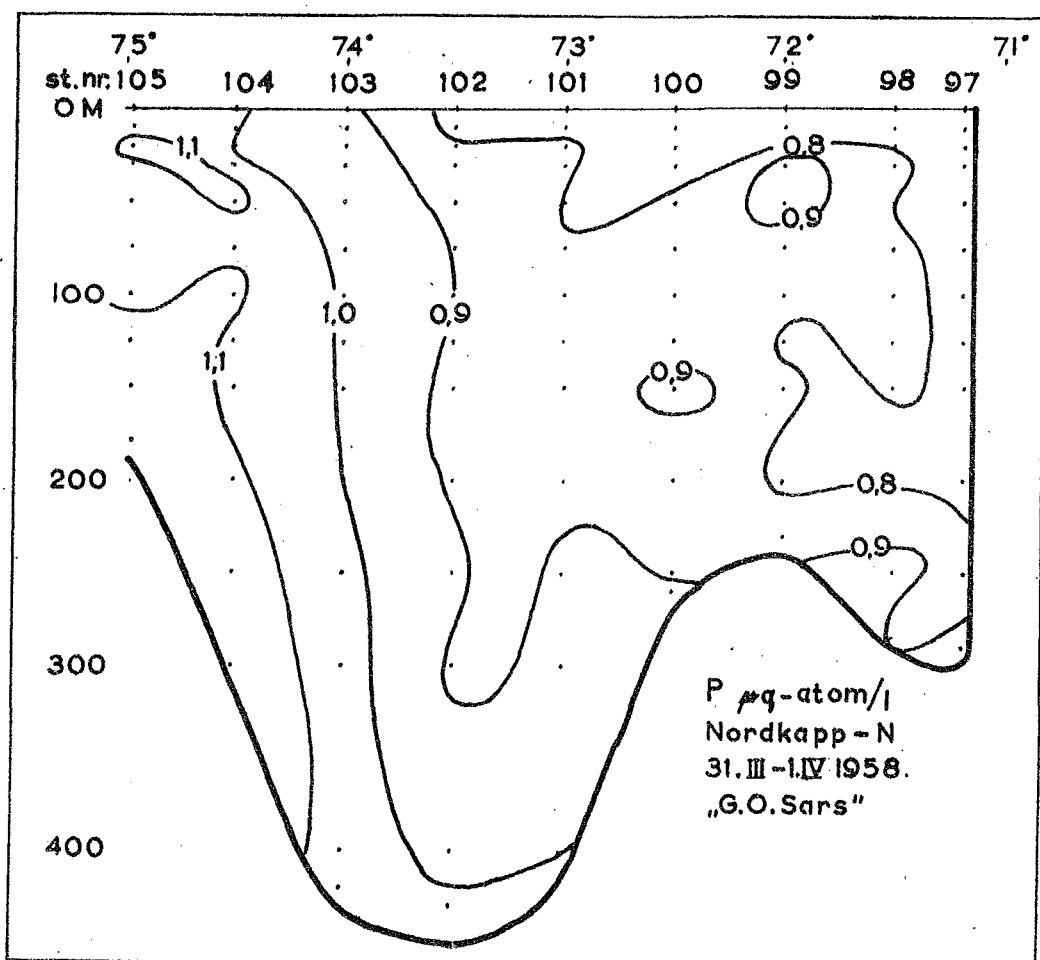


Fig. 10 Oxygen in section North Cape-N, spring.
 Fig. 11 Phosphate " " " " " "



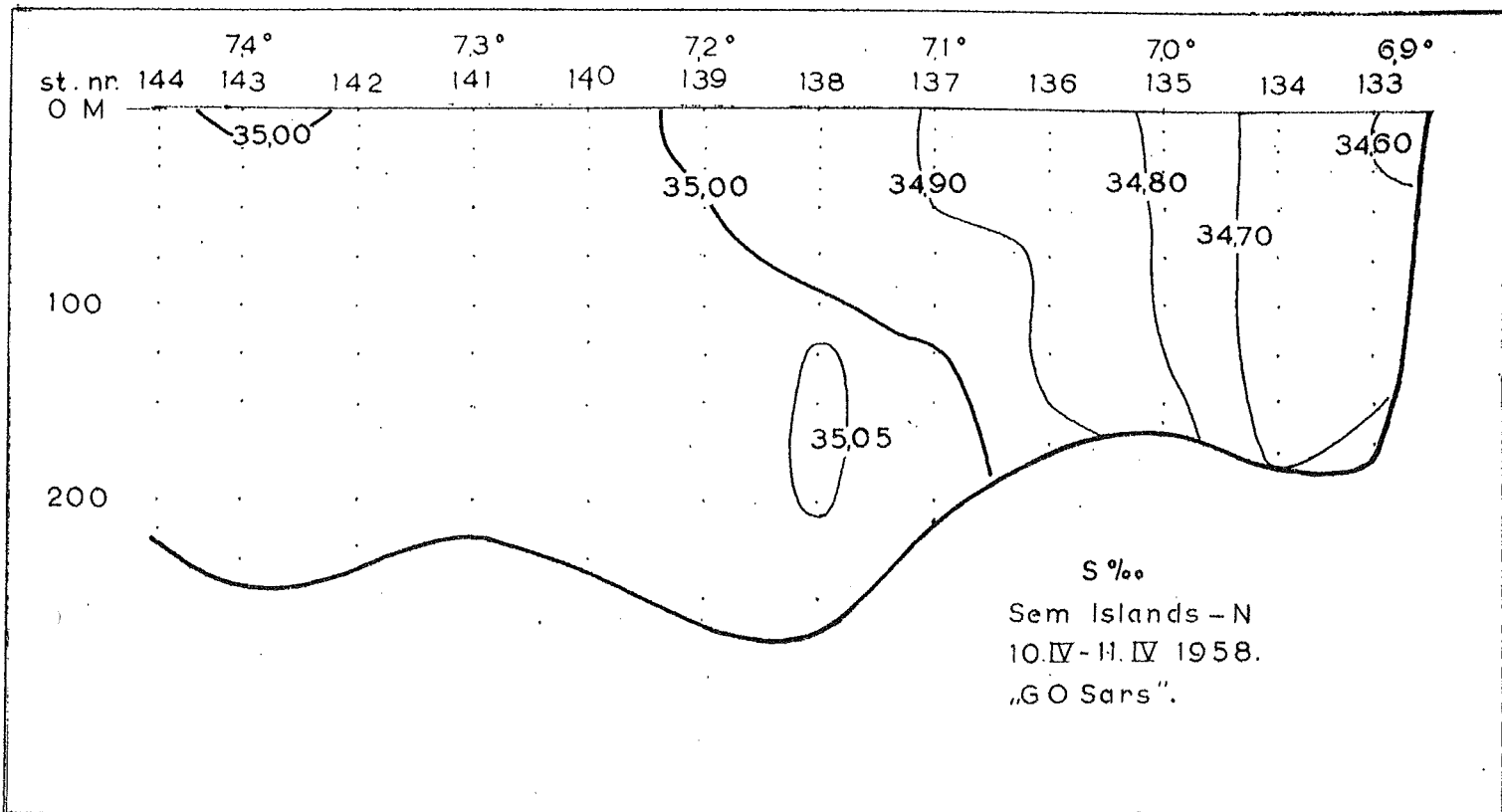
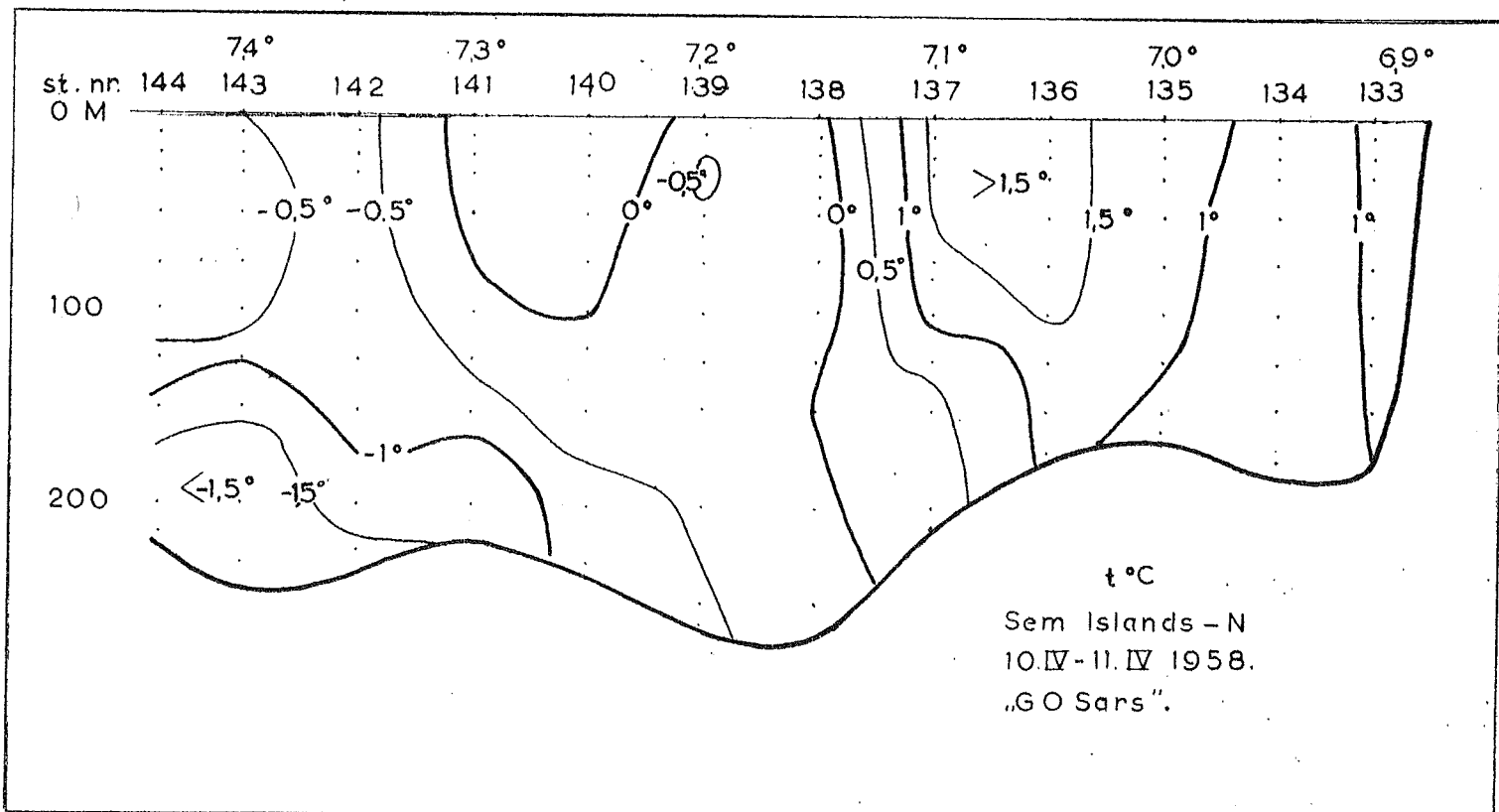


Fig. 12 Temperature in section Sem Islands-N, spring.
 Fig. 13 Salinity " " " " " "



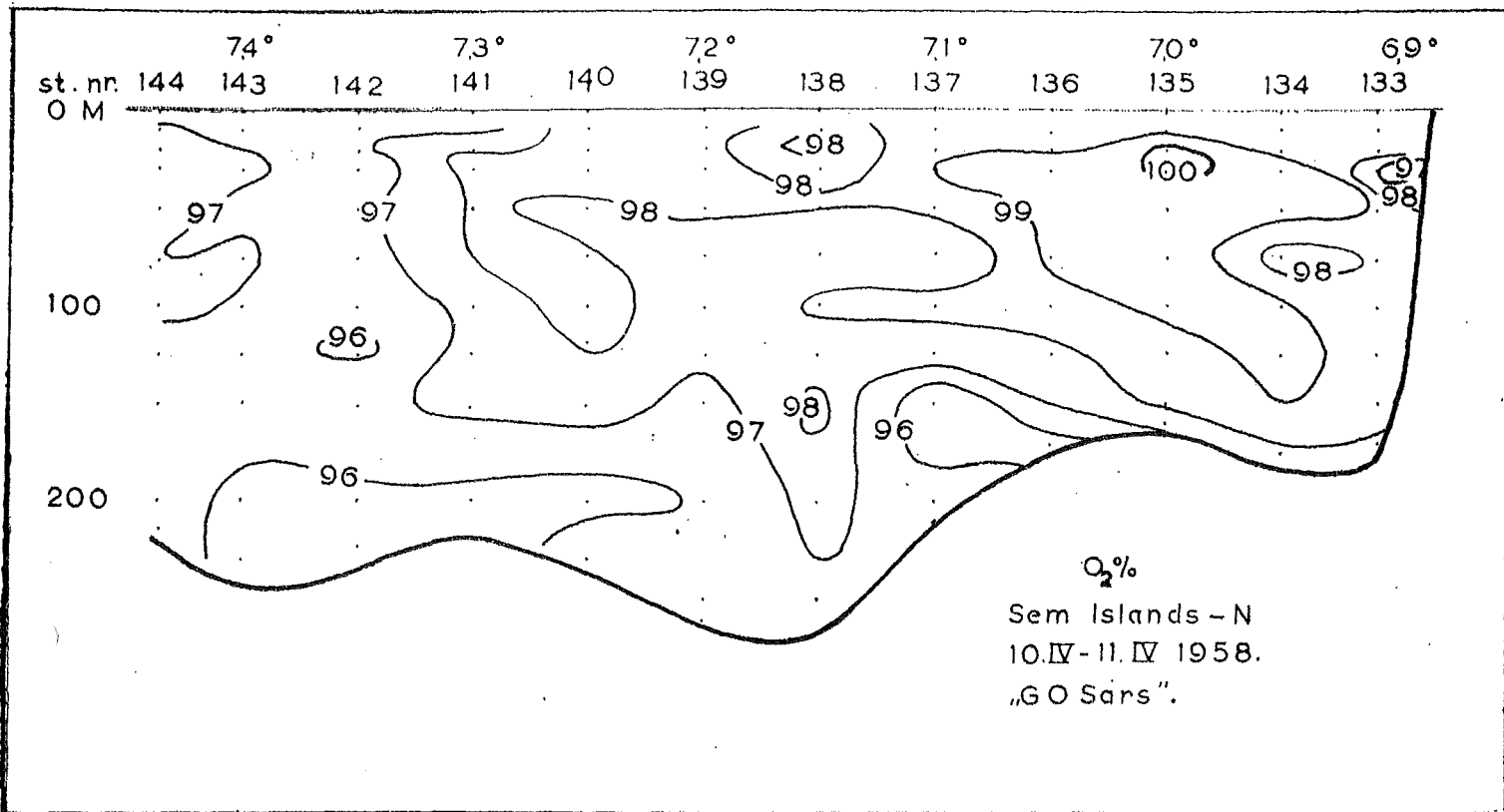
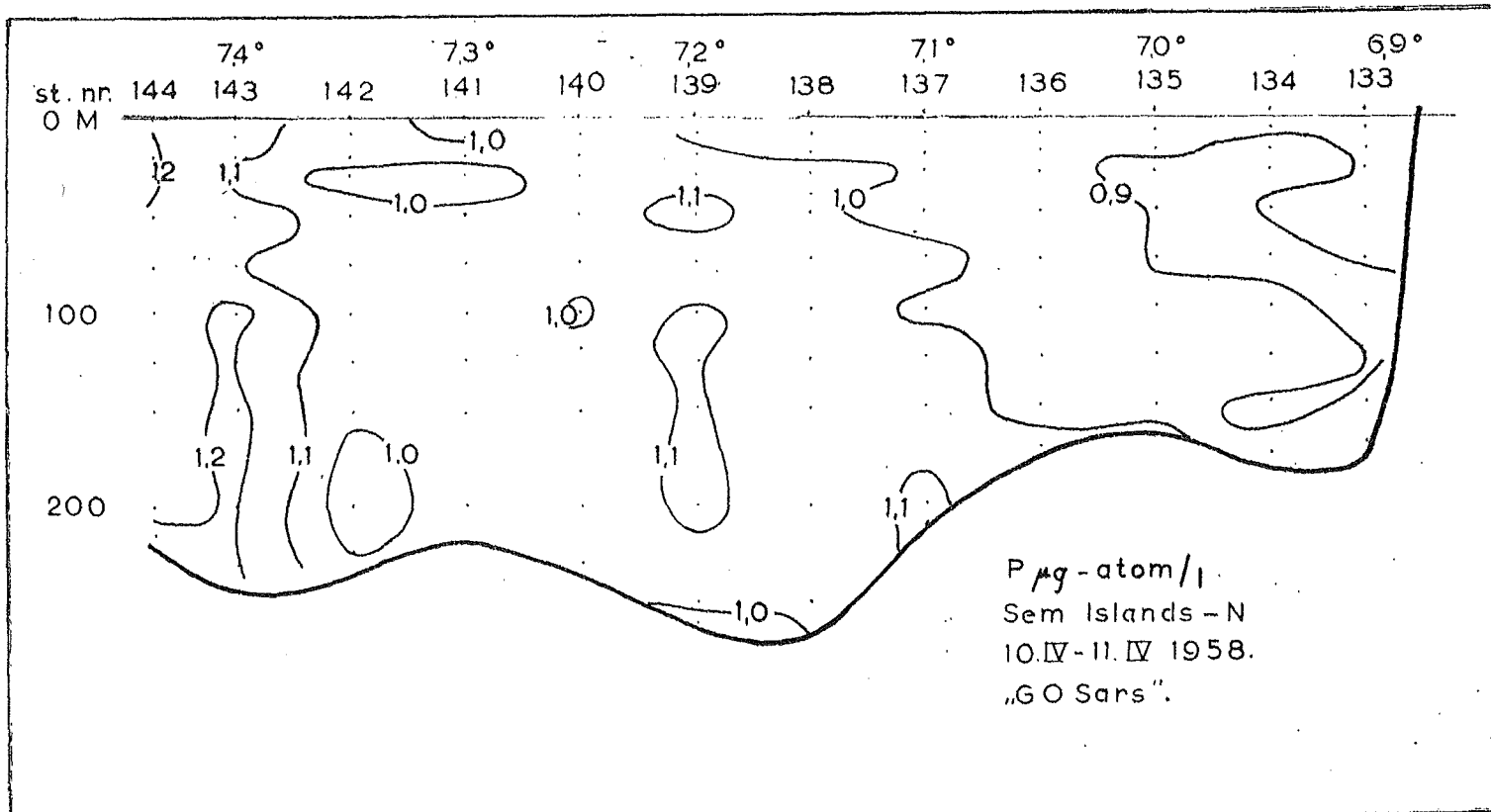


Fig 14 Oxygen in section Sem Islands-N, spring,

Fig 15 Salinity " " " " " "
Phosphate



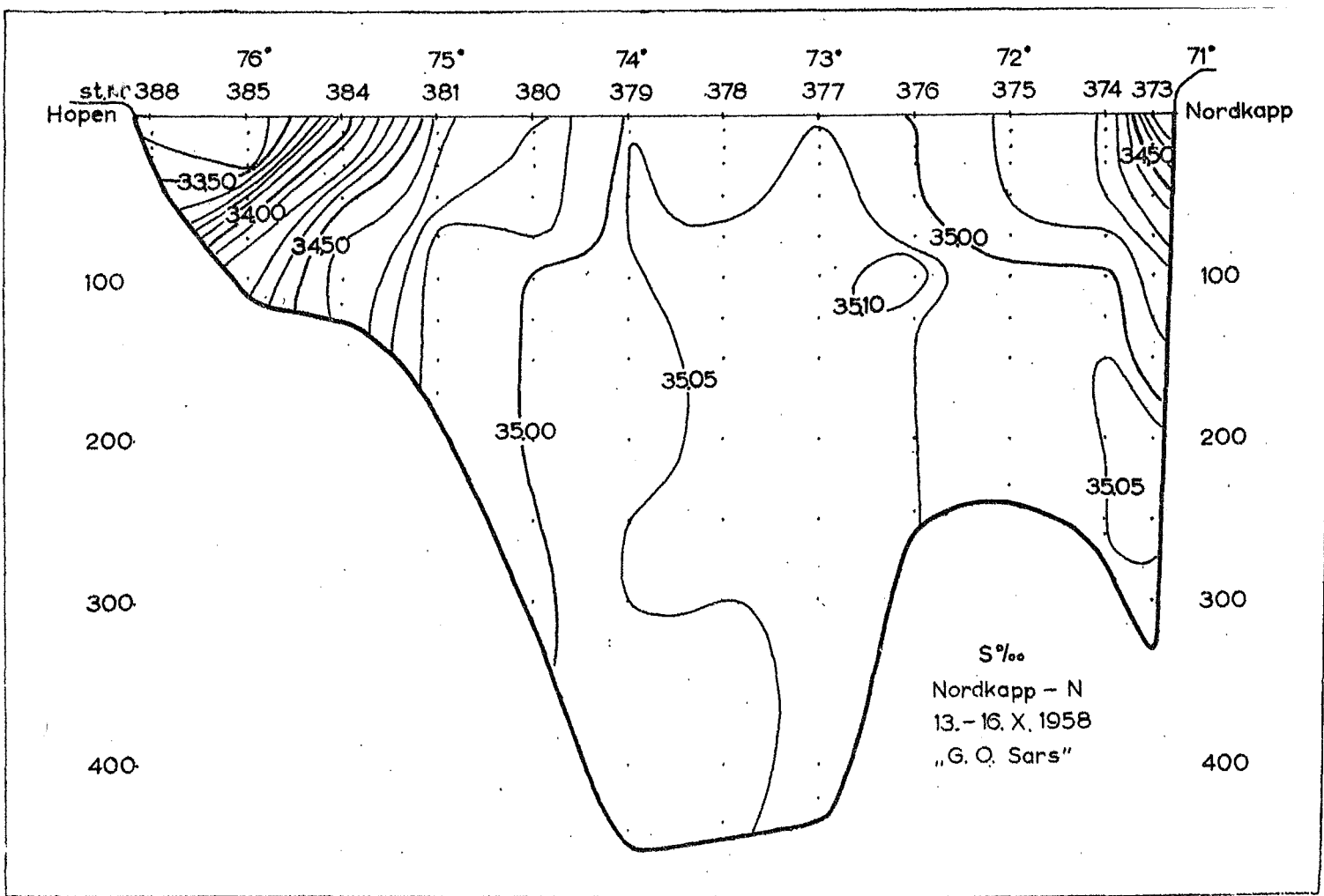
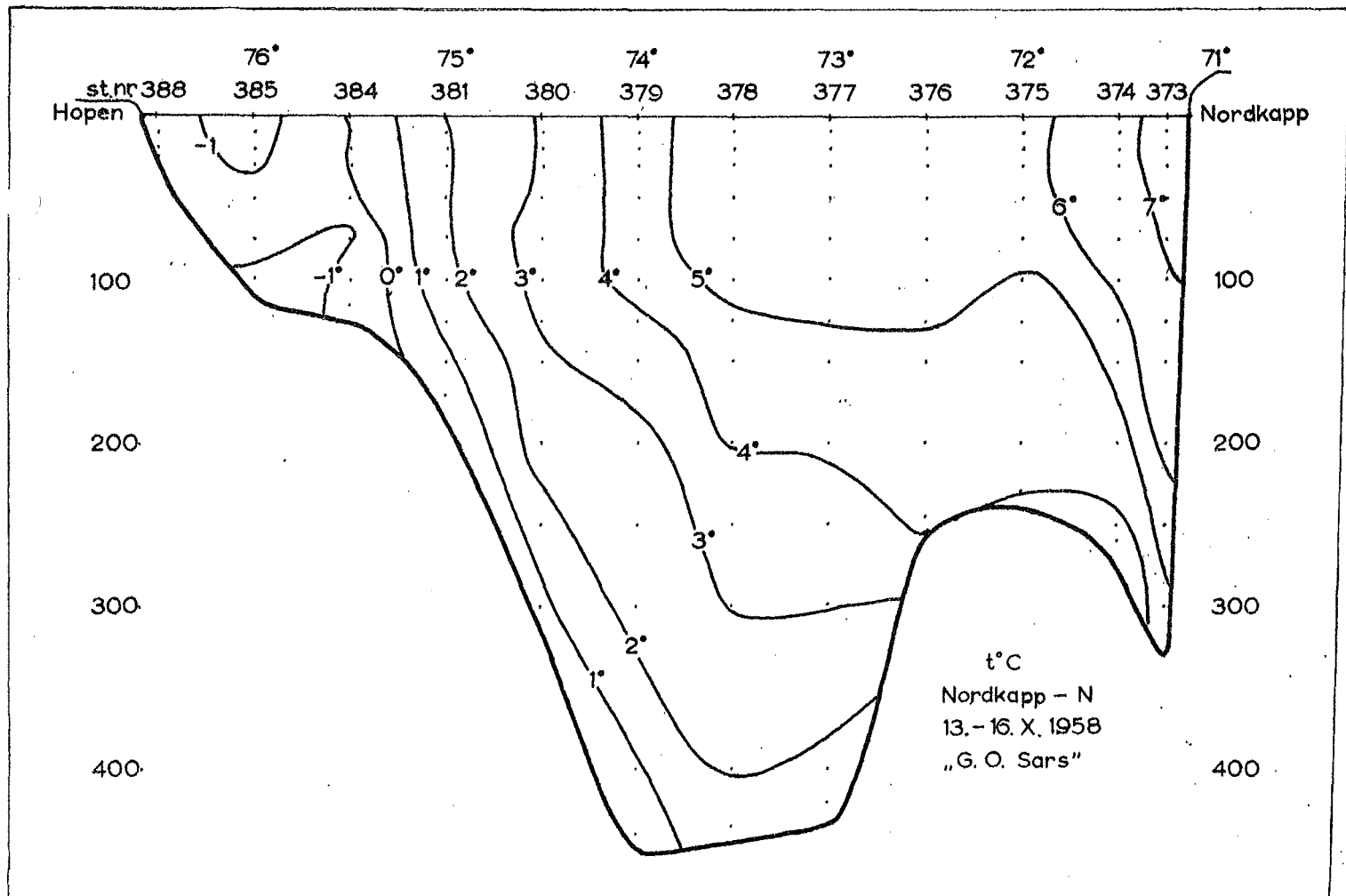


Fig 16
Fig 17

Temperature in section North-Cape-N, autumn.
Salinity " " " " " "



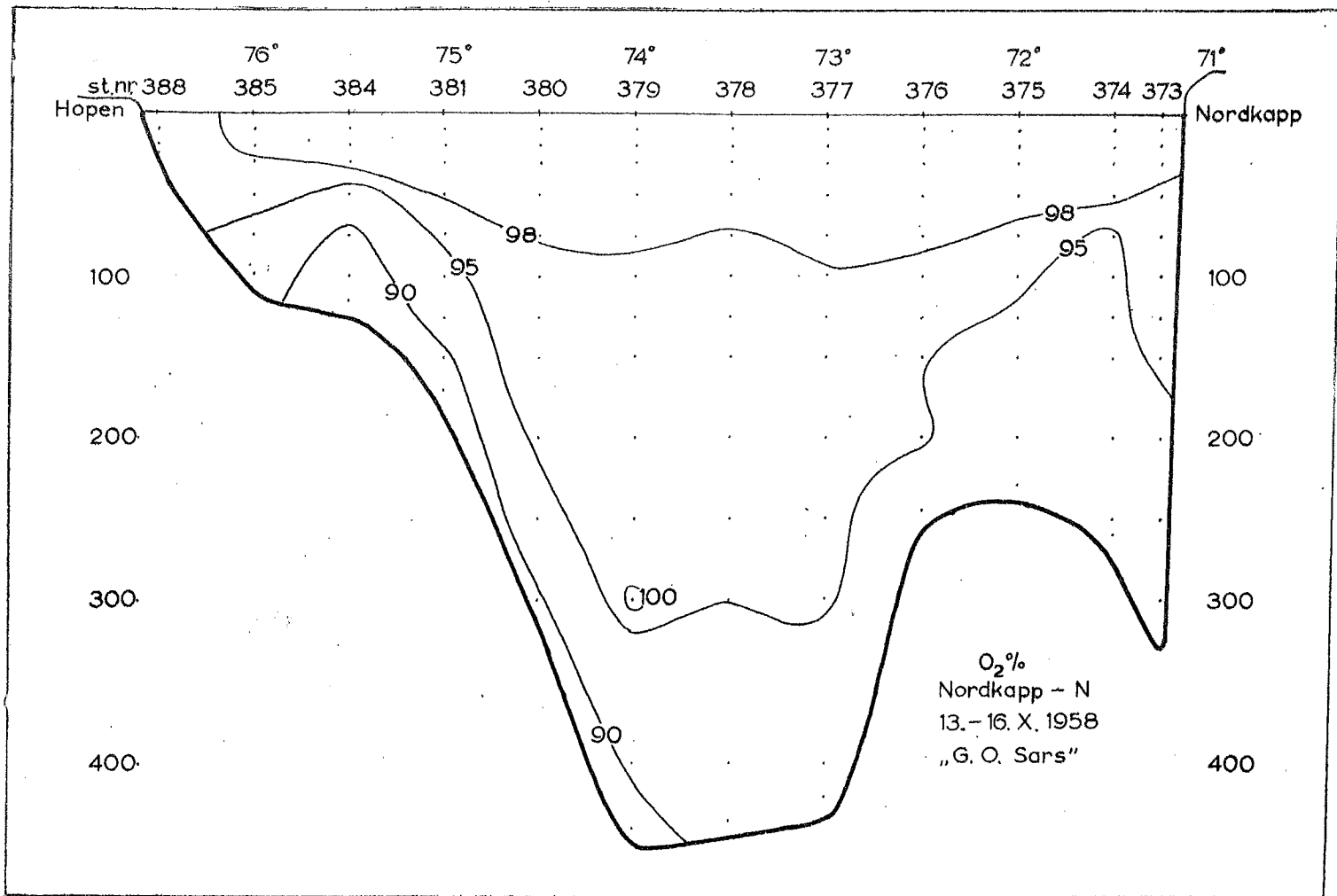


Fig 18 Oxygen in section North-Cape-N, autumn, /

Fig 19 Phosphate " " " " " "

