



Serial No. 375

Document No. 16

ANNUAL MEETING - JUNE 1956

DANISH RESEARCH REPORT

A. Cod in West Greenland Coastal Waters and on Offshore Banks, 1955.

By Paul M. Hansen

1. Occurrence of cod fry.

The catches of cod, *Gadus callarias* L., larvae taken by the "Dana" in July with the 2 m. stramin net are given in Figure 1. The numbers of cod larvae were small. The largest number was ten per 30 minutes in a haul with 100-25 m. wire. The largest numbers of larvae were found on the southern part of Store Hellefiske Bank. The absence of cod larvae in the stramin net hauls on the two southern sections in the Davis Strait (only one larvae was taken on the Frederikshåb section) probably indicates that there has been no transport by the current of cod fry from the Icelandic or other spawning grounds.

Judging from the poor occurrence of cod fry the 1955 year-class will be a very poor year-class which will be of no importance to the output of the fishery in the future.

2. Occurrence of small cod belonging to the age-groups I, II and III.

Small cod were taken in rather big numbers in hauls with a fine meshed seine in several localities in coastal waters and in the fjords, especially in Godthåb, Sukkertoppen and Holstensborg districts. Furthermore small cod were taken with a shrimp trawl in a coastal locality (63°53'N, 51°28'W) at depths from 220 to 240 m. where trawling experiments have been carried out regularly during all seasons since July 1953.

As the 1953 year-class predominated in these catches in 1955, there is reason to consider it a good year-class which will be of some importance to the fishery from 1958-59 onwards.

The length-frequencies of small cod taken by hand-seine, pound-net and shrimp-trawl on different stations in West Greenland are given in Figure 2 and details concerning the catches are given in Table 1. It is apparent that one single size-group between 15 and 25 to 30 cm. dominates the catches. Otolith readings have shown that this size-group corresponds with the II-group (i.e. 1953 year-class).

TABLE 1.

Sample	Position	Date	Gear	No. of Specimens
a	66°55'N 53°40'W	22/6	seine	1159
b	65°43'N 53°12'W	30/6	seine	786
c	64°19'N 50°25'W	14/6	pound-net	420
d	60°36'N 45°14'W	23/8	seine	181 (ages deter- mined)
e	63°53'N 51°28'W	20/1	shrimp-trawl	157
f	" "	19/2	" "	698
g	" "	4/4	" "	92
h	" "	26/11	" "	53) (ages deter- mined)
i	" "	20/12	" "	63) (ages deter- mined)

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3. The age composition of the stock of cod in commercial catches.

a. Offshore banks.

As in previous years a large number of cod otoliths together with length measurements have been collected from catches taken by hand-line from the "Dana" on the banks, from long-line by the "Adolf Jensen" and from Greenland fishing boats in coastal waters and in the fjords. A total of 6,058 otoliths have been used for age determinations; 922 collected from the "Dana", 2,638 from the "Adolf Jensen" and 2,498 from the Greenlanders' catches.

The age analyses of catches from the offshore banks are given together with average lengths of males and females in the attached Table 2. In Figure 3 the age compositions of seven catches from the banks (left) and the corresponding length measurements in 5 cm. groups (right) are given. Samples 3 and 6 are from long-line catches of the "Adolf Jensen". The remaining samples are from catches taken by hand-line from the "Dana".

Excepting the northernmost of the samples (No.1), the 1947 year-class dominates in all the catches.

The 1950 year-class was the second largest year-class, predominating in the catch on the northern part of Store Hellefiske Bank (47.5%). In 1954 it amounted to 25-30 percent of the catches on the same place and date. The higher percentages in the 1955 catches result from the growth of the individuals belonging to the 1950 year-class in the interjacent year. In 1955 the mean length of cod of the 1950 year-class was 55.8 cm. and it is by that length cod generally enter the commercial catches. The 1950 year-class was also taken in rather large numbers, 32.3% (sample No. 2), on the southern part of Store Hellefiske Bank. In sample 3 it was only about 12% because this sample was taken on a long-line with big halibut hooks. In samples 5 and 7 cod belonging to the 1950 year-class occur in very small numbers while it was very strongly represented (32.1%) in sample 6, a long-line catch in the early spring from Fylla Bank. Year-classes older than the 1947 year-class, for instance the former rich 1945 and 1942 year-classes, were only very slightly represented in the catches on the banks. Only in the southernmost of the seven samples from the Offshore Banks (No.7) does the 1945 year-class amount to more than 10% (viz.15%). The 1942 year-class is without importance in all samples except 3 which is the sample taken by long-line with halibut hooks, and the occurrence of such a relatively old year-class in the sample must be ascribed to the big sized hooks which chiefly catch big sized cod.

The graphs showing length measurements of cod in 5 cm. groups given in Figure 3 agree with the corresponding age analyses. The two peaks on the graphs (55-60 cm. and 65-75 cm.) represent the two predominating year-classes, 1950 and 1947.

According to the investigations only two year-classes have been of importance in the stock of cod on the banks in 1955. The most important year-class to the fishery on the banks has been the 1947 year-class which in 1955 had a mean length between about 68-72 cm. corresponding to a mean weight of about 3-3.5 kg. The next year-class which has been important in the stock is the 1950 year-class, but the small size of the individuals belonging to this year-class (mean length about 54-58 cm. and a mean weight of about 1.4-1.7 kg.) undoubtedly means that it has been of very little value to the commercial fishery.

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b. Coastal waters and fjords.

A total of 4,730 otoliths from 23 samples of cod from coastal waters and fjords were read and the data are given in Table 3 (Figure 4). Most of the samples have been taken by long-line with cod hooks. Samples 12, 14 and 25 were taken on long lines with two thirds cod hooks and one third halibut hooks, samples 16 and 17 from pound-net catches and sample 22 from a shrimp-trawl catch. In the two samples (8 and 9) from Subdivision 1A the 1942 (XIII) year-class predominates and the two old year-classes 1934 (XXI) and 1936 (XIX) are present in greater numbers than in samples from other subdivisions. It is a common phenomenon that old rich year-classes occur in the catches in Subdivision 1A several years after they have decreased and nearly disappeared from the catches in the southern subdivisions. In the samples from Subdivisions 1B and 1C (10-15) the rich 1947 year-class predominates except in sample 13 where the 1950 year-class predominates with 46.2%. The samples from Subdivision 1D are from the interior part of the Godthåb fjord (18-19), from the coastal area close to the entrance of this fjord (20-22) and from the interior part of the Ameralik Fjord (16-17). The samples from the Ameralik Fjord are from pound-net catches so the age composition shows a great number of small young cod with predominance of the 1950 year-class. In the samples from Godthåb Fjord in winter and in early spring (18 and 21), just before and during the spawning period, cod belonging to the 1940 year-class (age group XV) and older age-groups make up 49%. The 1940 year-class predominates with the 1942 year-class second. Godthåb Fjord is the only locality where the 1940 year-class has been of importance during a period of years. The youngest year-classes, younger than eight years, occur in small numbers especially in sample 18. The sample from Godthåb Fjord in September (19) is quite different from the samples taken in winter and in spring. Among the oldest age-groups the XV age-group (1940) is the only one represented (with 2.7%). The 1945 year-class predominates with 33.3%. The two samples from the coastal area in September and October (20 and 22) are very similar to each other with the 1950 year-class predominating and the 1947 year-class as the second largest. In Subdivision 1E only two samples have been collected, in July-August and October. In sample 23 the 1949 year-class predominates with 40.5%, while the 1950 year-class is the second best. In sample 24 the 1947 year-class predominates with 37%, next the 1949 year-class with 14%. The output of the commercial fishery in Subdivision 1E has consisted mainly of small cod which seems to indicate that the 1949 and 1950 year-classes have been very richly represented. The pound-net fishery is however very important in this subdivision in spring and in early summer.

Samples 25 - 30 are from Subdivision 1F. They are very different according to composition of year-classes. The 1950 and 1949 year-classes predominate in samples 28 and 29 and they are also represented as the second and third largest in sample 30. With the occurrence of rather large quantities of small sized cod in the commercial catches it seems that these young year-classes have been of importance in the fishery to a similar degree as in Subdivision 1E. However, unlike 1E it must be mentioned that there is no pound-net fishery in Subdivision 1F. The 1945 year-class which until 1954 highly predominated the catches in Subdivision 1F, predominates only in two samples (26 and 27) in 1955, and the 1947 year-class which in previous years has been of much less importance than in the northern subdivisions predominates in two samples (25 and 30). Year-classes older than the 1945 year-class were very poorly represented in the samples except samples 25 and 26.

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4. Tagging experiments.

2,496 cod were tagged in 1955; 79° on the offshore banks from the "Dana" and 1,688 in coastal waters and fjords from the "Adolf Jensen", the "Tornaq" and the "Immanuel".

580 recaptures have been reported in 1955. The distribution of the different years' tagging returns is given in Table 4. 547 recaptures have been taken in West Greenland waters, 32 in Iceland waters and 1 in the Barents Sea. In addition one has been reported from the Newfoundland area taken by a Portuguese fishing vessel. This remarkable recapture has not been confirmed hitherto, but it is made probable by another recapture of a tagged Greenland cod from the same area in 1954. The latter recapture which was reported and confirmed in 1955, was of a cod tagged off Sydproeven, 60°26'N, 45°35'W, Subdivision 1F, September 20, 1951, recaptured by a Newfoundland trawler in Conception Bay, Newfoundland, Subdivision 3L, November 20, 1954. Its length when tagged was 63cm. and it belonged probably to the 1945 year-class, and was then 9 years old when recaptured. This is the first reported recapture of a tagged Greenland cod from the Newfoundland area. The cod recaptured in the Barents Sea was tagged off Nanortalik, 60°08'N, 45°28'W, Subdivision 1F, September 9, 1954. The tag which was a plastic tag was found when the cod was landed by a German trawler. It was reported that the fish must have been taken off Røst or Malangen or on the Skolpen Bank in the Barents Sea in December 1955, and had then been about 15 months in the sea between tagging and recapture. It was a male eight years old, 1947 year-class, and had just reached maturity. This is the second cod tagged in Greenland and recaptured in the Barents Sea in the last two years. This year, 1956, another remarkable recapture was reported, taken by a German trawler on the newly discovered Anton Dohrn Bank between East Greenland and Iceland 65°45'N 30°00'W, February 7, 1956. The cod was tagged on 60°14'N, 45°31'W, September 17, 1953. It was a male, 64 cm. when tagged and 73.5 cm. when recaptured. It belonged to the 1945 year-class and had reached maturity when 9 years old. All these recaptures, two from the Barents Sea, two from Newfoundland and one from the Anton Dohrn Bank seem to indicate for the recent years a more dispersed emigration of cod from the Greenland area.

Among the 32 cod recaptured in Iceland waters, 22 were tagged in Subdivision 1F, two on the Dana Bank, four on Fylla Bank and one on each of: Fiskenaes Bank, Banana Bank, Lille Hellefiske Bank and Store Hellefiske Bank.

There have been many long migrations of cod in the Greenland area itself both northwards and southwards. Of special interest is a comparatively large number of migrations from the coastal and from the fjord area to the offshore banks, while there have been none from the offshore banks to the coastal waters and fjords. It seems that the stock of cod on the banks is recruited to a high degree from cod which have grown up in the coastal waters and in the fjords.

TABLE 5

Number of recaptures from taggings carried out on offshore banks, in coastal waters and in fjords. Cod tagged in 1955 omitted. Numbers in brackets give the stationary cod.

	Offshore banks	Coastal waters	Fjords	Iceland	Total
Offshore banks	213 (70)	1	-	9	223
Coastal waters	37	32 (16)	16	22	107
Fjords	12	15	77 (15)	1	105

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The frequencies of year-classes (age-groups) are given in Table 4.

Otoliths from a total of 324 recaptured cod have been collected for age determinations. As in 1954, the great majority of the cod recaptured in Iceland waters belonged to the 1945 year-class (X-age group). The 1947 year-class (Gr.VIII) gave two recaptures off Iceland and one from the Barents Sea. Thus the 1947 year-class now has reached maturity and some of the individuals have emigrated to distant spawning grounds. It will be interesting to see if the emigration of this rich year-class will be continued to a higher degree in the coming years.

The age frequencies among the recaptures from Greenland waters show a predominance of the 1947 year-class which was to be expected. The 1950 year-class comes as the second best represented year-class and the 1945, 1942 and 1940 year-classes are nearly equally represented. The comparatively strong representation of the latter year-class is due to the rather large number of recaptures from the Godthåb Fjord, which is the only locality where cod belonging to the 1940 year-class occur in large numbers.

In Table 6 the numbers of recaptures reported from the different nations are given. As in 1953 and 1954, the largest numbers of recaptures have been reported from Portuguese and Greenland fishermen. Portugal has reported no less than 259 recaptures from the West Greenland area. This must be due to the excellent system of organization Portugal has developed in collection of information about recaptures of tagged cod. It would be desirable if all nations which carry out fishery in West Greenland waters could organize the important collection of tags and of data on recaptures in such a way that the full value of the tagging experiments can be achieved. As the situation is now, it must be feared that many fishermen keep the tags from recaptured cod as souvenirs or amulets, or throw them away.

TABLE 6.

	<u>Recaptures from 1955</u>		
	<u>Greenland</u>	<u>Iceland</u>	<u>Barents Sea</u>
Denmark	1	-	-
Greenland	244	-	-
Faroe Islands	6	-	-
Norway	16	-	-
Iceland	7	27	-
United Kingdom	3	1	-
France	3	-	-
Germany	4	4	1
Portugal	259	-	-
Total	543	32	1

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B. Hydrographic Conditions in the Western Part of Labrador Sea
and Davis Strait, 1955.

by F. Hermann

During July 1955 the Danish R/V "Dana" worked the hydrographic stations shown in Figure 5. The hydrographic conditions of the Sections I-VI are shown in the attached Figures 7-12.

The ice conditions in 1955 were unusually severe at West Greenland. Great quantities of heavy "Storis" were carried by the East Greenland Current round Cape Farewell and up along the west coast where in July it was found as far north as Fiskenaes Bank. Owing to the ice conditions the easternmost stations of the Cape Farewell and Frederikshåb sections could not be taken.

Figure 5 gives the temperature distribution at 50m and shows the location of sections I to VI, the section Kap Farvel-Hamilton Inlet Bank, and some additional hydrographic stations worked between the sections. As could be expected from the distribution of the ice the arctic component of the West Greenland Current was strongly developed and caused negative water temperatures as far north as west of Fyllas Bank and low temperatures over the banks south of Fyllas Bank.

Over the shallow part of Fyllas Bank the temperature was slightly below normal and on the western slope considerably below normal. Over Lille Hellefiske Bank and Store Hellefiske Bank the conditions were about normal.

The Atlantic component of the West Greenland Current, the Irminger current, was also well developed off the middle part of West Greenland, but its core was situated deeper and further westward from the bank than usual. Consequently it had little influence on the conditions on the banks. It is remarkable that higher temperatures were found in section III in this warm undercurrent than in the more southerly Fyllas Bank section (II). As, furthermore, this current does not seem to be so well developed in the incomplete Frederikshåb section (I), there is reason to believe that the warm current was decreasing in strength during the time of observation.

Phosphate determinations were carried out for the upper 100 metres and Figure 6 gives the distribution of phosphate at 20 metres. As in the previous years a maximum of phosphate was found off the western slope of the banks. In the northernmost part of the area higher concentrations than usual were found.

Observations from M/K "Adolf Jensen" showed that the temperature over the shallow part of Fyllas Bank on 31st March was as low as -0.7 and on 11th May had increased to 0.4 over the bottom.

In the entrance of Godthåb Fjord position $64^{\circ}07'N - 51^{\circ}53'W$ a hydrographic station was worked from M/K "Adolf Jensen" throughout the year as often as possible. These observations are of more than local interest as it is believed that many of the features in the variation of temperature are representative of those for the middle part of the West Greenland area. The maximum bottom temperature (Fig.13) is reached as late as Nov.-Dec. due to the influence of the warm Irminger Current. The maximum bottom temperature was higher in 1953 than in 1954. In March the winter cooling reached the bottom and nearly homothermous water of -0.5 was found both in 1954 and 1955.

C. Sections Faroes to East Greenland and Cape Farewell to West Ireland.

by F. Hermann

Two transatlantic sections were worked from R/V "Dana", the section along 62°N from the Faroes to East Greenland from 1 to 7 July (Figure 16) and from Cape Farewell to Ireland from 13 to 21 August (Figure 17).

As in 1954 the warm Atlantic water with temperature above 8°C. was found in great thickness in the eastern part of the section (Figure 16A.). Over the slope off the Faroes relatively cold water indicates an overflow of Norwegian Sea deep water over the Faroe-Iceland ridge or between the Faroes and Faroe Bank. The bottom water with salinity above 35‰ found in the deep eastern basin must be a mixture of Norwegian Sea deep water with Atlantic water.

West of the Reykjanes Ridge the strong inclination of the isotherms and isohalines indicates a strong northgoing current, the Irminger Current. In the western part of the section the East Greenland Polar Current was found over the Greenlandic shelf and outside the shelf the southgoing branch of the Irminger Current was found. Only small amounts of Atlantic water were found in the Irminger Sea.

In the Greenland-Ireland section (Figures 17A and 17B) the Polar Current seems to be of greater volume than usual and it is remarkable that temperatures below -1°C. were met here as late as the middle of August. The Irminger Current was not so well developed and its core with temperature above 5° was situated far from the shelf.

One of the most striking features in the section is the sharp front between the subarctic water and the warm and saline water between station 9796 and 9797. The front is situated in the southwestern part of the trough between the Reykjanes Ridge and the Mid Atlantic Ridge. This front was found in nearly the same position in 1954 and seems thus to be rather closely connected with the bottom configuration.

The two sets of inclinations of the isotherms between the Mid Atlantic ridge and the European Continental Slope (stations 9800 to 9801 and 9803 to 9804) indicate strong northgoing currents at these positions.

- THE END -

TABLE 2

Cod from West Greenland Banks 1955. Frequency percentages and mean lengths of males and females.

Sample No. Year- class	1		2		3		4		5		6		7	
	%	M. cm	%	M. cm	%	M. cm	%	M. cm	%	M. cm	%	M. cm	%	M. cm
1951	7.8	44.6	5.1	46.1	0.3	-	2.3	47.0	4.8	63.0	0.3	-	7.0	52.3
1950	47.5	54.2	32.3	56.3	11.9	54.6	56.8	58.0	4.8	63.0	32.1	54.6	3.5	63.5
1949	2.8	63.2	2.1	66.0	2.0	61.7	60.3	66.4	5.2	64.0	11.2	58.4	3.5	63.5
1948	10.6	63.9	12.8	68.1	9.2	65.8	67.3	65.5	14.4	66.0	14.7	63.1	10.5	63.3
1947	26.3	67.3	36.9	71.9	35.9	68.2	70.4	70.6	57.7	71.5	37.2	66.1	52.6	66.6
1946	0.6	68.0	3.1	70.3	3.1	66.3	73.2	72.0	5.2	75.3	1.2	68.0	3.5	65.0
1945	2.2	71.0	3.6	76.5	7.1	74.2	75.5	76.6	8.3	79.8	1.6	78.0	15.8	70.0
1944	-	-	0.5	76.0	5.1	80.3	78.3	75.0	1.3	79.0	0.3	78.0	-	-
1943	-	-	-	-	1.4	81.0	78.0	85.3	0.9	83.0	0.3	-	1.8	73.0
1942	0.6	83.0	2.6	91.0	13.2	79.1	82.4	78.7	0.9	83.0	0.3	74.0	3.5	74.0
1941	0.6	-	-	-	0.7	73.0	82.0	81.8	1.3	-	0.3	-	-	77.0
1940	-	-	1.0	85.0	4.7	82.3	87.5	-	-	-	0.4	-	-	82.0
1939	-	-	-	-	0.3	-	95.0	-	-	-	-	-	-	-
1938	-	-	-	-	0.7	90.0	106.0	-	-	-	0.3	-	-	78.0
1937	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1936	-	-	-	-	3.1	80.3	89.8	-	0.4	-	-	-	-	-
1935	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-
1934	-	-	-	-	1.0	104.0	88.1	-	-	-	-	-	-	-
Total	179	-	195	-	295	-	263	-	228	-	311	-	57	-

TABLE 3

Cod from coastal waters and fjords of West Greenland 1955. Frequency percentages.

Sample No. Year- class group	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	Sep.	Sep.	Aug.- Sep.	Aug.- Sep.	July	June- July	Aug.	May	June	Feb.- Aug.	Sep.	Sep.	Sep.	May	Oct.	July- Aug.	Oct.	Aug.	Sep.	Apr.- May	June	Aug.	Oct.	
1951 IV	-	-	-	-	1.5	-	4.4	15.7	4.4	0.1	7.2	24.7	2.3	11.5	1.0	1.0	-	-	-	-	-	-	-	-
1950 V	-	-	0.5	21.2	5.3	46.2	3.9	1.6	34.2	2.0	10.8	47.8	6.8	36.8	24.0	8.5	-	-	4.0	-	7.9	3.0	4.6	-
1949 VI	-	-	1.0	4.9	-	18.1	1.3	-	8.5	7.6	2.0	7.2	8.0	3.4	11.5	40.5	14.0	-	2.7	5.7	44.4	44.6	18.3	-
1948 VII	-	-	2.6	10.3	8.0	12.1	5.2	2.4	5.1	3.2	0.7	3.6	1.8	1.1	4.6	6.0	4.5	-	1.3	5.7	22.2	32.6	15.2	-
1947 VIII	15.5	7.5	52.3	55.6	50.7	21.6	35.0	22.8	10.9	19.6	6.8	18.0	10.6	8.0	25.3	19.5	37.0	34.2	22.7	6.5	0.8	5.1	4.1	-
1946 IX	2.1	1.3	2.1	1.1	1.3	0.5	1.3	1.6	1.0	2.5	0.9	1.8	-	1.1	1.1	1.0	0.5	-	1.3	18.7	18.3	12.1	38.1	-
1945 X	12.4	11.3	15.0	3.7	10.7	-	10.4	11.0	8.2	12.7	12.6	33.3	-	6.8	6.9	3.5	12.5	22.9	32.0	49.6	5.6	2.5	13.2	-
1944 XI	3.1	2.5	2.6	0.6	4.0	-	3.9	2.4	0.3	1.3	1.7	2.7	-	2.3	-	0.5	-	1.2	5.3	2.4	-	-	1.0	-
1943 XII	7.7	6.3	3.1	1.1	8.0	-	5.2	3.1	0.3	1.3	3.6	4.5	1.8	-	1.1	1.5	3.0	1.2	4.0	-	-	-	-	-
1942 XIII	33.0	37.5	13.0	1.4	9.3	-	23.4	-	4.1	3.8	17.8	8.1	2.7	17.0	-	1.5	8.0	18.1	14.7	9.8	-	-	1.5	-
1941 XIV	6.7	7.5	2.1	-	-	-	1.3	-	1.0	-	2.1	-	0.9	2.3	-	-	0.5	2.4	1.3	-	-	-	-	-
1940 XV	7.7	7.5	3.1	-	-	-	6.5	-	7.5	5.1	24.0	2.7	0.9	36.4	1.1	0.5	2.0	8.4	1.3	1.6	-	-	2.0	-
1939 XVI	3.6	1.3	-	-	-	-	-	-	0.3	0.6	3.1	-	-	3.4	-	-	1.5	1.2	4.0	-	-	-	1.0	-
1938 XVII	-	1.3	0.5	-	-	-	-	-	5.1	2.5	13.7	-	-	5.7	-	-	2.0	3.6	1.3	-	-	-	-	-
1937 XVIII	0.5	2.5	0.5	-	-	-	-	-	0.3	0.6	3.1	-	-	-	-	-	0.5	-	-	-	-	-	-	-
1936 XIX	4.6	3.8	1.6	-	-	-	-	-	5.1	2.5	1.6	-	-	-	-	-	2.5	3.6	1.3	-	-	-	-	-
1935 XX	-	-	-	-	-	-	-	-	0.3	-	5.9	-	0.9	2.3	-	-	0.5	-	-	-	-	-	-	-
1934 XXI	3.1	5.0	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.5	-	-	-	-	-	-	-
1933 XXII	-	3.8	-	-	-	-	2.6	-	-	1.3	0.8	-	-	1.1	-	0.5	1.5	2.4	2.7	-	-	-	-	-
1932 XXIII	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	194	80	193	788	75	199	77	127	293	158	745	111	113	88	87	200	200	83	75	123	125	199	197	-

TABLE 4

Recaptures off Greenland (Gr.) and off Iceland (Ic.) from 1955 of age determined cod tagged in different years' tagging experiments.

Year-class	Age-group	1949		1950		1951		1952		1953		1954		1955		Greenland % minus 1955		Iceland			
		Gr.	Ic.	Gr.	Ic.	Gr.	Ic.	Gr.	Ic.	Gr.	Ic.	Gr.	Ic.	Gr.	Ic.	Total	%	Total	%		
1934	XXI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.3	0.5	-	-	
1935	XX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1936	XIX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1937	XVIII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1938	XVII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1939	XVI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1940	XV	1	-	-	-	-	-	1	-	-	-	-	-	-	-	4	1.2	1.4	-	-	
1941	XIV	-	-	-	-	-	-	5	-	-	-	-	-	-	-	7	2.2	1.9	-	-	
1942	XIII	1	-	-	-	-	-	2	-	-	-	-	-	-	-	4	1.2	1.4	-	-	
1943	XII	-	-	-	-	-	-	6	1	-	-	-	-	-	-	35	10.8	12.1	-	-	
1944	XI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1945	X	1	1	-	-	-	-	2	-	-	-	-	-	-	-	33	10.2	15.0	-	-	
1946	IX	-	-	-	-	-	-	7	6	-	-	-	-	-	-	1	0.3	0.5	-	-	
1947	VIII	-	-	-	-	-	-	1	-	-	-	-	-	-	-	5	1.5	2.4	-	-	
1948	VII	-	-	-	-	-	-	7	1	-	-	-	-	-	-	38	11.7	17.4	-	-	
1949	VI	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	0.6	1.0	-	-	
1950	V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	27.5	36.7	-	-	
1951	IV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	3.4	3.4	-	-	
1952	III	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	4.3	1.9	-	-	
††		1	1	4	1	5	2	29	1	39	1	123	-	-	-	18	5.6	-	-	-	
Total		4	2	6	1	10	5	60	9	65	6	263	(1)9	139	-	223	-	-	-	6	(1)32

(1) Recaptured in the Parents Sea.

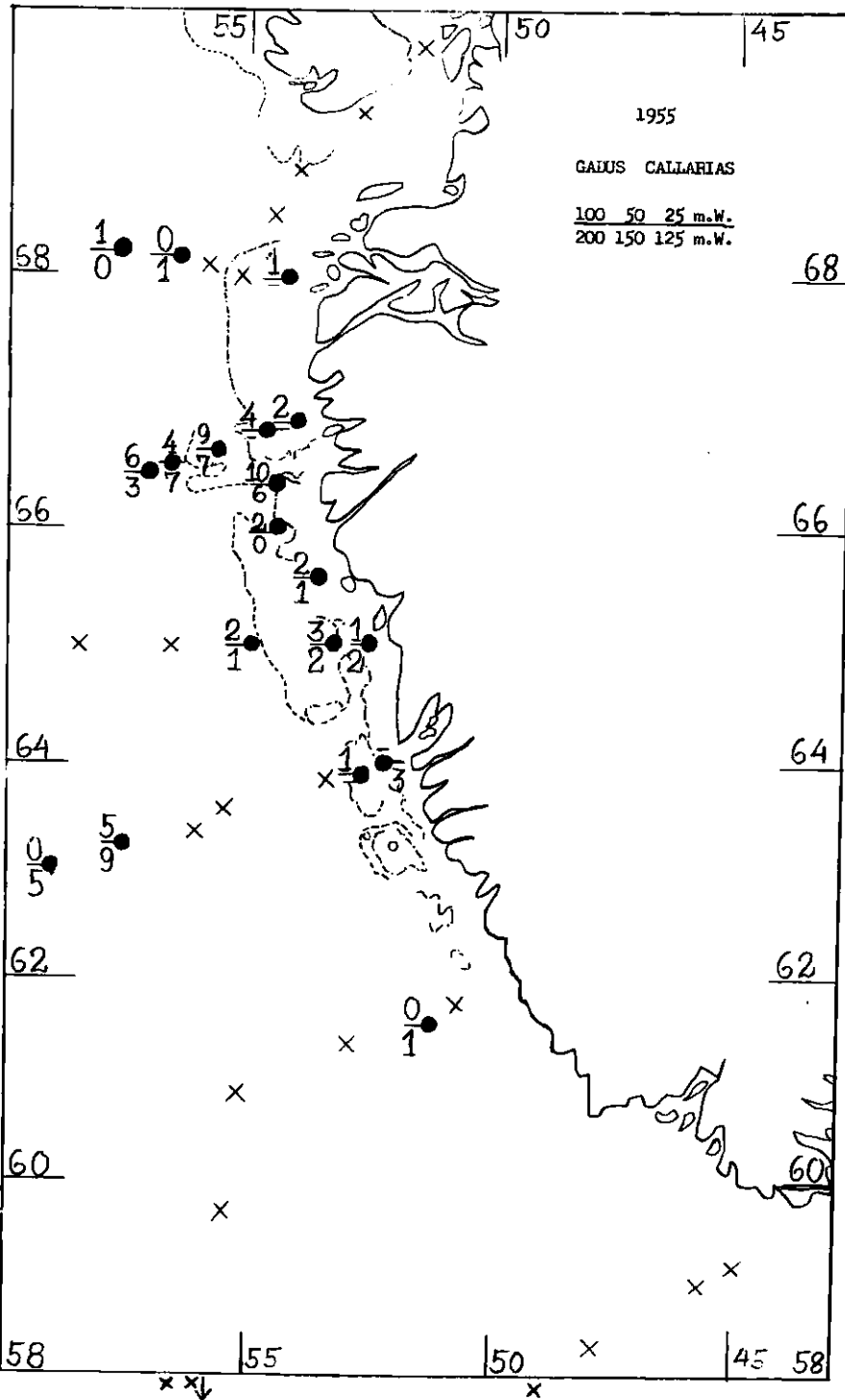


FIGURE 1. Catches of cod larvae per 30 minutes haul with a 2m. stramin bag from the "Dana", July-August 1955. Numbers in hauls with a 100-25 m. wire and with a 200-125 m. wire are shown respectively above and below the line.

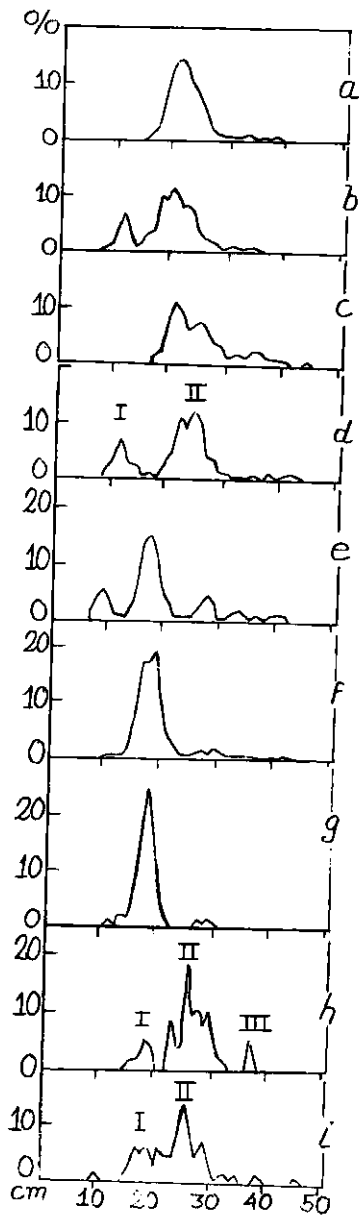


FIGURE 2. Length-frequencies of small cod, age-groups I, II and III.

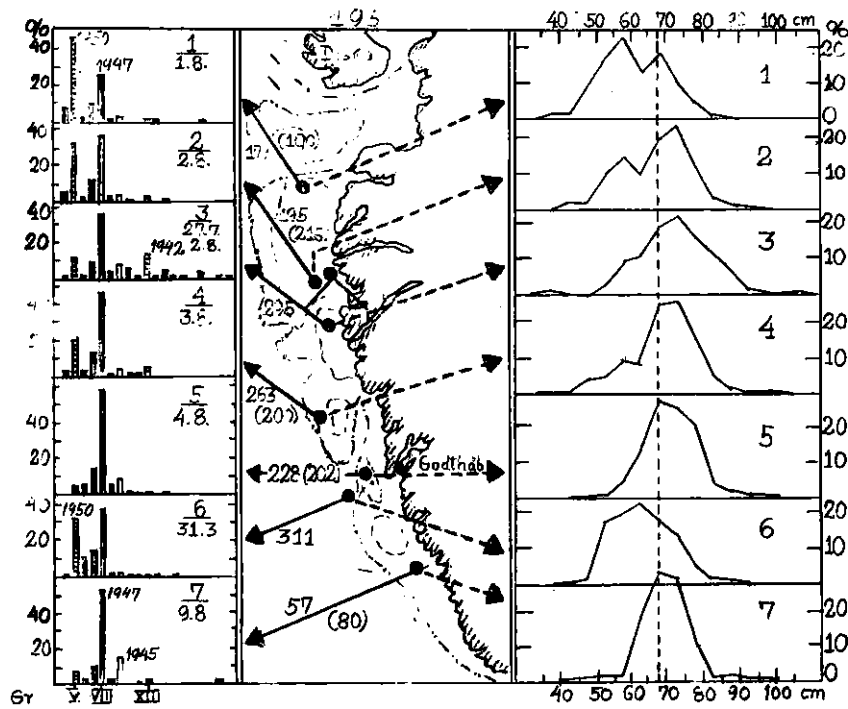


FIGURE 3. Percentage age distribution (left) and length measurements by 5 cm. groups (right) of cod caught on Greenland Banks, 1955. Off each station are given no. of specimens investigated and in brackets of cod tagged.

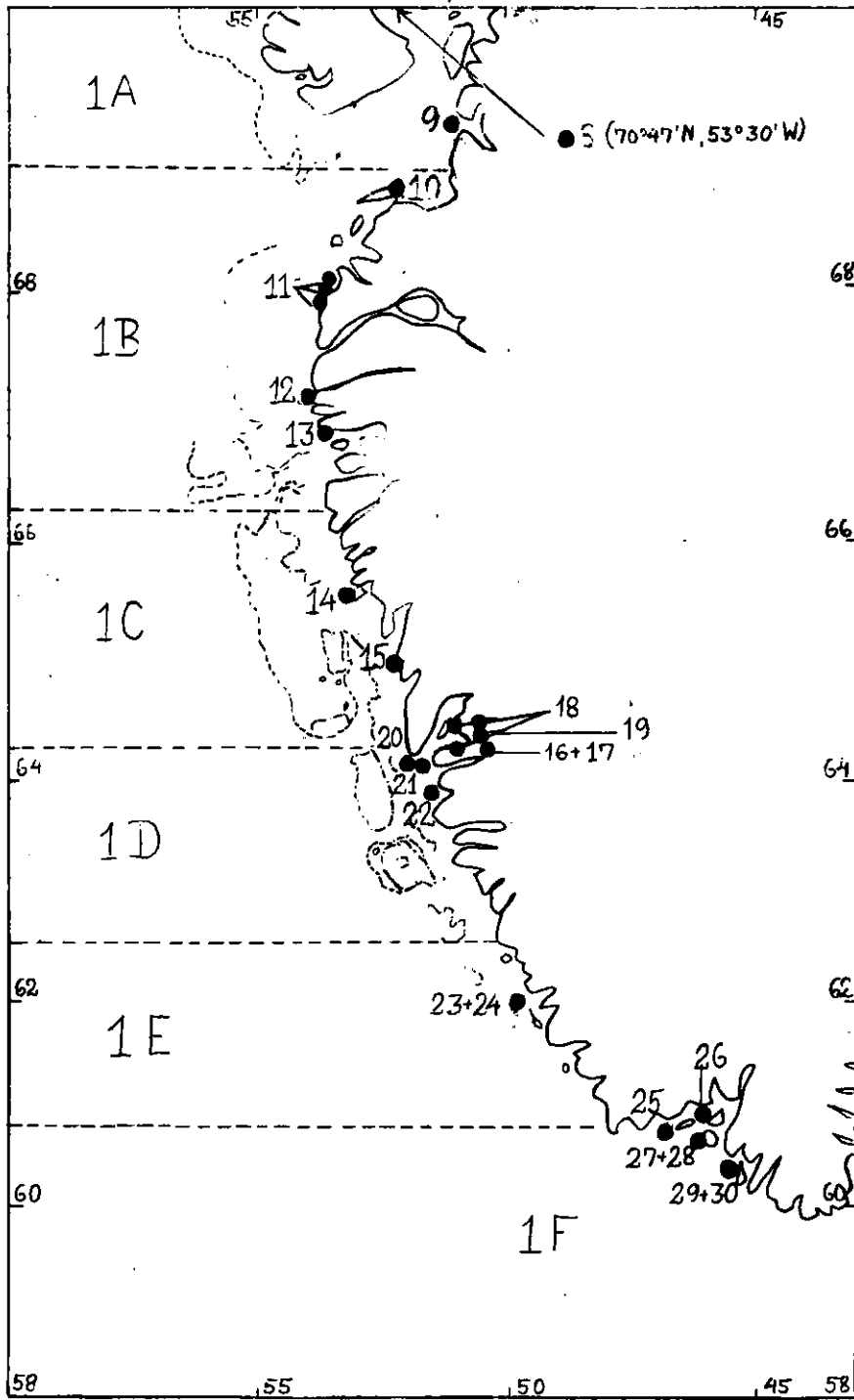
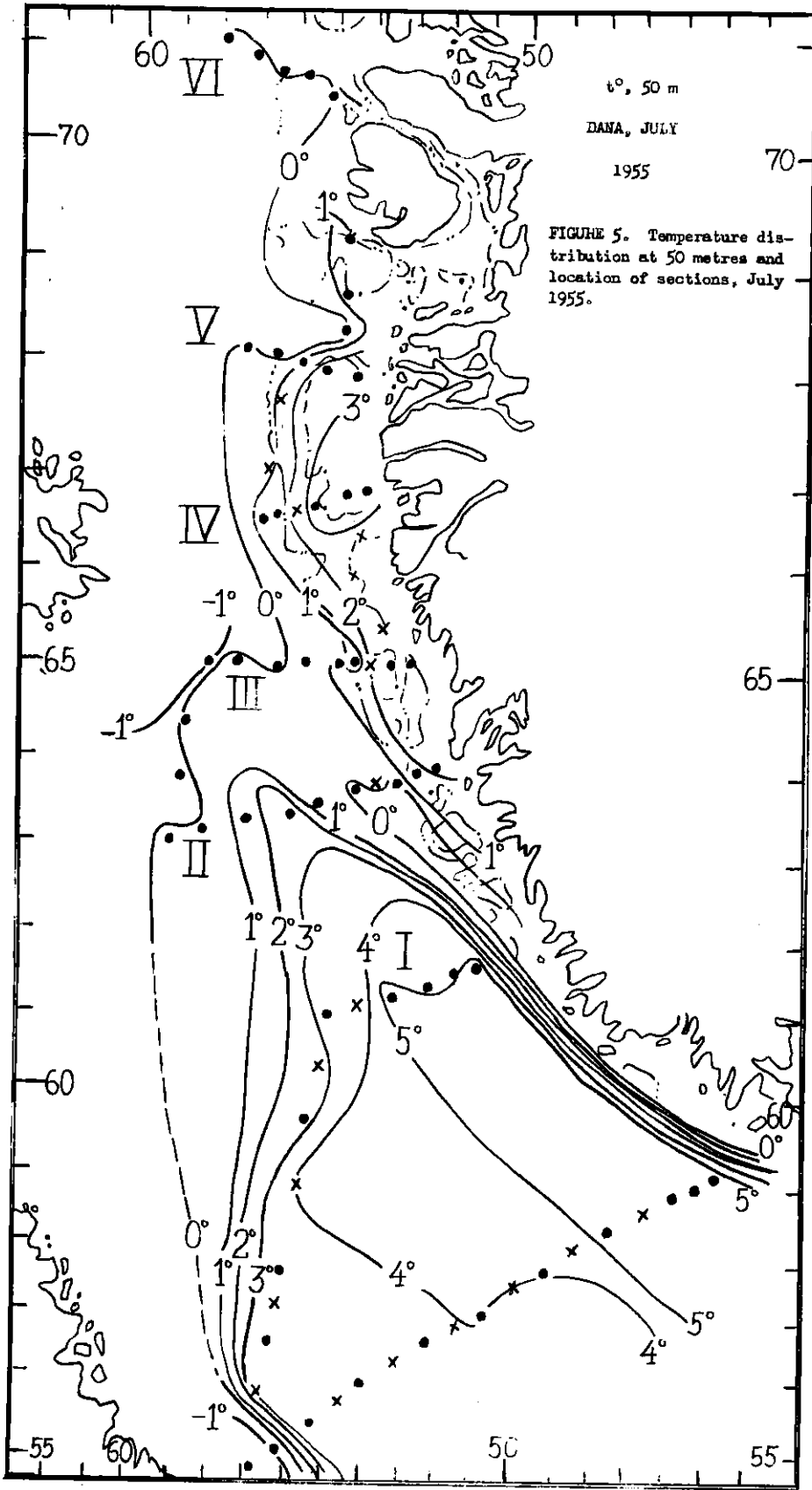
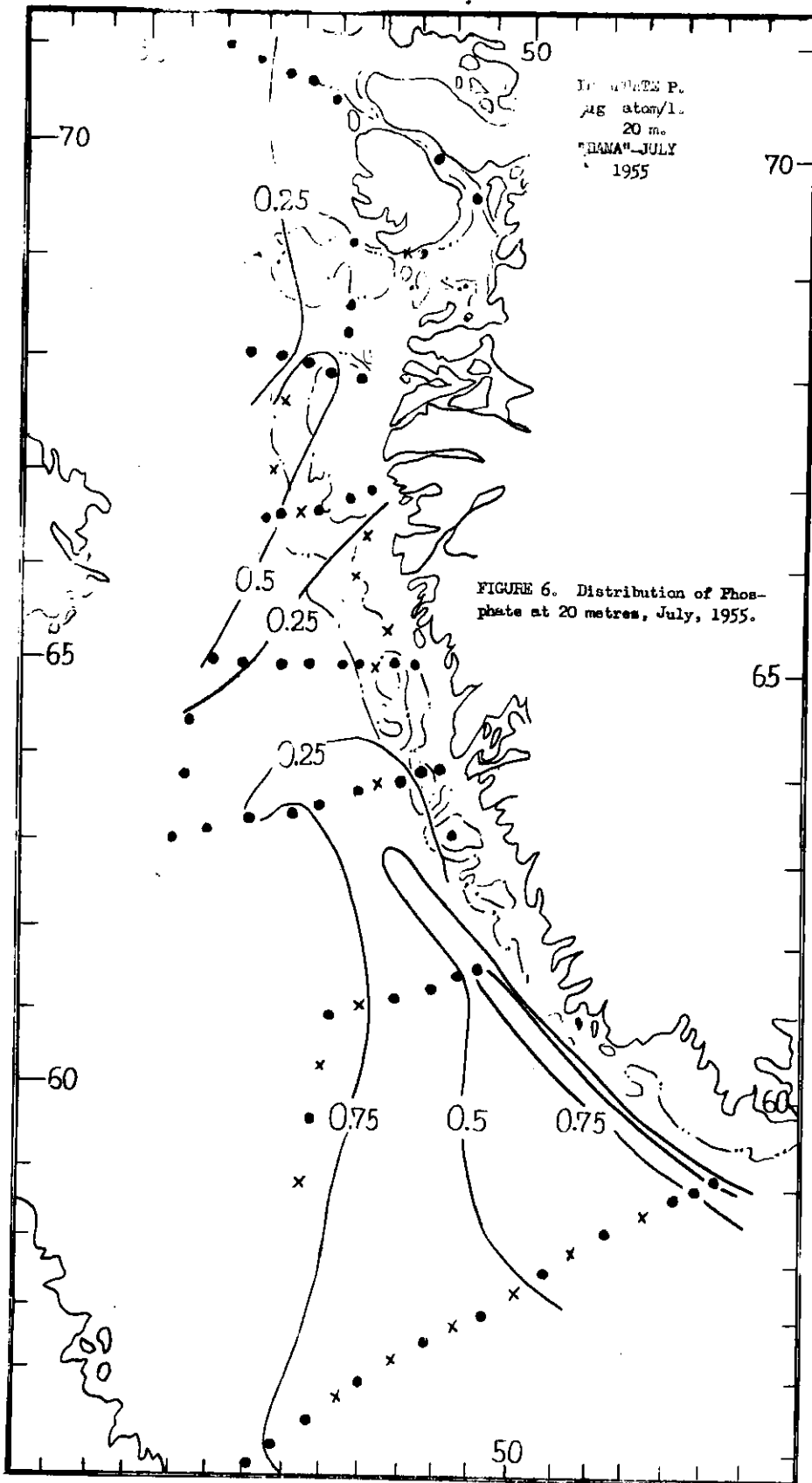


FIGURE 4. Localities from the coastal waters and fjords where otolith samples have been collected for age analyses. The numbers correspond with those given in Table 3.





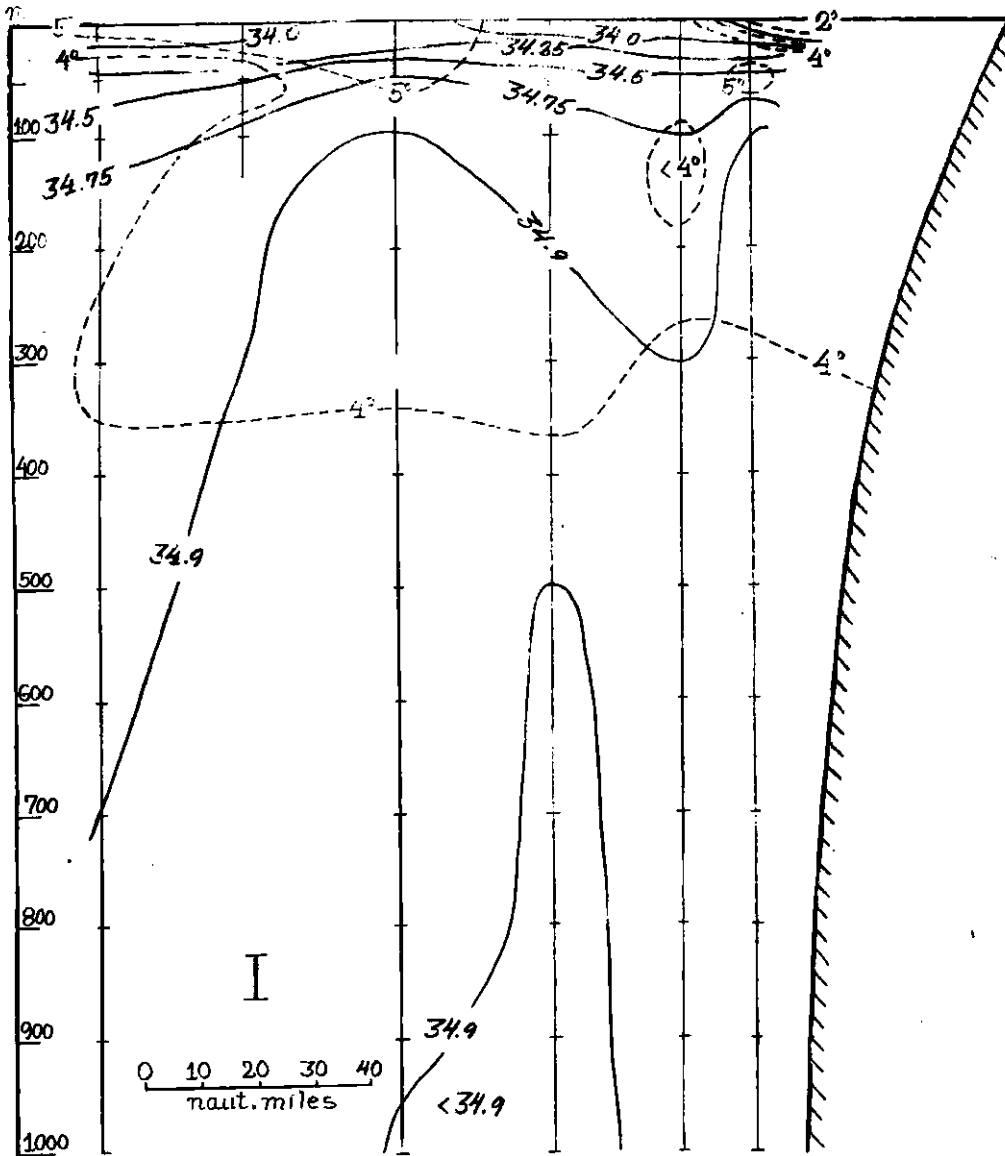
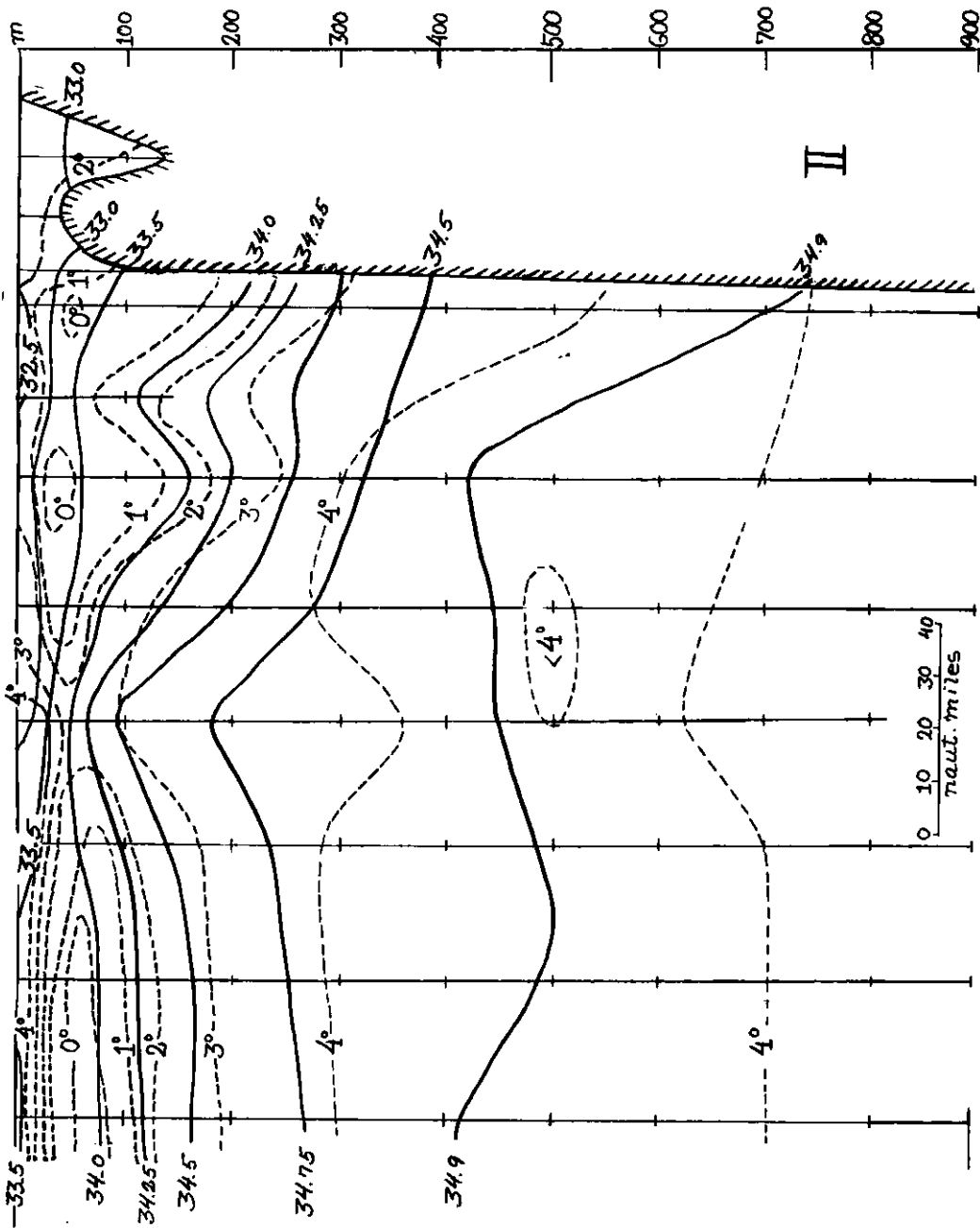


FIGURE 7. Section I: off Frederikshåb, 14th to 15th July, 1955.

FIGURE 8. Section II:
 across Fylla Bank, 2011
 to 22nd July, 1955.



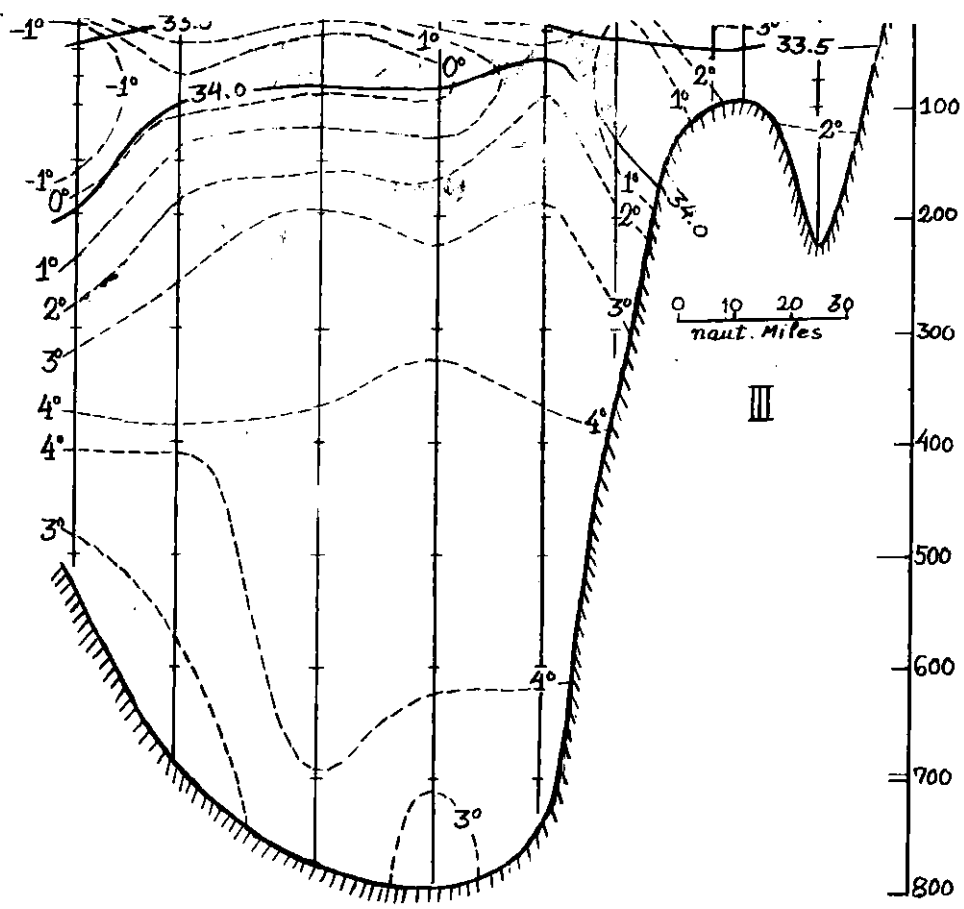


FIGURE 9. Section III: across Lille Hellefiske Bank, 22nd to 23rd July, 1955.

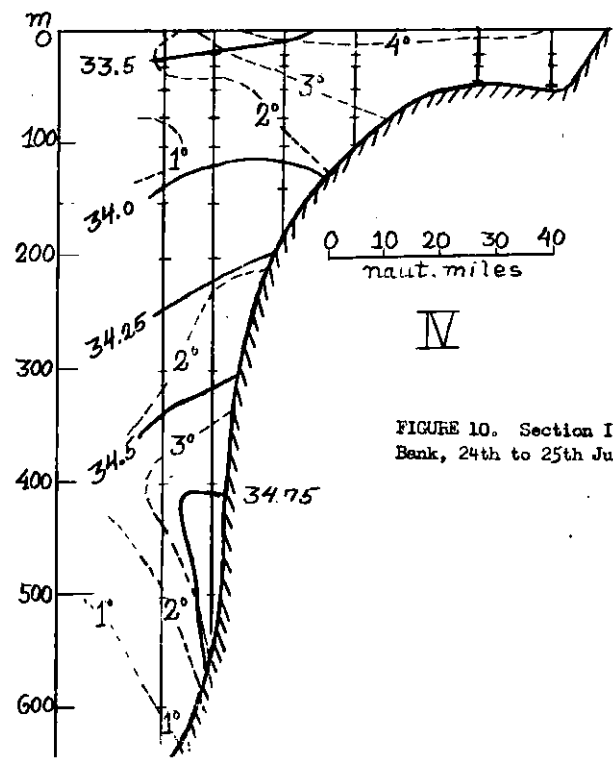


FIGURE 10. Section IV: across Store Hellefiske Bank, 24th to 25th July, 1955.

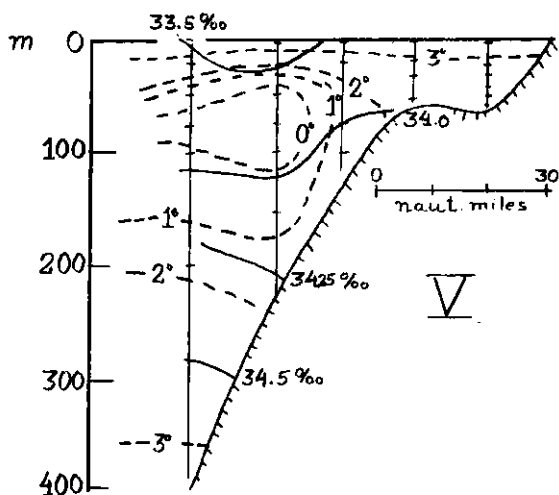


FIGURE 11. Section V: off Egedesminde, 25th to 26th July, 1955.

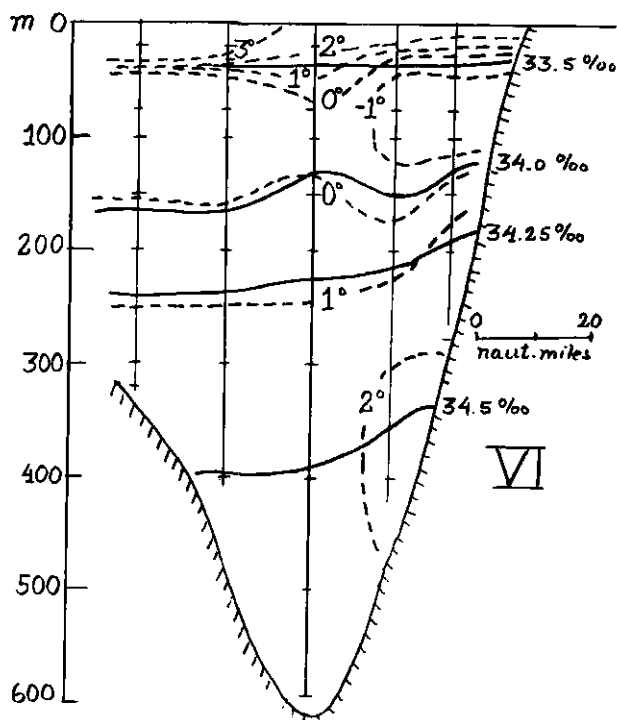


FIGURE 12. Section VI: off Harep, 30th July, 1955.

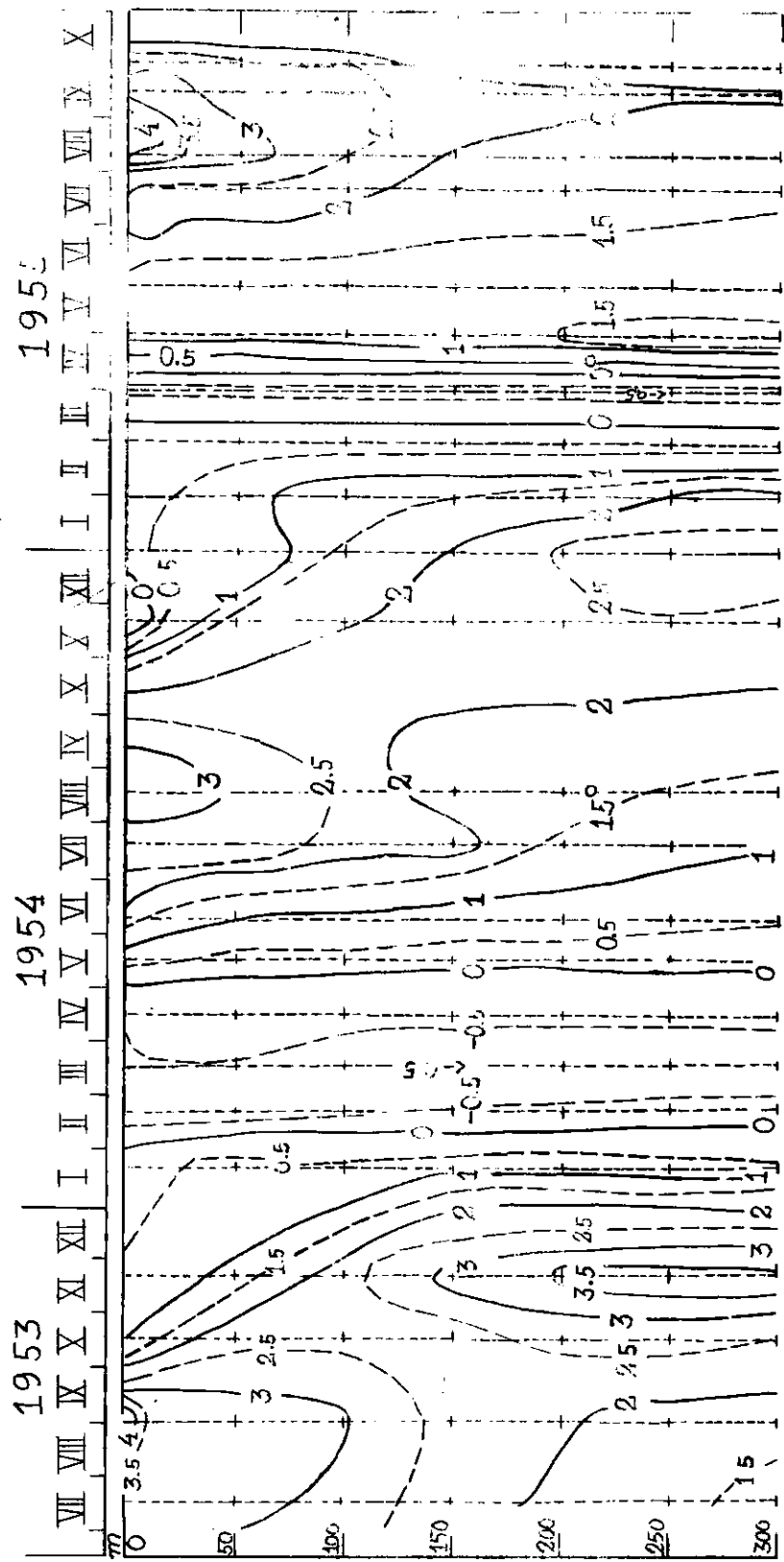


FIGURE 13. Variation of temperature in the entrance of Godtåbb fjord.

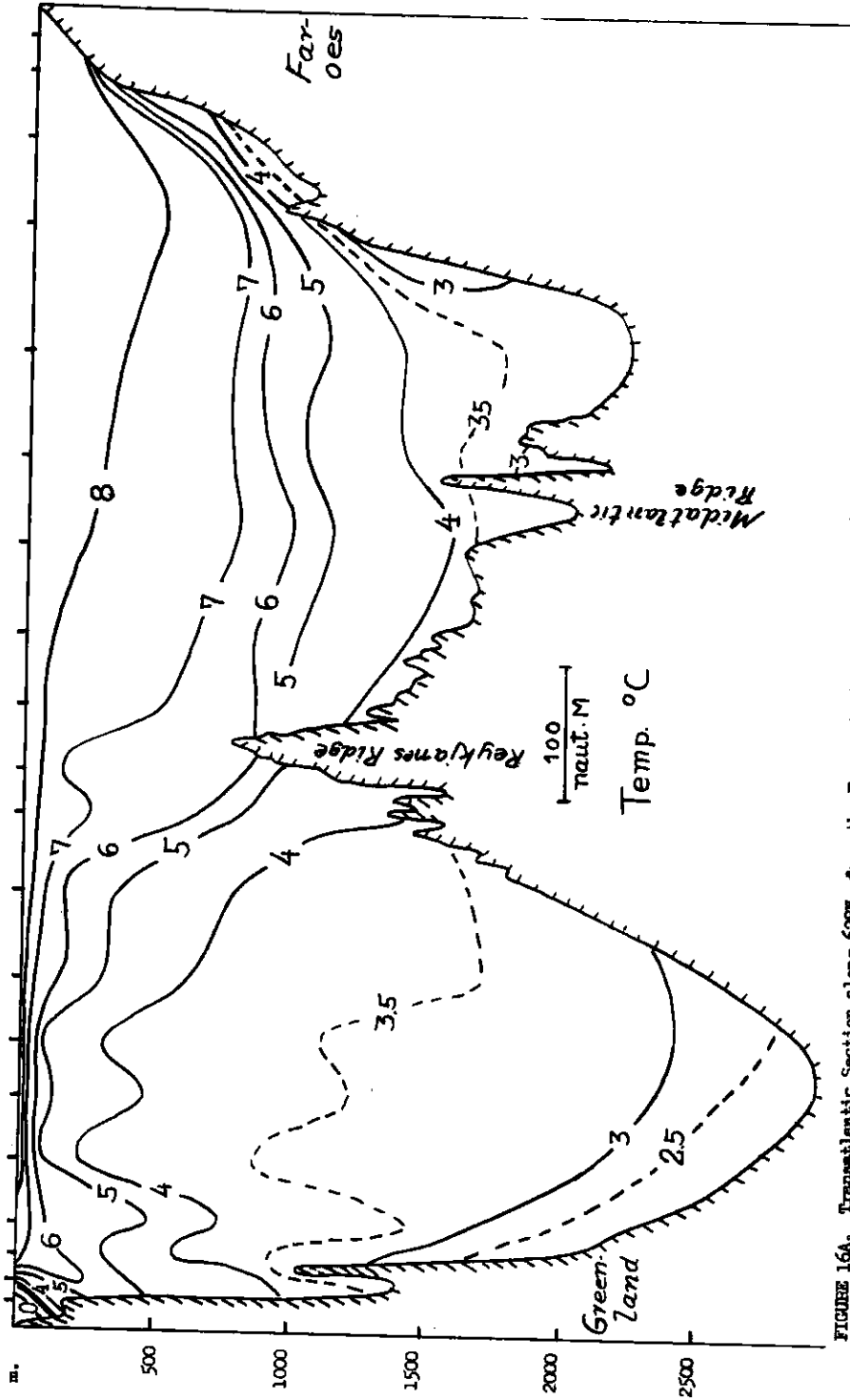


FIGURE 16A. Transatlantic Section along 62°W. from the Faroes to East Greenland. R/V "Thana", 1-7 July 1955, Temperature °C. The Stations are marked along the surface line.

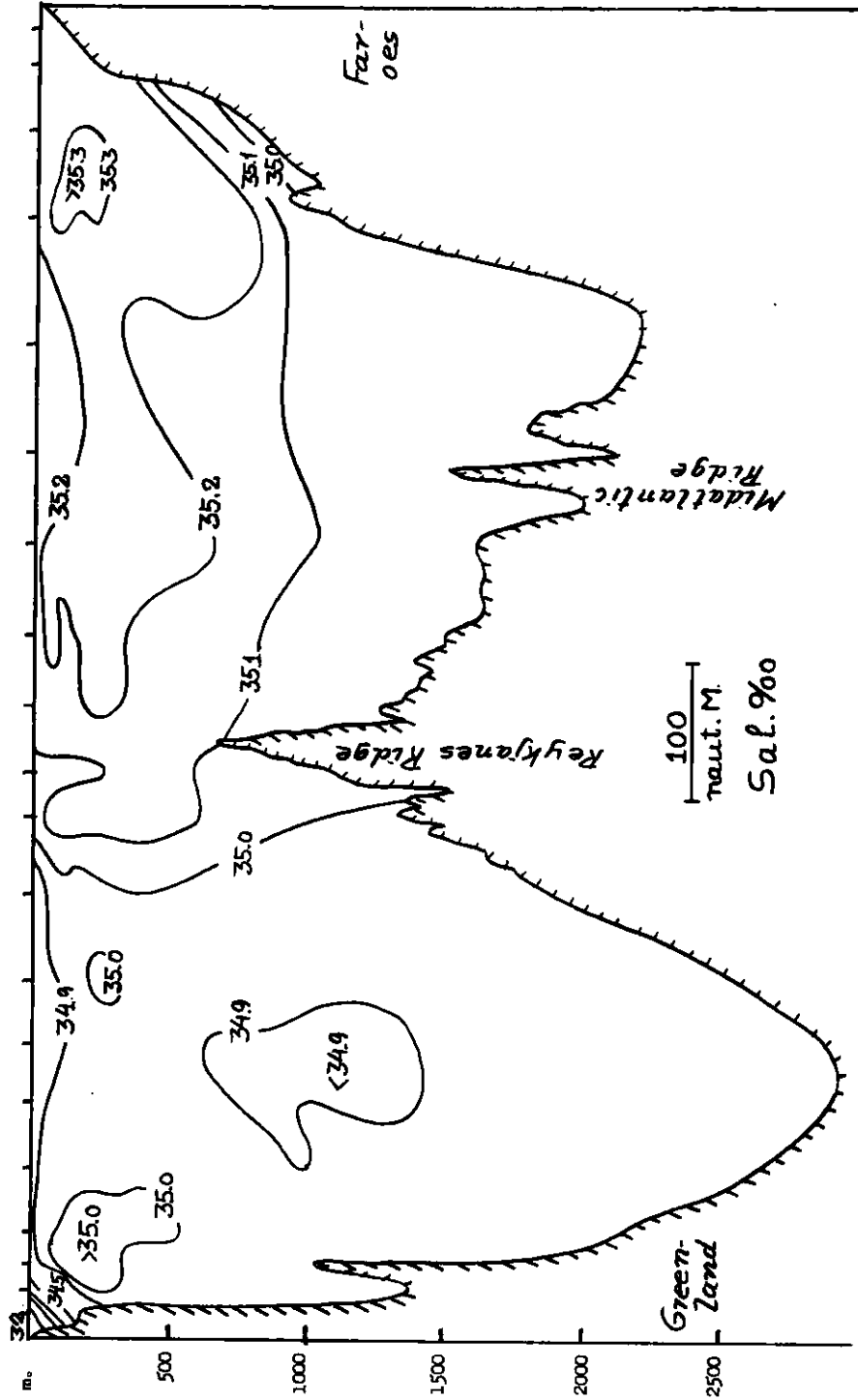


FIGURE 168. Transatlantic Section along 62°W. from the Faroes to West Greenland. B/V "Dana", 1-7 July 1955. Salinity ‰. The Stations are marked along the surface line.

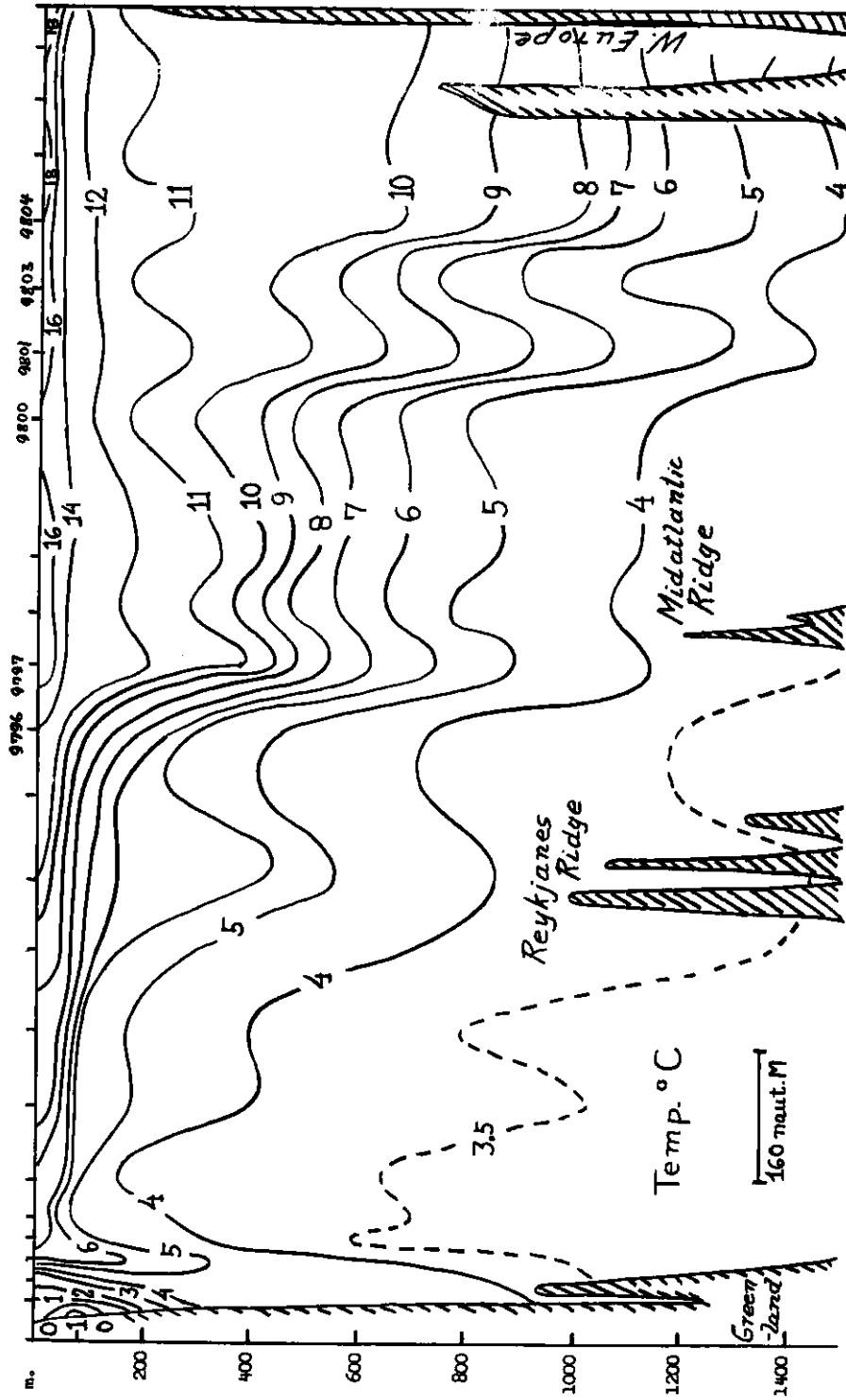


FIGURE 17A. Transatlantic Section from Cape Farvel to Ireland. R/V "Dana", 13-21 August 1955. Temperature °C. The Stations are marked along the surface line.

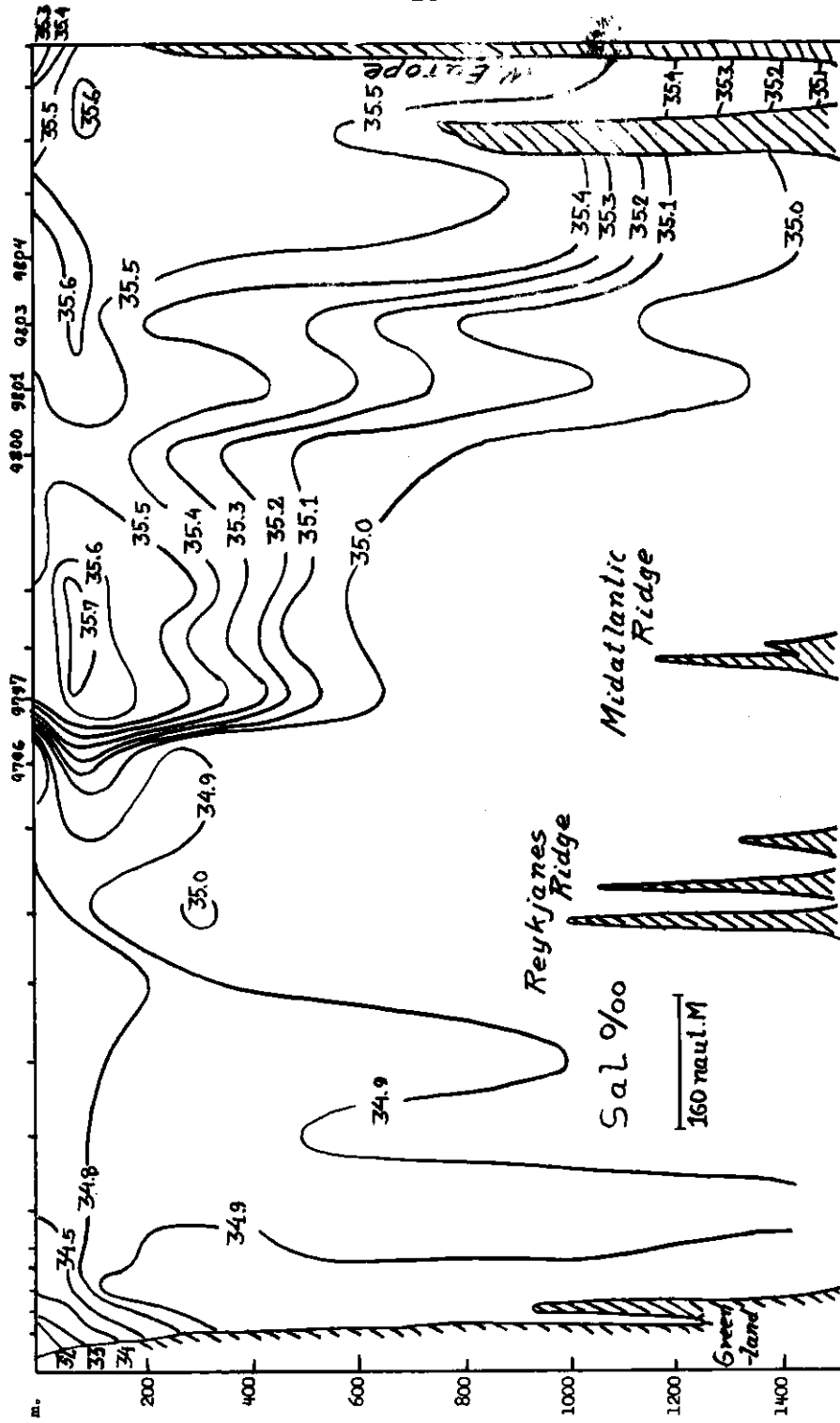


FIGURE 17B. Transatlantic Section from Cape Farvel to Ireland. R/V "Dana", 13-21 August 1955. Salinity ‰/oo. The stations are marked along the surface line.