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French Research Report for 1961

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The following operations were carried out by France in 1961 in the ICNAF area:

- I. Observations made on board the deep sea trawler "Bois Rosé" in February to April, 1961, in the Gulf of St. Lawrence and south of Newfoundland (Subareas 3 and 4).
- II. A cruise by the oceanographic vessel "Thalassa" in the region of the Grand Bank, the St. Pierre Bank and Banquereau (Subareas 3 and 4).
- III. Hydrographic sections made on board the "L'Aventure".

I. OBSERVATIONS MADE ON BOARD THE TRAWLER "BOIS ROSÉ"

A provisional report of these observations was given in the ICNAF Document No. 33 from the 1961 Annual Meeting. The detailed data concerning the size and age distribution of the cod is still under preparation; the results will be given in the Sampling Yearbook.

II. CRUISE BY THE OCEANOGRAPHIC VESSEL "THALASSA" JULY-AUGUST, 1961

The oceanographic vessel "Thalassa" carried out a research cruise in the area south of Newfoundland from 18th July to 5th September, 1961. The main regions investigated (Subareas 3 and 4) are: The slopes south-west of the Grand Bank, St. Pierre Bank, St. Pierre and Miquelon Islands, and Banquereau. The operations carried out were trawlings, dredgings, v.s. soundings and hydrographic observations. A preliminary report of the results of these observations is given below.

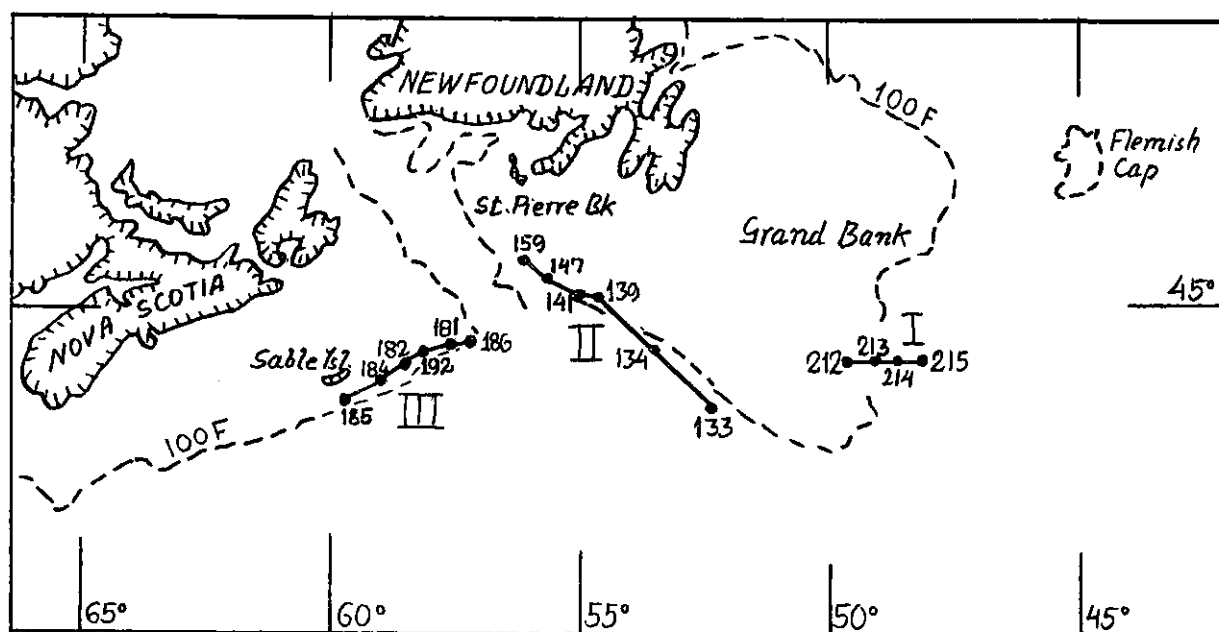


Fig. 1. Position of hydrographic sections I, II and III.

### A. TRAWLINGS

The head-rope of the trawl used is 30 m and the ground-rope 41 m, specially designed for a rough bottom with rollers; the trawl mesh is 50 millimeters from knot to knot.

#### a. Subarea 3, the slopes southwest of the Grand Bank, St. Pierre Bank and St. Pierre and Miquelon.

On the slopes south and southwest of Grand Bank and south of Green Bank, 12 trawlings were made. The general depths fished are between 150 and 600 metres.

Good catches of Sebastes (5 to 6 tons per hour) were made at depths of 300 to 400 metres in water with a temperature of 4 to 5° C. in the region south of 43°50' N. Lat., in the following locations: 43°04' N. Lat. - 50°53' W. Long. and 43°43' N. Lat. - 52°20' W. Long.

The Sebastes still predominated north of 53°50' N. Lat. on the slopes of the Grand Bank and the Green Bank, but there were not in this region, as in the preceding, caught more than one ton per hour.

The further catches, from the slopes west of St. Pierre Bank in water of 3 to 6°C., and on the Bank itself in water of 3 to 4°C. (a total of 6 hauls), consisted in the main of haddock, silver hake, Sebastes and cod. It can be noted inter alia, that one haul of 1 hour and 30 minutes made on the slopes (45°35' N. Lat. - 56°34' W. Long., 220 metres depth) yielded 926 kg of fish, of which 518 kg were Merluccius bilinearis, and that another haul of one hour on the Bank (45°38' N. Lat., - 55°53' W. Long., 46 metres depth) provided 363 kg of fish of which 418 kg were cod.

#### b. Subarea 4, Banquereau

A total of 11 trawl hauls were made in depths between 150 and 350 metres in the following regions: a) the slopes northeast of Banquereau, b) the slopes towards the south until the longitude of Sable Island.

Satisfactory catches of Sebastes (the species was found in waters of 3 to 7°C.) were made on the two following locations: 45°22' N. Lat. - 57°51' W. Long. on the slopes of Mimia Bank (north of Banquereau, 170 to 220 m) where 2,500 kg of this species were taken in a haul of 20 minutes; and on 44°12' N. Lat. - 58°09' W. Long. (slopes south of Banquereau), where 1,100 kg were caught in a haul of 50 minutes.

Further to be mentioned is a haul of 40 minutes at 44°31' N. Lat. (the southeast point of Banquereau - 180 m) where 2,000 kg of fish were caught, 1,300 kg being cod.

Finally, the Great Silver Smelt (Argentina silus), which is not marketed at St. Pierre, was caught in abundance in water of 7 to 8° C. in the two following locations: 43°39' N. Lat. - 59°10' W. Long. (south-east of Sable Island, 220 m; 3,700 kg in one hour) and 43°37' N. Lat. - 59°40' E. Long. (south of Sable Island; 170 m, 2,800 kg in one hour).

### B. V.S. SOUNDINGS - BOTTOM CONFIGURATION

On the slopes southwest of Grand Bank, the bottom is almost everywhere very rough at depths below 300 to 400 metres. The trawlings were generally carried out at depths between 100 and 400 metres. A haul at 600 m yielded only poor results.

The slopes to the west of St. Pierre Bank, however, appeared for the main part as favourable for trawling; the depth did not exceed 300 to 350 m.

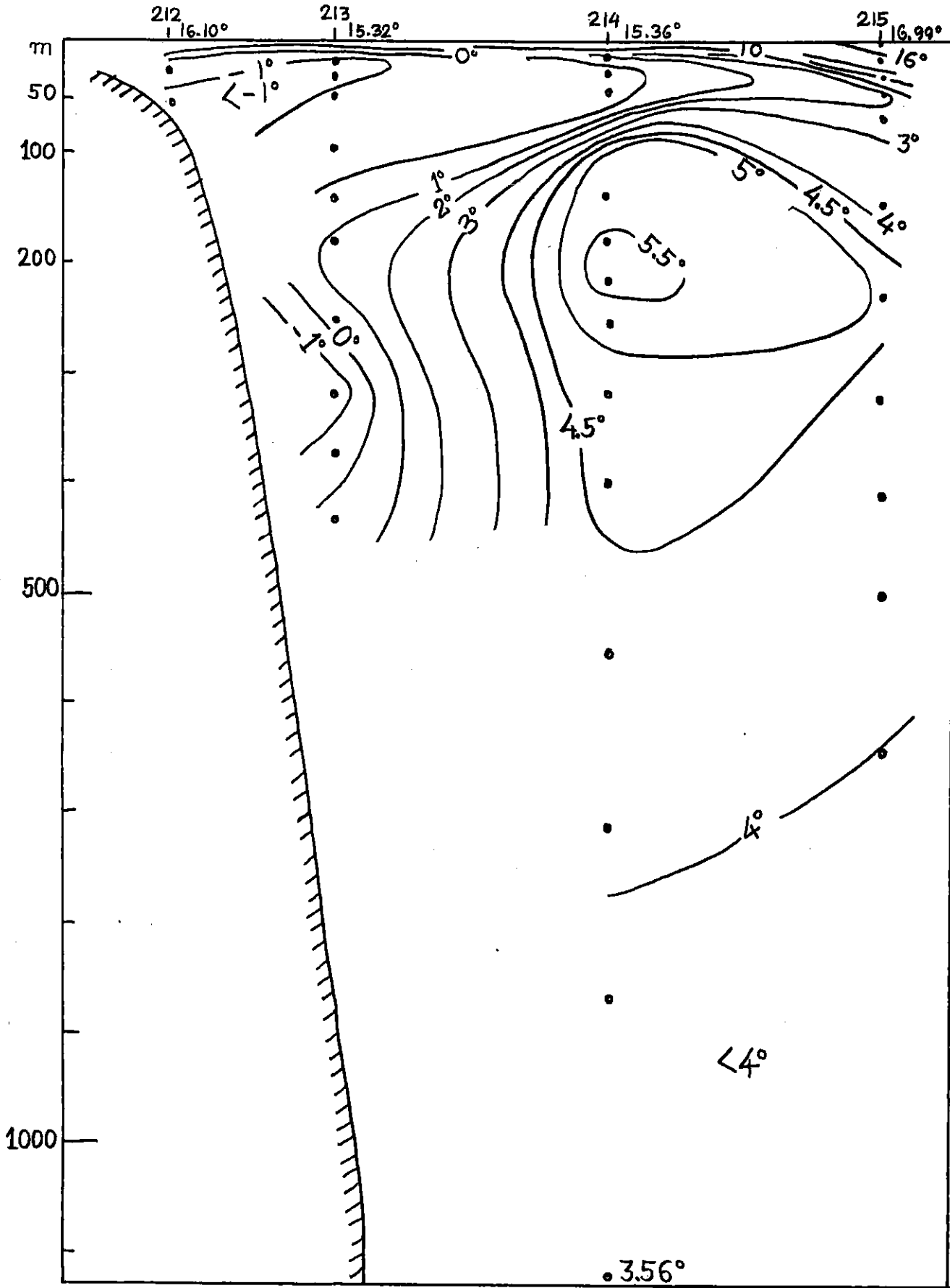


Fig. 2a. Section I. East slope, Grand Bank, 27-28 August 1961.  
Temperature ° C.

In the region of Banquereau, the bottom is rather smooth on the slopes to the east of the Bank, as well as southeast of Sable Island, as soundings between 250 and 300 m reveal.

The conditions for trawlings in the other regions of the slopes were partly good, partly bad.

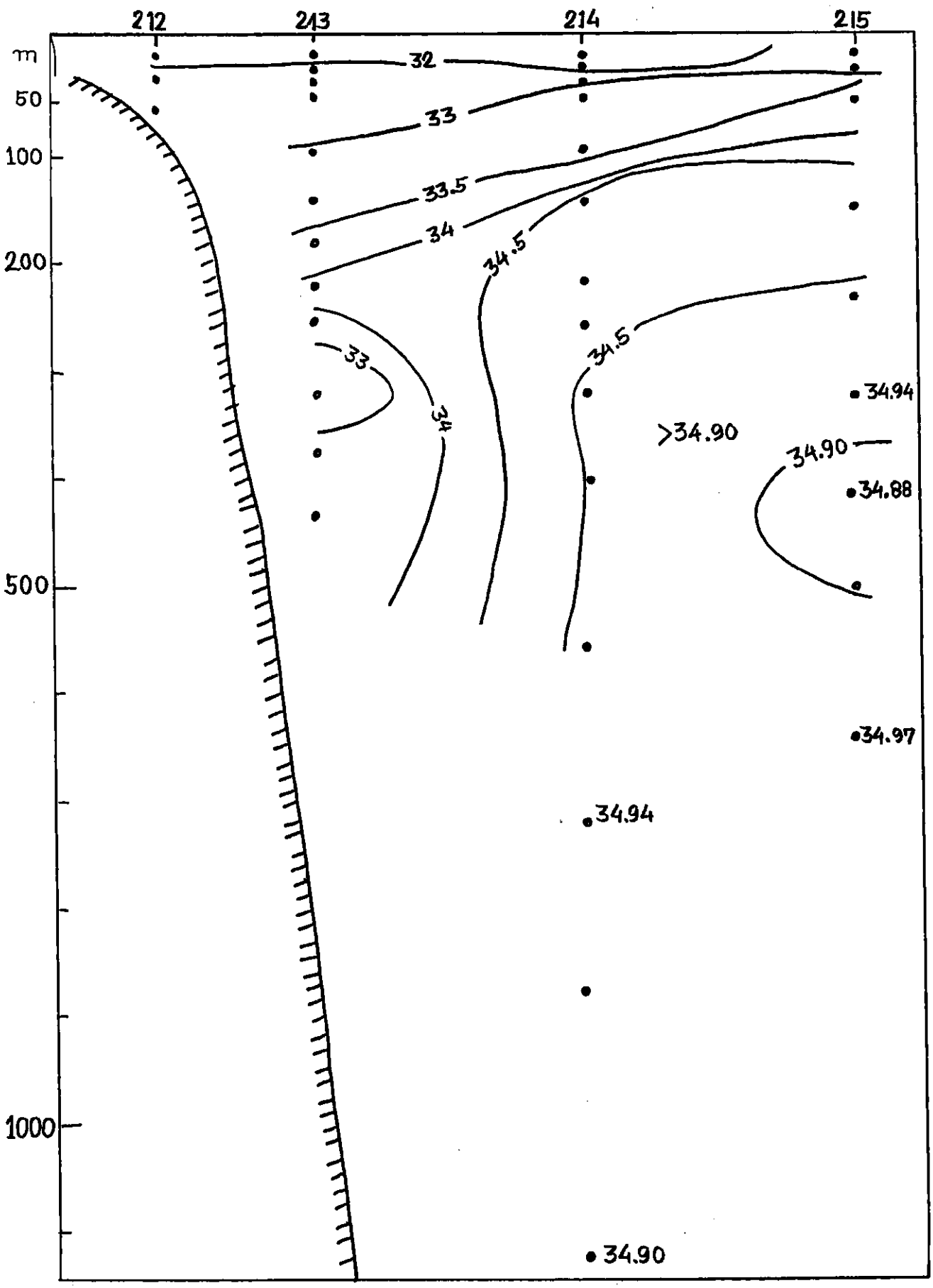


Fig. 2b. Section I. East slope, Grand Bank, 27-28 August 1961. Salinity ‰

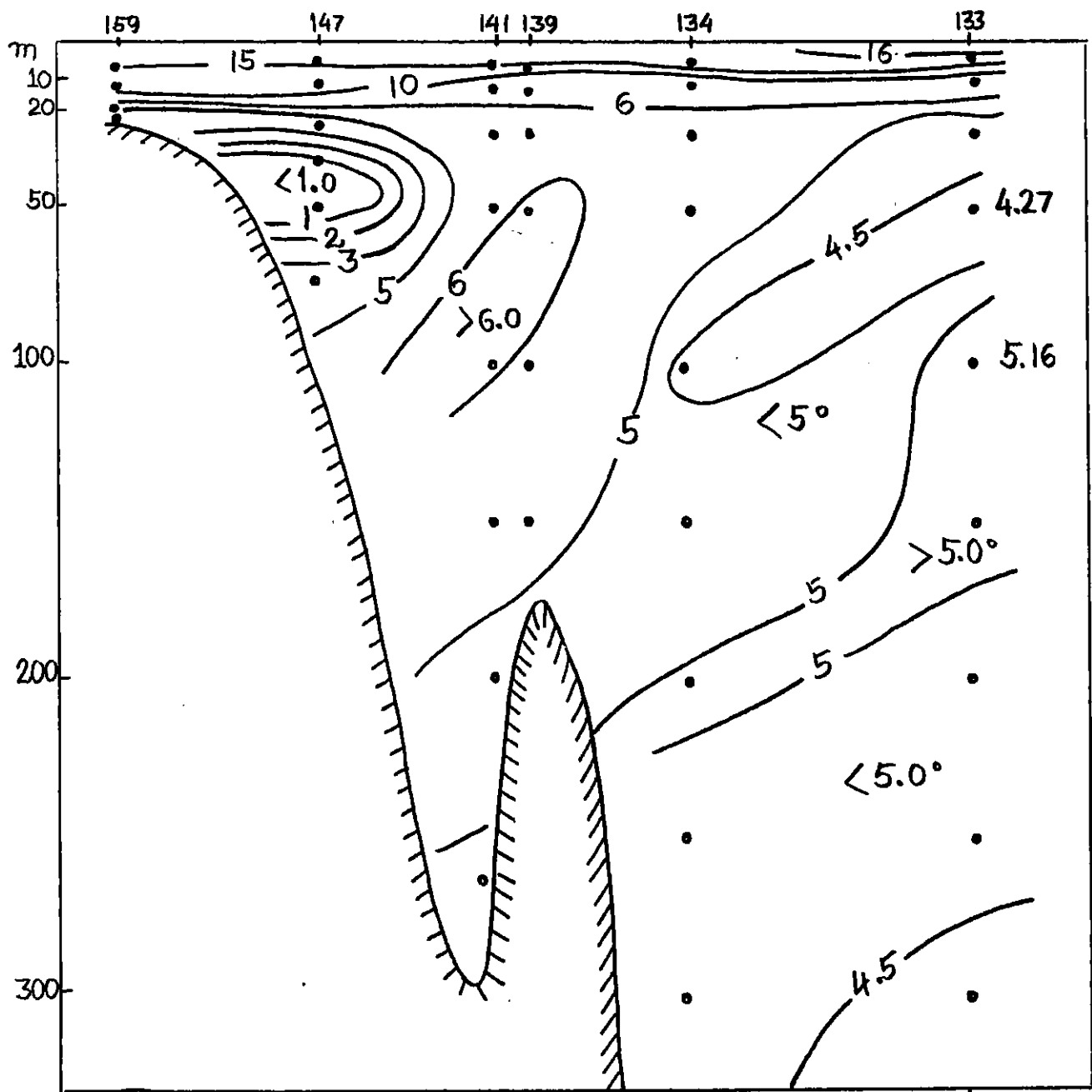


Fig. 3a. Section II. Southeast Grand Bank - St. Pierre Bank, end of July, 1961. Temperature ° C.

C. HYDROGRAPHY

Three hydrographic sections were taken during the cruise (see Fig. 1).

a) Section I. (Fig. 2a and b) Slopes east of Grand Bank following the 44° N.Lat. (Subarea 3), 27-28 Aug. 1961

Below the surface water (which had reached a temperature of 16° C.) the Labrador Current constituted an intermediate tongue between 20 and 150 m along the slopes; the tongue extended seawards, however, becoming thinner (minimum temperature - 1° C., salinity 32.22°/oo). The thinnest part of this layer, farthest offshore, is placed above Atlantic water which occupied the depth in this region between 100 to 700 m (maximum temperature 5.50° C., maximum salinity 34.94°/oo).

The mixed waters (1 to 4°C., 33 to 34.5°/oo salinity) were found where the above mentioned two types of water met and occupied the deeper part of the slope below 200 m, penetrating - due to increased density by cooling - down to 1,000 m. The deepest water layers investigated had a temperature of 4° C.

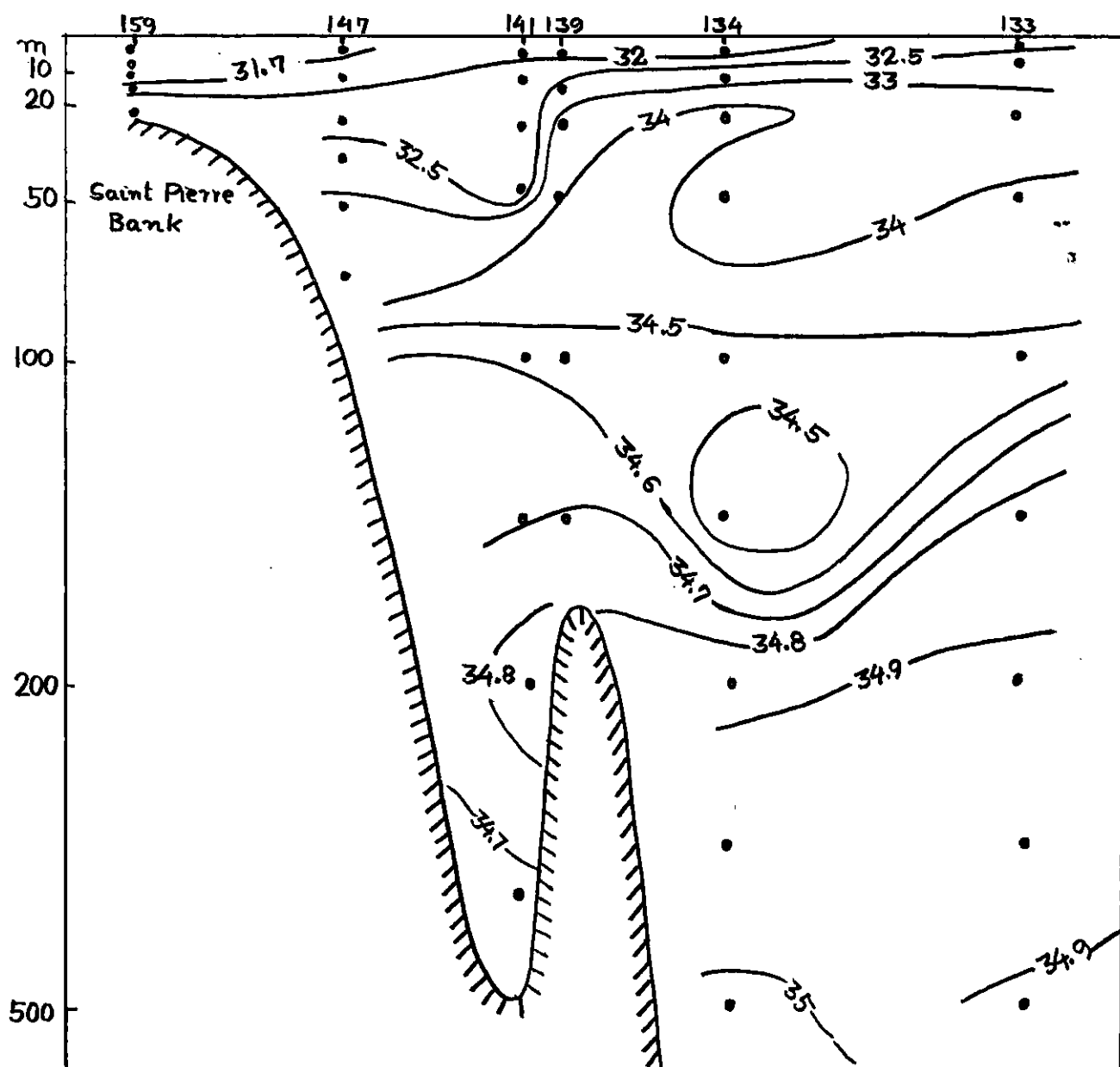


Fig. 3b. Section II. Southeast Grand Bank - St. Pierre Bank, end of July. Salinity<sup>0</sup>/oo.

b) Slopes southwest of Grand Bank and south of St. Pierre Bank (Subarea 3).

In the region of the slopes (70 to 600 m) between southwest of Grand Bank and St. Pierre Bank (Section II, Fig. 3a and b) the following observations were made in the end of July:

- a) A heating of the surface water down to about 20 m to 16°C.
- b) An influx of warm Atlantic water from southwest (water of 4° to 6° C. and of more than 34<sup>0</sup>/oo salinity) occurred along the slopes at depths between 50 and 400 m with its maximum toward the southwest in the Whale Deep.
- c) The presence of a tongue of cold intermediary water (about 1° C.) with a low salinity at depths of 30 to 100 m on the slopes east of St. Pierre Bank and south of the Fletan Channel. This tongue stretches about 20 miles seawards, becoming, at the same time, thinner.

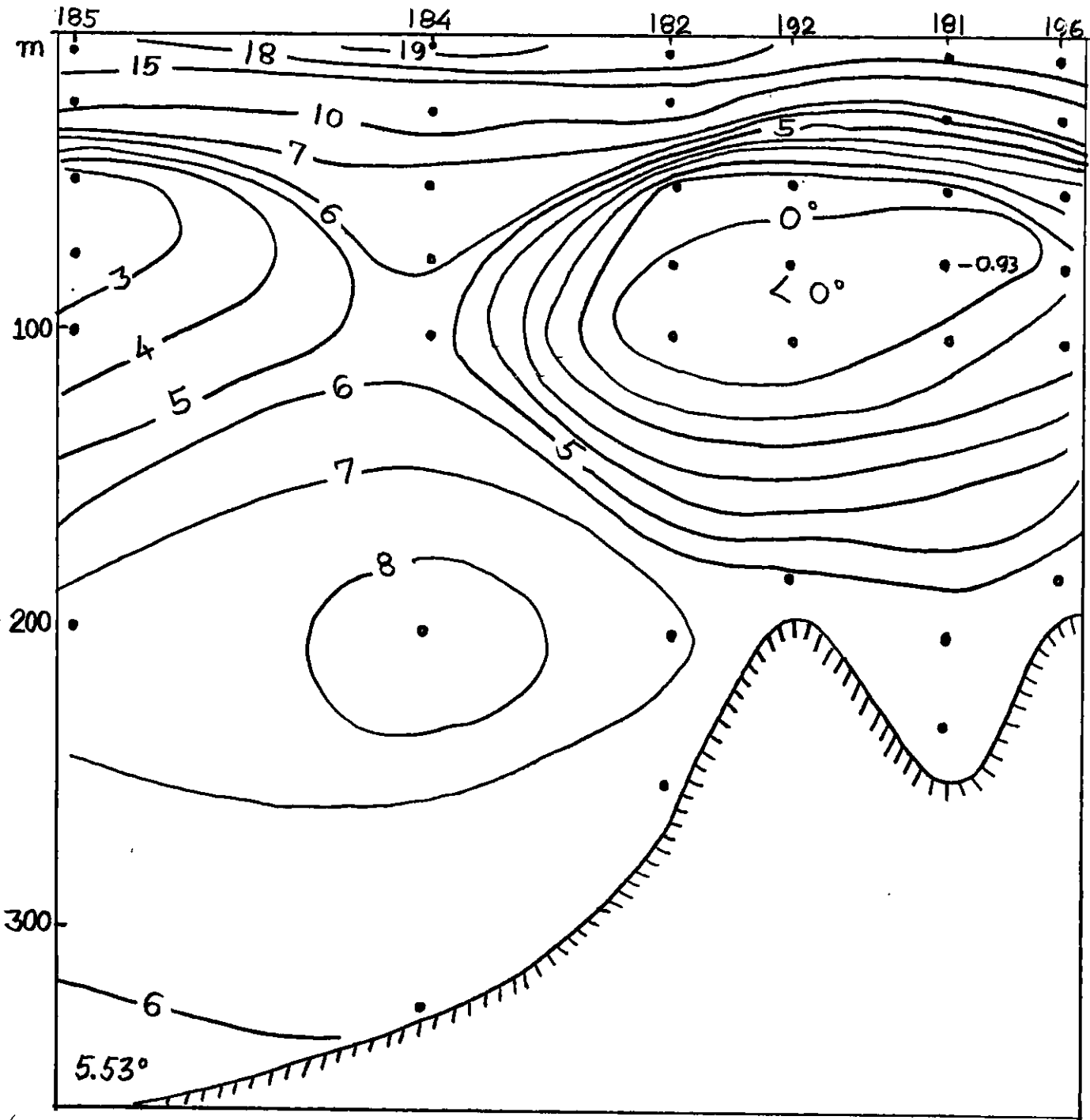


Fig. 4a. Section III. Slopes southeast of Banquereau, 11-13 August 1961. Temperature °C.

c) Region of Banquereau (Subarea 4).

At the middle of August, (Section III, Fig. 4a and b) cold water was present in great quantity in layers above the Bank.

On the northeast slopes (surface temperature ca. 4°C.), Atlantic water constituted a deeper layer from 150 m and downwards. This Atlantic water was overlaid by a cold water patch (0 to 4°C.) ranging from 30 to 150 m.

Along the slopes southeast of Banquereau and Sable Island (section III), the Atlantic tongue was more important and penetrated in the direction SW-NE with a maximum temperature of 8° at 200 m depth. This tongue was most predominating at the opening of the channel between Banquereau and Sable Island, and in this region it, by its upward moving, divided the cold water of low salinity off the slopes into two bodies.

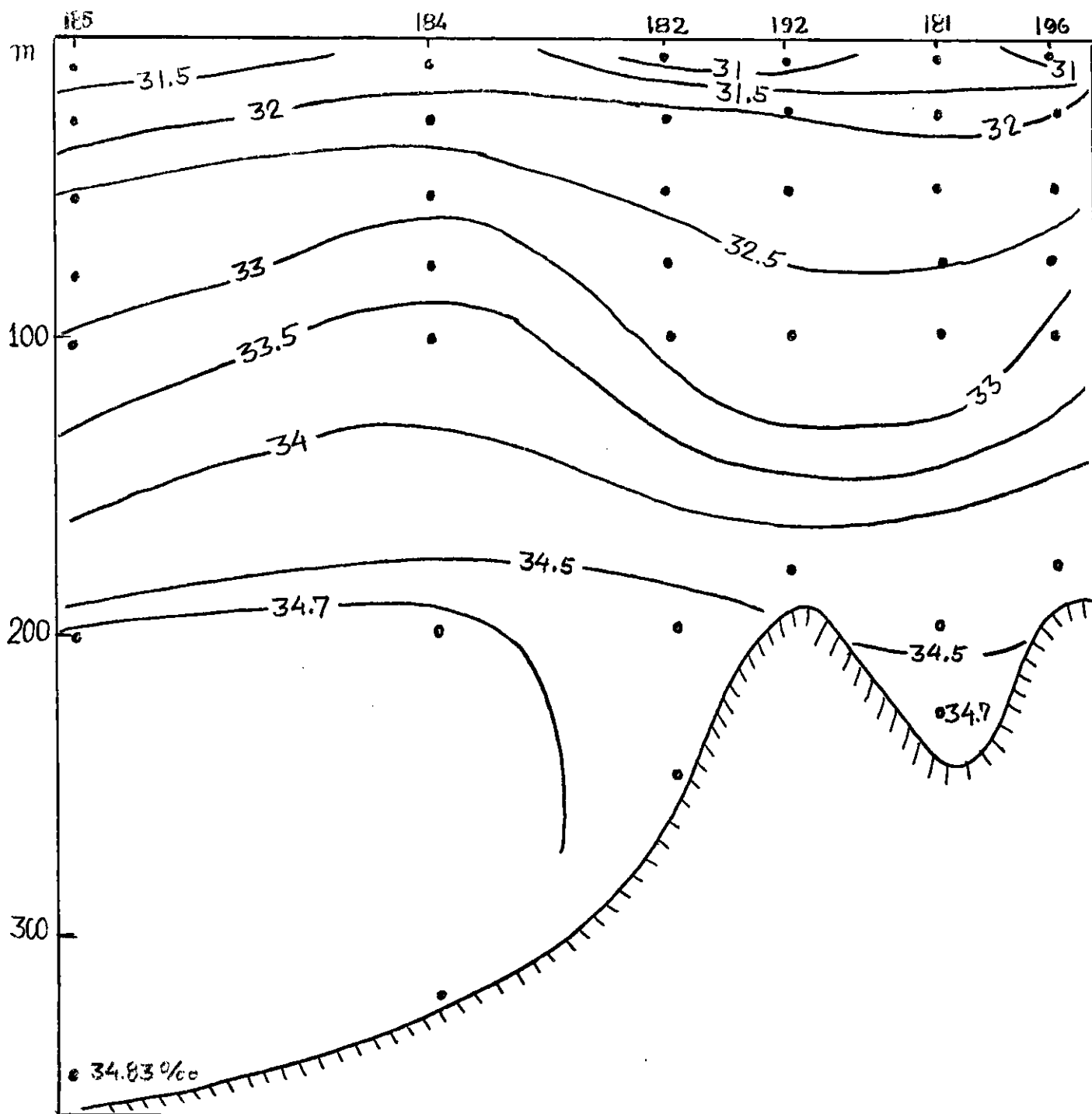


Fig. 4b. Section III. Slopes southeast of Banquereau, 11-13 August 1961. Salinity ‰.

D. OBSERVATIONS IN THE REGION OF ST. PIERRE AND MIQUELON (Subarea 3)

The cruise of the "Thalassa" included a series of researches in the region of the St. Pierre and Miquelon Islands:

a) Fishing experiments with lobster pots were carried out with no results.

b) V.S. soundings permitted to define the position and the profile of certain rocky grounds called "basses" and used by the dory fishermen (hand line). A new fishing ground of this kind was located.

c) Dredgings showing the nature of the bottom were carried out, as well as soundings with the GALEAZZI TURRET.



d) Hydrographic observations in the beginning of August showed that the surface water had been heated to 16.05°C. to a distance of 10 miles to the south of St. Pierre Island and to 16.28°C. to a distance of 8 miles to the north of Cape Miquelon.

Closer to the coast the surface temperature was 13.15°C. (southwest of St. Pierre Island).

At a depth of about 25 m the offshore water (9 miles to the south of St. Pierre) measured 3.36°C. and the inshore water around 7°C. At 50 m depths (Roche Miquelon extérieure) the temperature decreased to 1.75°C.

E. SCALLOP (Pecten magellanicus) DREDGINGS)

(Subarea 3)

Several hauls with scallop drags were carried out on the St. Pierre Bank. The best yields (10 kg of scallops per 15 minutes haul) were obtained at 45°44' N.Lat. and 55°52' W.Long. The mode of the length curve was 12 cm and the scallops were relatively old (4-9 years).

NOTE: The detailed data of the measurements (cod and redfish) and other biometric data collected on board the "Thalassa" are being prepared for final rendering in the Sampling Yearbook.

III. HYDROGRAPHIC OBSERVATIONS MADE ON BOARD THE FRIGATE "L'AVENTURE"

Seven hydrographic stations in deep water were operated on the 14th and 17th November, between Newfoundland and the Azores Islands.

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