Serial No. 101

INTERNATIONAL COMMISSION FOR THE NORTHWEST ATLANTIC FISHERIES

Document No. 29

THIRD ANNUAL MEETING

OFFICE SCIENTIFIQUE et TECHNIQUE des PECHES MARITIMES
LABORATOIRE de BOULOGNE-sur-MER

Summary Report of the cruise of the French Research vessel "President Theodore Tissier" in the Region of Newfoundland and Labrador (Subareas 2 and 3)

(August - September 1952)

The oceanographic research vessel "President Theodore Tissier" sailed from Brest July 31, 1952 and crossed the Atlantic to St. John's, Newfoundland following the 48° N.Lat. From St. John's, the vessel went to the Hamilton Bank (off Labrador) and from there to the region around St. Pierre et Miquelon islands. From there, it followed the 45°30' N.Lat. to the Grand Banks. From the Grand Banks it returned to Brest, arriving there September 18, 1952.

During the cruise for which a short summary of results is given below, hydrographic observations as well as plankton collections were made regularly along the route; further biometric observations and marking experiments on cod. Finally a survey was made of the Hamilton Bank (depth-soundings) and observations of the nature of the bottom.

A. - Hydrography.

1) Subarea 3.

The hydrographic section from Brest to St. John's, Newfoundland, along the 48° N.Lat., showed the presence of a layer of warmer surface-water (temperatures above 12°C) down to an average depth of 100 m. Westwards of 22°W.Long, the layer of warmer water penetrated farther down; the isotherm 12°C reached a depth of 300 m. just to the East of Flemish Cap, touching the tongue of cold water formed by the Labrador Current.

The hydrographic section from Flemish Cap to St. John's, Newfoundland showed the following characteristic features (fig.A):

a) Warm continental water (12° - 14°C) right at the surface.

b) "Cold wall":

1) at the lower edge East of Flemish Cap and of the Grand Banks, waters of 2° to 4° were observed.

2) between the Flemish Cap and the Grand Banks waters of 4° to 6°C were observed (slope water).

3) on the Great Banks from 25 m. to the bottom, arctic and continental waters were observed.

According to the hydrographic section made during the return trip (first half of September) along the 45°30' N.Lat., from St. Pierre Bank to the Grand Bank, arctic waters (below 0°C) occupied the Halibut Channel, the Green Bank, and the Haddock Channel from 75 m. down to the bottom. A tongue of cold water of comparative importance and also of arctic waters, was present at the edge east of the Grand Banks (section B).

2) Subareas 2 and 3.

The hydrographic observations made during the crossing from St. John's, Newfoundland to Hamilton Bank (second half of August) at a distance of 50 -150 miles from the coast, have shown the presence of cold water of arctic origin (below 0°C) in a large part of that region. The layer of arctic water penetrated downwards from an average depth of 50 m. to varying depths; near the coast these waters were on the bottom; farther offshore they were withdrawing from the bottom and decreased in thickness to form an intermediate coldwater layer between two warmer layers: the seasonally warmed surface layer and the deep layer in connection with Atlantic waters. The Hamilton Bank was completely covered by a layer of arctic water about a hundred metres thick (fig. C and D).

The above observations will be supplemented by studies of the salinities.

B. - Biological and biometrical observations. Tagging.

Measurements and sampling of otoliths of cod (total number 3,500) caught in trawl were carried out on the Hamilton Bank.

The length curve for the males shows peaks of 48, 52 (maximum) and 55 cm., that of females, 48, 52 and 57 cm. (maximum).

The readings of the otoliths are expected to explain the form of the length curves.

The stage of maturity of most of the cod was only little advanced. The stomach contents consisted of fish (mainly capelin) and of various crustaceans.

The richest catches were obtained from the southern part of the Bank, which was as mentioned earlier, completely covered by a layer of arctic water, about 100 m. thick.

The tagging was carried out on line-caught cod from the waters around Iles Saint Pierre et Miquelon.

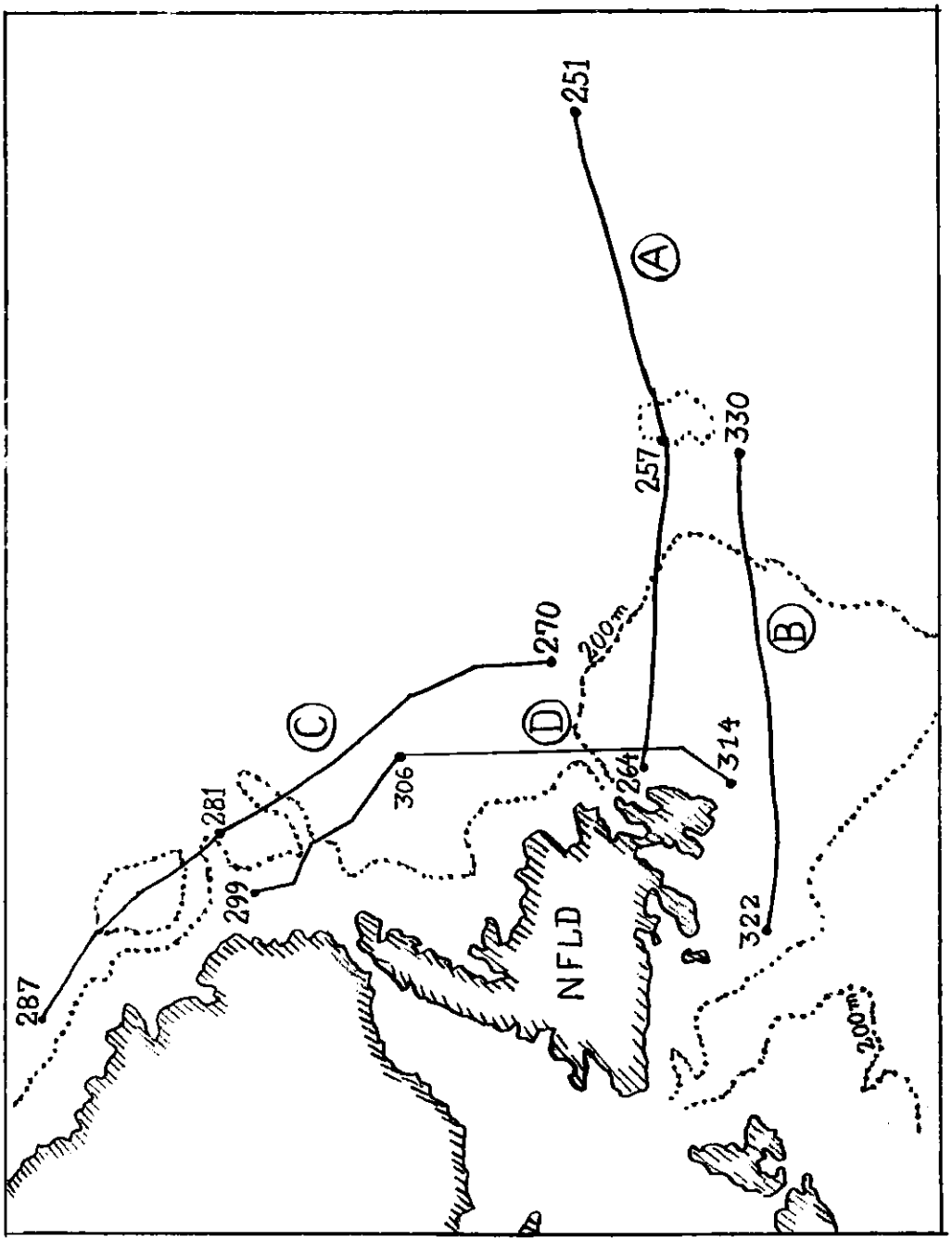
Tagging was carried out by means of a Reverdin needle passing a nylon thread through the dorsal muscles to attach the celluloid tag. This is a simple method that can be used quickly.

C. Soundings - Nature of Bottom.

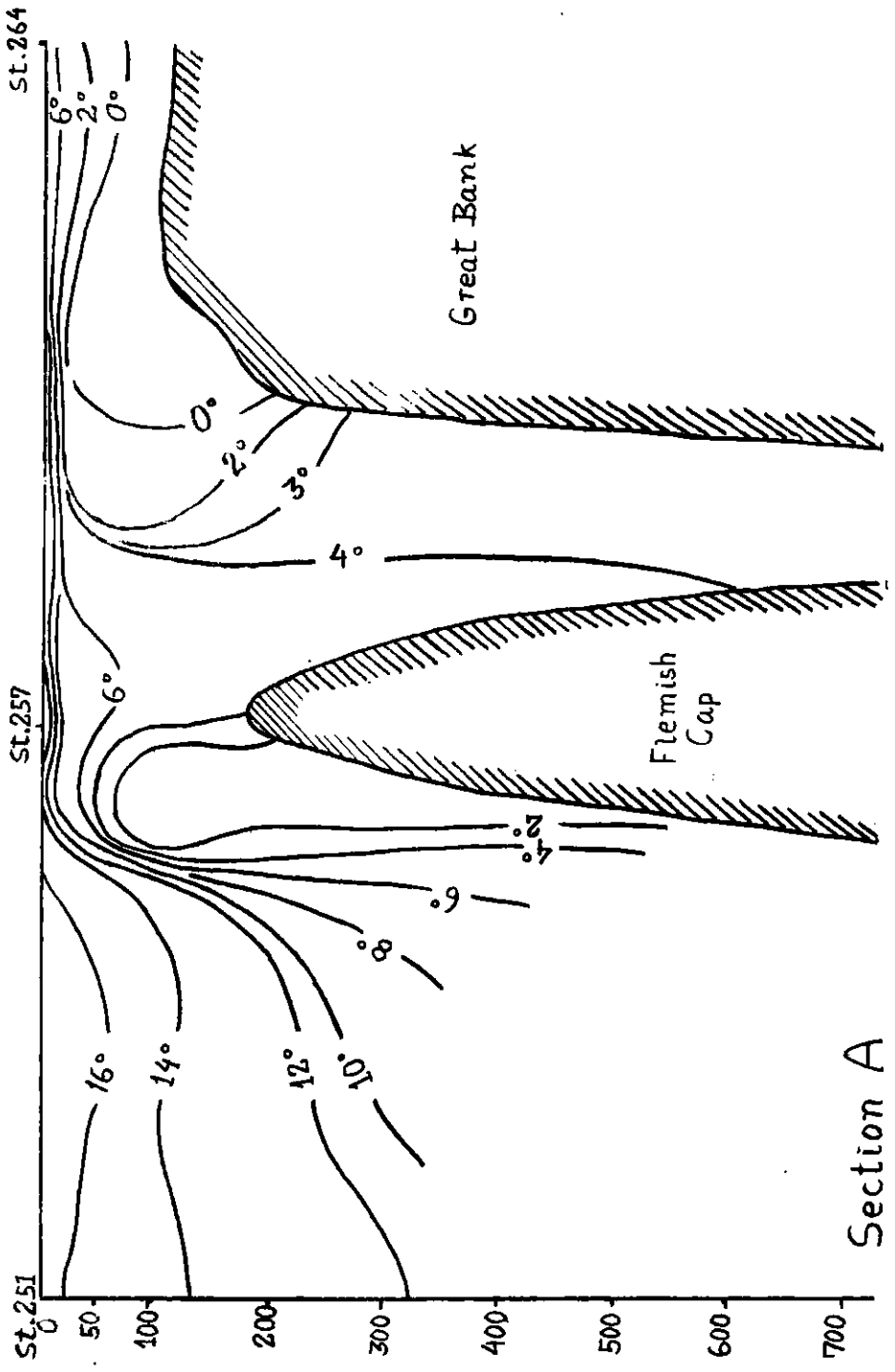
The soundings of Hamilton Bank were made by means of a recording echo-sounder, and along zigzag courses. The bottom samples were obtained from a "Raillier du Baty" dredge. A map showing the soundings and the nature of the bottom has been prepared for the use of fishermen.

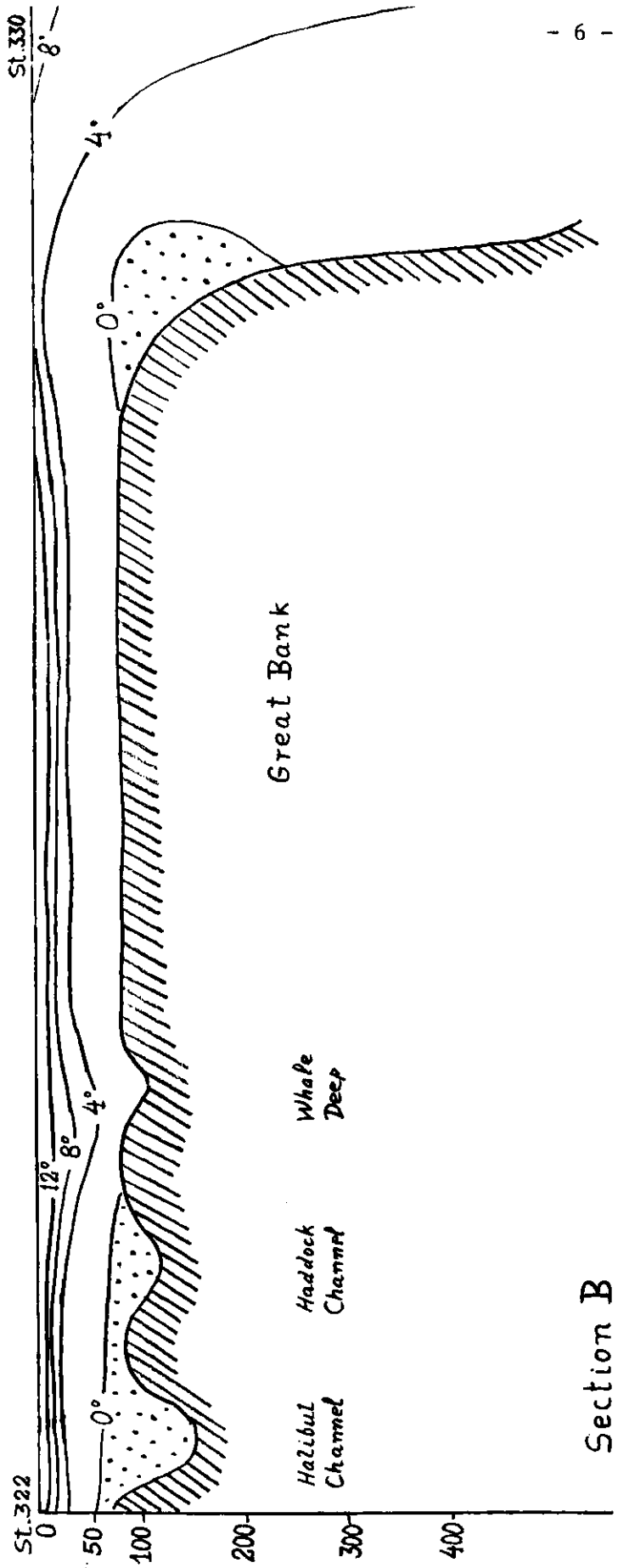
Le Chef du Laboratoire de
Boulogne-sur-Mer,

J. Ancellin.

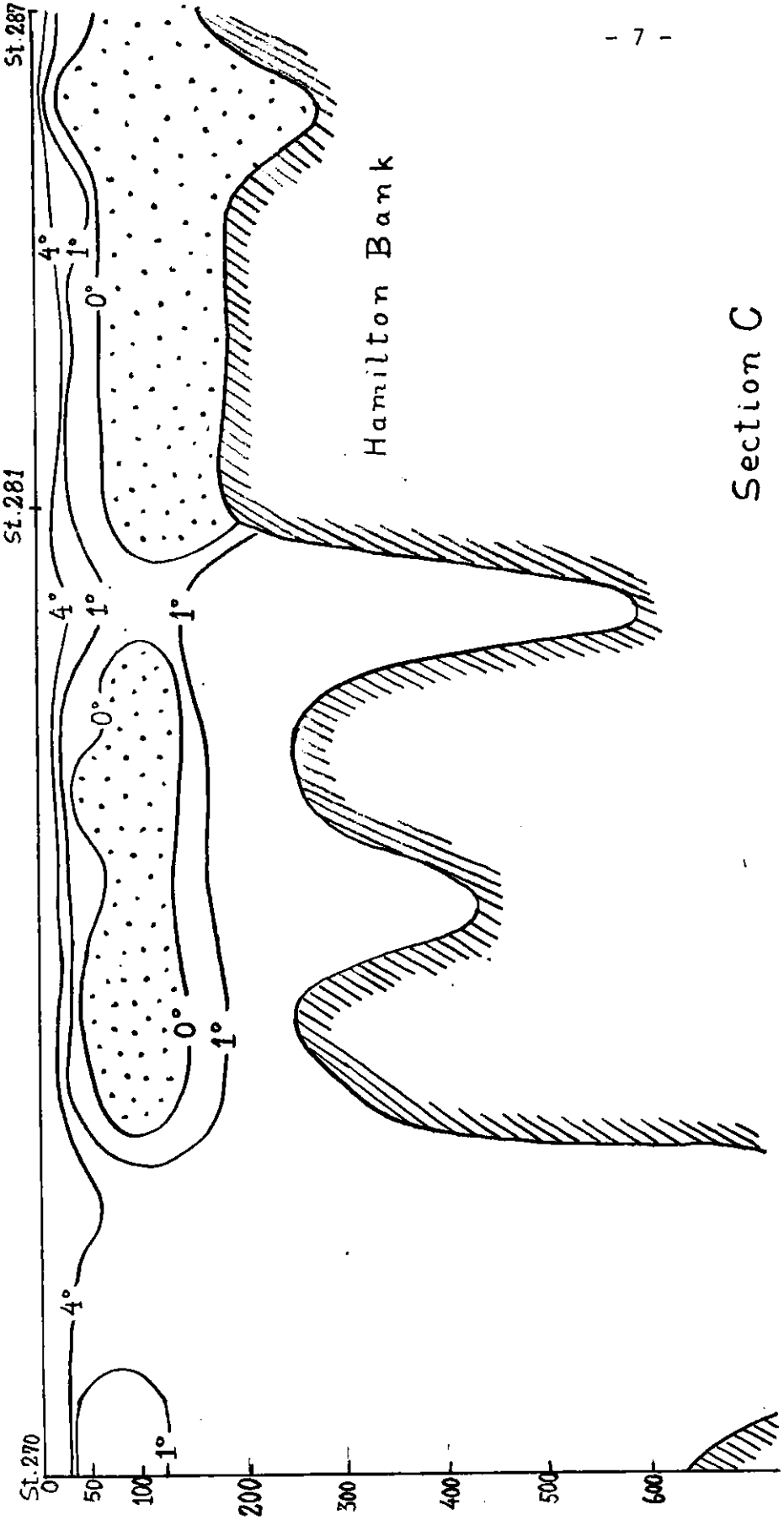


Hydrographic Sections off Newfoundland and Labrador. August - September 1952.

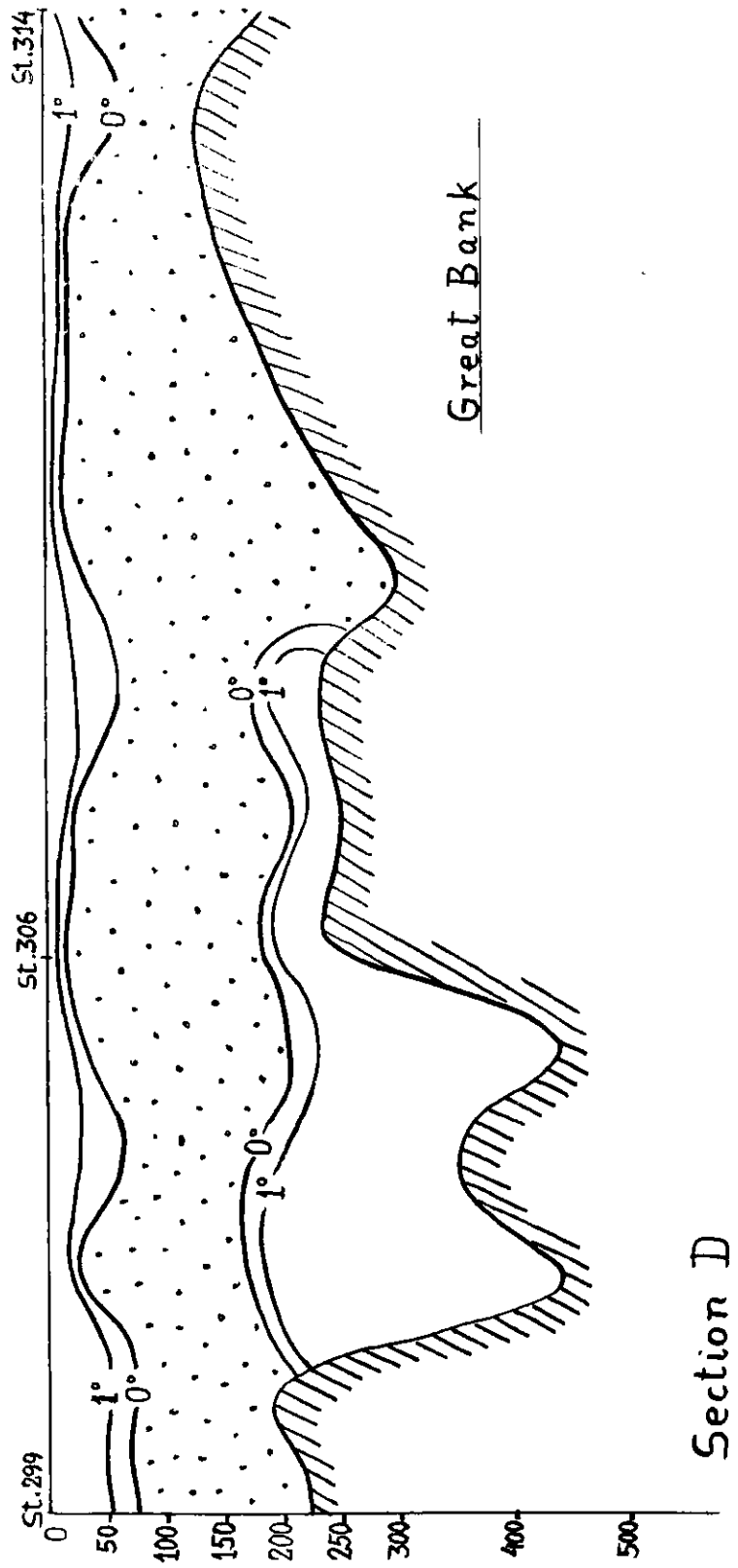

St.264
St.257
St.251
6°
2°
0°
Great Bank
0°
2°
3°
4°
6°
Flemish Cap
2°
4°
6°
8°
10°
12°
14°
16°
0
50
100
200
300
400
500
600
700
Section A


St.330
8°
4°
0°
Great Bank
Whale Deep
Haddock Channel
Halibut Channel
12°
8°
4°
0°
St.322
0
50
100
200
300
400

Section B


St.287
St.281
St.270
Hamilton Bank
4°
1°
0°
1°
4°
1°
0°
0°
1°
4°
1°
0
50
100
200
300
400
500
600

Section C


St.299
St.306
St.314
1°
0°
1°
0°
0°
1°
1°
0°
Great Bank
0
50
100
150
200
250
300
400
500

Section D