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Contributions to the hydrography of the waters of the Scotian shelf. General hydrography - 1935.

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CONTRIBUTIONS TO THE HYDROGRAPHY OF THE WATERS OF THE SCOTIAN SHELF

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INTRODUCTION

Hydrographical investigations were continued on the Scotian during 1935. A cruise of the area extending between Shelbourne and Canso was made in May and again in August. The western half of the area was investigated also in July. Inshore conditions were followed through seven cruises over a line of stations extending outwards from Halifax harbour, as well as by the regular daily and weekly observations made in Halifax harbour. Lines of stations were also occupied in Chedabucto bay, off Glace Bay, and off Ingonish in June and September.

THE MAY CRUISE /// --- 1935

The May cruise consisted, as in the previous year, of the occupation of seventeen stations for observations of temperature and salinity. The cruise was inaugerated on May 15th, and was completed on May 21st. The collected data are furnished in table 1.

(a) The Horizontal Distribution of Temperature and Salinity.

The distribution of temperature and salinity is shown in plan, for depths of 0 and 50 metres in figures 1 and 2 respectively. The surface temperatures are seen to range between less than 1.0° C. and greater than 5.0° C., with the colder waters to the

eastward, and the warmer waters offshore and to the west. The surface salinities range from less than 30.10‰ to greater than 32.10‰, with the less saline waters inshore and to the eastward, and with the more saline waters offshore. This surface distribution of temperature and salinity for May, 1935 is very similar to that for May, 1934.

At 50 metres, temperatures less than -0.5° C. were encountered and were found distributed in the inshore area from Halifax eastward. The higher temperatures at this depth are somewhat greater than 1.5° C. but less than 2.0° C. On the whole, the temperatures at a depth of 50 metres are lower than 2.0° C. with the colder waters inshore and to the eastward. Salinities, at a depth of 50 metres, range from less than 31.70‰ to greater than 32.30‰, the higher salinities being experienced in the central portion of the area. In May of the previous year, temperatures at 50 metres ranged chiefly between 1.5° C. and 2.5° C., but mostly greater than 2.0 °C. In general too, salinities, at a depth of 50 metres, in May, 1934 were somewhat lower than at the corresponding depth in May, 1935. It is then evident that the temperature conditions at 50 metres presaged a somewhat colder water year in 1935. It might be noted also that the somewhat lower temperatures in 1935 were accompanied by somewhat lower salinities. This point is of interest in a later consideration of the factors involved in the formation and maintenance of the "intermediate layer" of the Scotian shelf.

(b) The Vertical Distribution of Temperature and Salinity.

1. Temperature

The vertical distribution of temperature, as observed during the May cruise is shown in figures 3 and 4. In section 121-124, which is the most easterly section, temperatures of less than 5.0°C. reach to depths of 140 metres, while a large portion of the section

contains water of a temperature less than 1.0° C. In section 58 - 50, the water of less than 5.0° C. extends to a depth of 130 metres inshore and to a depth of only 80 metres offshore. The colder waters of temperatures less than 1.0° C. are found only in the inshore portion of the section. Waters of less than 0.0° C. are also present in the section. In the section 124-50, only a trace of water of a temperature less than 1.0° C. is to be found. Temperatures of less than 5.0° C. extend to depths of approximately 100 metres. In a similar cruise of the previous year, only a trace of water of less than 2.0° C. was to be found in this offshore section. In the present case, water of a temperature less than 2.0° C. constitutes a layer of 15 to 60 metres in thickness. In section 127-129, waters of a temperature of less than 5.0° C extend to depths of 110 metres. Waters of temperatures less than 1.0° C. are noted at both the inshore and offshore ends of the section. The layer of water of a temperature less than 2.0° C. is approximately five metres in thickness at station 127, and as much as forty metres in thickness in the offshore end of the section. In a similar section, in May of the previous year, only a trace of water of a temperature of less than 2.0° C. was to be found. In section 134-131, all temperatures are less than 4.0° C. with the major portion of the section consisting of water of less than 1.0° C. and even less than -1.0° C. In a similar section, in May of the previous year, temperatures were all less than 3.0° C. and greater than 0.0° C. In the section 129-131, with the exception of the immediate surface waters at station 129, all temperatures are less than that of 5.0° C. and greater than 0.0° C.

shelf. A comparison of the vertical distribution of salinity in May, 1935, in the sections 127-129, 134-131, and 129-131, with that for May, 1934, would indicate that greater stratification is in evidence in 1935. This is due chiefly to the presence of considerably fresher waters which are noted at the inshore ends of the sections 127-129 and 134-131 in May, 1935. In section 127-129, the "upper layer" is from fifty to seventy-five metres in thickness not very extensive, reaching a depth of 65 metres inshore and petering out just beyond station 128. In section 134-131, the "upper layer" is from fifty to seventy-five metres in thickness. In section 129-131, the "upper layer" exists only in the eastern half of the section, and has a thickness of as much as fifty metres. This "upper layer", in May, 1935, again proves to be of greater importance in these eastern sections than in May, 1934. Other than this, the maximum salinity in May, 1935 which is somewhat greater than 34.50 ‰ in the section 127-129, somewhat greater than 32.50 ‰ in the section 134-131, and somewhat greater than 32.50 ‰ in the section 129-131 is comparable with the maximum salinity in the same respective sections in May, 1934. On the whole however, it would seem that the waters of lower salinity are much more prominent in May, 1935 than in May, 1934. In other words, in May, 1935, the Scotian shelf had been flooded with a surface layer of considerable thickness and of a fairly uniform salinity which was less than 32.50 ‰.

THE JULY CRUISE // --- 1935

The July cruise consisted only in the occupation of the regular stations in the western half of the area. The cruise was completed on July 2nd, and 3rd. The collected data are furnished in table 1.

(a) The Vertical Distribution of Temperature and Salinity.

1. Temperature

The distribution of temperature for July, 1935 is shown in section in figure 7 for the western half of the area. A comparison of the temperature conditions in the sections in July with those in the same sections in May, indicates that vernal warming has been responsible for considerable temperature stratification in the upper fifty metres, with surface temperatures somewhat greater than 10.0° C. In general too, the thickness of the band of colder waters (less than 2.0° C.) changed but little, nor has the position of the upper and lower boundary surfaces of this layer changed appreciably. The warmer bottom waters have undergone only slight changes. The main feature of the internal temperature changes between May and July is seemingly the vernal warming which has penetrated to below the twenty-five metre level.

2. Salinity

The distribution of salinity for July, 1935 is shown in section in figure 7. for the western half of the area. More saline waters have entered the section 121-124 at the lower levels since the May cruise. These more saline waters have been accompanied by a decrease in the amont of water of a salinity between 32.50 ‰ and 32.00 ‰ , and an increase in the amount of water of a salinity between 32.00 ‰ and 32.50 ‰ . In the section 58-50, the surface layer, to a depth of 50 metres, has been considerably freshened in the interval May to July, the thickness of the layer of a salinity between 32.00 ‰ and 32.50 ‰ has been considerably decreased, and bottom waters have been slightly less saline. Considerable freshening of the waters of the upper fifty metres of the section

124-50 has occurred in the interval May to July, but the thickness of the layer of water of a salinity less than 32.50‰ has been somewhat decreased.

3. A Summary of the Combined Changes in Temperature and Salinity in the Interval May--July.

Although the temperature changes in the western sections, noted in the interval May to July, indicate the effect of vernal warming of the upper twenty five metres (or more), the large decrease in the salinity of the surface layer, as a whole, records wholesale replacement, or considerable admixture of the surface waters as found in May with waters of considerably less salinity. The effect of land drainage at the time of spring freshets is not to be minimized, but it is altogether probable that these fresher waters represent the contribution of lighter (fresher and warmer) waters from the eastward.

THE AUGUST CRUISE --- 1935

The August cruise consisted, as in the May cruise, of the occupation of the seventeen stations for observations of temperatures and salinities. The cruise was inaugerated on August 26th, and completed on August 30th. The collected data are furnished in table 1.

(a) The Horizontal Distribution of Temperature and Salinity.

The distribution of temperature and salinity is shown in plan, for depths of 0 and 50 metres in figures 9 and 10 respectively. The surface temperatures range from less than 10.0° C. to greater than 17.5° C. The major portion of the Scotian shelf is covered by surface waters of a temperature between 16.0° C and 17.5° C. A steep horizontal gradient exists in the inshore surface

Waters to the west of Halifax. The warmer waters were distributed offshore to the east. The salinity of the surface waters in August is from less than 30.30 ‰ to greater than 31.70 ‰ , with the more saline waters offshore, and the fresher waters inshore and to the eastward. A comparison of this distribution of surface temperatures and salinities with similar ones for August, 1934, brings out the main feature that more saline surface water was experienced in 1934. Another point worthy of note is that the horizontal temperature gradient, as pictured for the surface waters in 1935 to the west of Halifax, was quite general all along the coast, although not as extreme as in August,1934.

The distribution of temperature and salinity at 50 metres for August indicates that the waters, at a depth of 50 metres, are of somewhat higher temperatures than in May. This is particularly true offshore to the eastward, where a steep horizontal temperature gradient from 1.5° C. to 5.5° C. exists. The salinity is fairly uniform at adepth of 50 metres in August (in general, a salinity of approximately 32.30 ‰). This is somewhat higher than the general salinities experienced in May, 1935. Compared with the observations of August, 1934, salinities for August, 1935, are considerably lower (a general value of 32.30 ‰ for 1935 as compared to values between 32.30 ‰ and 33.10 ‰.

(b) The Vertical Distribution of Temperature and Salinity.

1. Temperature

The vertical distribution of temperature, as observed during the August cruise is shown in figures 11 and 12. The maximum temperature in the section 121-124 has increased to greater than 15.0° C. (some five degrees of warming since July). Then

ten degree isotherm has been located at a depth of five to ten metres greater than in July. Further stratification in the upper layers of water is therefore quite prominent. The waters of lower temperatures have become somewhat warmer, and these temperatures of less than 1.0° C. have dissappeared from the section. The warmer bottom waters have undergone little change. In the section 58-50, the ten degree isotherm has been located at a depth of ten metres greater than in July, and the temperatures of the surface waters are now greater than 15.0° C. The waters at intermediate depths are considerably warmer than in July, with but a trace of temperatures of less than 1.0° C. and a comparatively thin layer of water of temperatures less than 2.0° C. Bottom water temperatures have increased by approximately one degree since July.

In the section 124-50, the ten degree isotherm has been located at a depth some ten metres greater than in July. The upper twelve metres of water are of a temperature greater than 15.0° C. The layer of colder waters has been decreased somewhat in thickness, but the comparatively low temperatures still prevail.

In the section 127-129, considerable changes have taken place since May. The four degree isotherm has been displaced downwards by about twenty-five metres in the interval, and surface waters have increased in temperature by more than ten degrees. Consequently, considerable stratification is in evidence in the upper fifty metres. No trace of water of less than 0.0° C. is now to be found. The water at intermediate depths are generally much the same as in May but with somewhat greater stratification. The bottom waters at station 129 are however, warmer by as much as three degrees.

In the section 134-131, the changes on the whole within the interval May-August are most marked. Waters of temperatures less than 0.0° C. are found only in trace, while in May the greater part of the section was composed of water of a temperature less than 0.0° C., and even less than -1.0° C. Extreme stratification is evident in the upper layers, with surface temperatures higher than 15.0° C. Bottom temperatures at station 131 are greater than 5.0° C.

In the section 129-131, all waters of temperatures less than 3.0° C. have been removed from the section, and in the upper fifty metres, temperatures are greater than 5.0° C. Bottom temperatures range from greater than 3.0° C. to greater than 5.0° C.

2. Salinity

The vertical distribution of salinity as observed during the August cruise is shown in figures 13 and 14. The distribution in section 121-124, when compared to that for July, indicates that a general freshening has occurred in the interval, i. e. insofar as minimum and maximum salinities are concerned. Actually however, through an upward shift of the isohalines of 32.00 ‰ and 32.50 ‰, the average salinity of the waters of intermediate depth has been somewhat increased.

In the section 58-50, the salinity of the upper layers of water have increased to some extent in the interval July-August. We find that in August, the minimum surface salinity is greater than 31.50 ‰, while in July all surface salinities were less than 31.00 ‰. The salinity of the bottom waters

have also slightly increased in the interval July-August. In the section 124-50, the salinity distribution in August is much the same as that in July, except that the layer of water of a salinity between 32.00‰ and 33.00‰ has decreased in thickness and the salinity of the bottom waters is somewhat lower.

The distribution of salinity below 50 metres in the section 127-129 in August is very similar to that of the distribution in May. In the upper fifty metres, the distribution of salinity has been changed considerably by a rearrangement of the isohaline of 32.00‰. Waters of the immediate surface layer, in August, are generally between 31.50‰ and 32.00‰. The distribution of salinity in the section 134-131 shows no general change as having taken place in the interval May-August. Some slight increase has taken place in bottom salinities and due to a rearrangement of the isohaline of 31.50‰, the surface waters are generally of lower salinities in August. In the section 129-131, for August, considerable difference in the location of the isohalines of 32.00‰ and 32.50‰, as compared to that of May, is in evidence. The salinity, in general, is about the same, although fresher waters are in evidence as shown by the presence of the isohaline of 31.50‰ at stations 130 and 131 in August.

VARIATION IN DISTRIBUTION OF TEMPERATURES AND SALINITY IN THE INTERVAL MAY-AUGUST, ----- 1935

Generally speaking, the outstanding hydrographic feature of the variation in the nature of the waters of the Scotian shelf, in the interval May-August, is the result of the vernal and summer warming. The resultant rise in temperature

of the upper layers of water is accompanied by a general lowering of the salinity. This statement, although included only in what must be considered only as a progress report, would seem to be borne out by the observations of the past few years -- 1932-1935 inclusive. In 1935, the changes occurring in the waters at intermediate depths, -- the so-called "intermediate layers"--w , were slight. As compared to 1934, when very marked changes were in evidence, this point is of considerable interest. The point has had specific attention in two publications viz: "An Invasion of Marginal Waters Over the Scotian Shelf", and "Transgressions in the Atlantic Ocean". The year 1934 is temporarily classed as a warm water year as compared to the other years of our observations. In general, the larger changes of salinity have definitely been ascribed to movement---- and that movement, either from the eastward or from offshore.

APPENDED DATA AND ILLUSTRATIONS

Data are furnished in table 2 in connection with seven cruises over a line of stations extending outwards from Halifax, and figures 15 to 21 inclusive indicate the distribution of temperature and salinity in this section. The data for lines of stations occupied in Chedabucto bay, off Glace Bay, and off Ingonish are furnish in table 3, and the figures 22 to 25 inclusive indicate the distribution of temperature and salinity in these sections.

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
50	May 16	0 m.	31.85	3.8
		10	32.00	3.62
		25	32.01	3.08
		50	32.30	1.62
		75	33.44	4.56
		90	34.05	6.60
	July 3	0	30.81	13.7
		10	31.22	10.34
		25	32.05	4.61
		50	32.38	0.92
		75	33.04	2.98
		90	33.51	4.45
	Aug. 26	0	31.31	16.4
		10	31.26	16.46
		25	31.96	1.85
		50	32.30	0.30
		75	32.84	2.41
		90	33.22	3.64
58	May 16	0	31.20	4.4
		10	31.17	4.09
		25	31.89	-0.03
		50	31.98	-0.53
		75	32.01	-0.41
	July 2	0	30.70	13.7
		10	31.02	10.15
		25	31.85	4.32
		50	32.12	0.28
		75	32.47	0.45
	Aug. 27	0	31.06	14.6
		10	31.17	12.81
		25	32.03	3.13
		50	32.38	1.55
		75	32.88	2.04
121	May 15	0	31.35	4.0
		10	31.35	3.74
		25	31.56	1.88
		45	31.83	0.77
	July 3	0	31.55	7.4
		10	31.74	2.77
		25	31.87	1.82
		45	31.98	1.18
	Aug. 26	0	31.53	9.9
		10	31.56	9.44
		25	31.83	5.22
		45	32.45	3.05
122	May 15	0 m.	31.46	4.6
		10		3.98
		25		3.39
		50	31.87	1.19
		62	31.96	1.15
	July 3	0	31.42	13.8
		10	31.47	12.30
		25	31.65	5.61
		50	32.00	1.73
		62	32.09	1.33
	Aug. 26	0	31.29	15.5
		10	31.22	15.65
		25	31.94	6.16
		50	32.12	2.79
		62	32.16	2.67
123	May 15	0	31.49	4.5
		10	31.51	4.18
		25	31.73	1.98
		50	31.91	0.63
		75	31.91	0.96
		100	32.36	0.95
		150	33.82	5.85
		166	33.86	6.02
	July 3	0	31.09	13.9
		10	30.93	13.20
		25		6.27
		50	31.92	1.02
		75	32.16	1.18
		100	32.52	0.91
		150	34.36	7.18
		166	34.56	7.69
	Aug. 26	0	31.36	16.4
		10	31.33	16.41
		25	31.71	5.39
		50	32.10	1.02
		75	32.47	2.74
		100	32.94	3.48
		150	33.10	6.69
		166	34.33	7.63
124	May 15	0	31.53	4.3
		10	31.51	4.13
		25	31.78	2.52
		50	31.98	0.57
		75	32.25	0.66
		80	32.27	0.72
	July 3	0	31.20	14.3
		10	31.24	12.00
		25	31.80	2.75
		50	32.07	0.07
		75	32.34	0.60
		80	32.36	0.47

Table 1 (continued)

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
124	Aug. 26	0 m.	31.42	15.8
		10	31.40	15.81
		25	31.67	7.48
		50	32.14	1.27
		75	32.57	2.12
		80	32.59	2.21
125	May 15	0	31.85	3.8
		10	31.82	3.74
		25	32.05	2.69
		50	32.25	1.63
		75	32.50	1.47
		100	33.86	6.23
		150	34.43	7.73
		200	34.76	8.25
	July 3	0	31.38	13.9
		10	31.35	12.59
		25	31.94	6.57
		50	32.30	1.17
		75	32.99	2.81
		100	33.69	5.16
		150	34.60	7.93
		200	34.85	7.93
	Aug. 26	0	31.18	16.1
		10	31.18	15.96
		25	31.65	6.02
		50	32.16	0.73
		75	33.35	1.06
		100	33.35	4.33
		150	34.25	7.49
		200		8.26
126	May 16	0	31.36	3.4
		10	31.64	2.60
		25	32.03	2.34
		50	32.14	1.79
		75	32.32	1.39
		100	32.56	1.39
		140	34.09	6.82
	July 2	0	30.32	12.9
		10	30.70	7.59
		25	31.78	4.40
		50	32.01	0.29
		75	32.68	1.65
		100	33.55	4.62
		140	33.68	6.68
	Aug. 26	0	31.06	17.2
		10	31.04	17.10
		25	31.73	7.34
		50	32.18	1.96
		75	32.83	2.46
		100	33.58	4.89
		140	34.29	7.14
127	May 20	0 m.	30.81	4.2
		10	30.90	4.0
		25	31.38	0.27
		50	31.78	-0.68
		73	32.14	-0.58
	Aug. 29	0	30.97	17.2
		10	30.99	11.56
		25	31.92	2.00
		50	32.12	0.94
		70	32.36	0.70
128	May 20	0	31.96	4.5
		10	31.98	4.09
		25	32.25	3.67
		50	32.36	1.97
		75	32.83	2.74
		100	33.82	6.06
		150	34.34	7.41
		190	34.65	8.39
	Aug. 29	0	31.08	17.5
		10	31.11	16.88
		25	31.65	6.58
		50	32.29	1.31
		75	32.88	2.09
		100	33.39	4.17
		150	34.18	6.99
		190	34.60	8.51
129	May 20	0	32.20	5.1
		10	32.16	4.74
		25	32.21	3.58
		50	32.38	0.98
		63	32.74	0.91
	Aug. 30	0	31.76	17.6
		10	31.89	17.29
		25	32.86	14.52
		50	32.45	3.94
		63	32.57	3.41
130	May 20	0	31.96	4.0
		10	31.89	3.66
		25	31.83	2.78
		50	32.12	1.45
		60	32.59	0.29
	Aug. 30	0	31.47	17.9
		10	31.69	17.24
		25	31.92	9.99
		50	32.10	5.78
		60	32.20	4.30
131	May 20	0	31.83	3.0
		10	31.82	2.86
		25	31.82	2.89
		41	31.82	2.94
	Aug. 30	0	31.24	17.4
		10	31.29	14.30
		25	31.26	4.07
		40	31.71	5.22

Table I (continued)

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
132	May 21	0 m.	31.33	3.0
		10	31.56	2.61
		25	31.73	1.68
		50	31.94	0.01
		75	32.20	-0.34
		100	32.36	-0.37
		150	32.39	-0.22
		200	32.54	0.13
	Aug. 30	0	30.62	17.2
		10	30.59	16.70
		25	31.51	6.64
		50	32.14	1.10
		75	32.32	0.19
		100	32.39	0.15
		150	32.56	0.49
		200	32.72	1.32
133	May 21	0	30.66	2.0
		10	30.95	3.35
		25	31.47	0.39
		50	32.16	-0.77
		65	32.16	-0.68
	Aug. 30	0	30.16	17.1
		10	30.57	15.51
		25	31.49	4.62
		50	32.09	-0.03
		65	32.23	-0.04
134	May 21	0	29.96	0.9
		10	29.92	0.55
		25	31.35	-1.00
		50	31.56	-0.66
		75	31.98	-1.33
		100	32.36	-1.10
		125	32.51	-0.51
	Aug. 30	0	30.19	15.7
		10	30.44	14.01
		25	31.35	5.27
		50	31.89	2.22
		75	32.27	0.34
		100	32.65	0.27
		125	32.90	0.62

Table I (concluded)

Station 533

Sta.	Date	Depth	Sal.	Temp.
	1935			
533	Apr. 24	0 m.	29.63	3.0
		5	30.07	1.99
		10	31.13	1.01
		20	31.67	0.03
	May 4	0	-----	2.5
		5	31.26	0.39
		10	31.89	-0.21
		20	31.92	-0.31
	Jun. 4	0	30.95	9.0
		5	31.13	7.54
		10	31.26	4.64
		20	31.56	2.29
	Jul. 1	0	30.07	12.8
		5	31.06	6.54
		10	31.36	4.41
		20	31.55	3.44
	Sep. 4	0	30.44	12.7
		5	31.08	9.98
		10	31.47	5.93
		20	31.62	4.32
	Nov. 7	0	30.28	10.8
		5	30.25	9.85
		10	30.34	9.85
		20	30.55	10.05

Table 2 (continued)

Stations 59 and 60

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
59	Apr. 24	0 m.		1.6
		10	31.96	0.95
		25		0.19
		50		0.58
		75		0.00
		100		0.76
		150		6.21
	May 4	0	31.76	2.5
		10	31.73	1.84
		25	32.00	0.22
		50	32.05	-0.16
		75	32.10	-0.17
		100	32.34	0.10
		150	34.47	7.74
	June 3	0	31.51	7.6
		10	31.35	6.50
		25	32.00	0124
		50	32.27	2.62
		75	32.34	0.27
		100	32.59	0.98
		150	33.75	5.35
	July 1	0	30.50	12.6
		10	30.44	11.51
		25	31.64	3.19
		50	32.01	0.14
		75		1.09
		100	33.33	3.71
		150	34.36	7.10
	Sept. 2	0	31.13	17.3
		10	31.13	16.90
		25	31.80	9.27
		50	32.12	1.77
		75	32.59	1.53
		100	33.26	3.76
		150	34.36	7.34
	Nov. 7	0		10.3
		10	30.46	10.50
		25	30.44	10.52
		50	31.53	10.80
		75		4.81
		100	32.83	1.99
		150	33.89	5.72
	Dec. 8	0	30.95	5.7
		10	30.99	7.37
		25	31.04	7.19
		50	31.20	7.82
		75	31.83	7.10
		100	32.59	3.43
		150	33.44	4.41

Sta.	Date 1935	Depth	Sal.	Temp.
60	Jan. 19	0 m.	31.13	-1.0
		10	31.11	0.40
		25	31.11	0.40
		50	31.18	0.57
		75	31.09	0.52
		100	31.18	0.46
	Apr. 24	0	31.55	2.3
		10	31.74	0.89
		25		-0.61
		50	31.89	-0.71
		75	32.03	-0.76
		100		0.00
	May 4	0	31.65	3.5
		10	31.60	2.04
		25	31.94	0.74
		50	32.03	-0.01
		75	32.25	0.23
		100	32.88	2.20
	June 3	0	30.86	6.6
		10	31.02	5.85
		25	31.65	-0.07
		50	31.85	-0.53
		75	32.03	-0.69
		100	32.12	-1.04
	July 1	0	30.57	12.9
		10	31.17	7.43
		25	31.55	3.43
		50	32.20	0.45
		75	32.39	0.36
		100	32.63	0.90
	Sept. 2	0	31.08	17.1
		10	31.09	16.71
		25	31.80	6.90
		50	32.12	0.77
		75	32.48	1.08
		100	32.77	1.84
	Nov. 7	0	30.61	10.5
		10	30.55	10.55
		25	31.11	10.92
		50	31.89	1.72
		75	32.16	2.78
		100	32.52	1.71
	Dec. 7	0	30.86	6.1
		10	30.84	7.61
		25	30.84	7.63
		50	30.84	7.70
		75	31.67	8.68
		100	32.30	7.00

Table 2 (continued)

Stations 61 and 62.

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
61	Apr. 24	0 m.		2.9
		10		1.59
		25	31.76	-0.43
		50	31.92	-0.58
	May 4	0	31.64	2.7
		10	31.62	1.59
		25	31.85	-0.38
		50	32.18	0.13
	June 3	0	30.66	6.4
		10	31.02	4.88
		25	31.60	0.22
		50	31.65	0.24
	July 1	0	30.90	12.7
		10	31.27	6.78
		25	31.85	4.86
		50	32.18	0.43
	Sept. 2	0	31.15	15.7
		10	31.11	14.87
		25	31.96	3.81
		50	32.30	1.00
	Nov. 7	0	30.77	10.6
		10	30.73	10.70
		25	30.97	10.91
		50	31.73	8.97
	Dec. 7	0	30.73	6.1
		10	30.73	7.51
		25	30.72	7.49
		50	30.81	7.19

Sta.	Date 1935	Depth	Sal.	Temp.
62	Jan. 19	0 m.	30.55	-1.0
		10	30.57	-0.30
		25	30.59	-0.30
	Apr. 24	0	30.86	3.0
		10	30.88	1.88
		25	31.80	-0.17
		30	31.82	-0.23
	May 4	0	31.04	2.5
		10	31.00	2.28
		25	32.03	-0.43
		30	32.07	-0.23
	June 3	0	31.15	7.9
		10		6.20
		25		1.87
		30	31.69	1.85
	July 1	0	30.55	12.7
		10	30.52	10.94
		25	31.73	1.35
		30	31.85	0.21
	Sept. 2	0	30.79	13.4
		10	31.40	8.32
		25	31.80	3.42
		30	31.80	3.00
	Nov. 7	0	30.66	10.9
		10	30.66	10.65
		20	30.72	10.45
		30	30.99	4.4
	Dec. 7	0	30.28	4.4
		10	30.37	6.56
		25	30.39	6.13
		30	30.39	6.53

Table 2. (concluded)

Line through Strait Canso

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
Z167	Nov. 27	0 m.	29.33	7.0
		10	29.29	8.10
		25	29.40	8.12
		35	29.45	8.00
Z168		0 m.	29.04	7.1
		10	29.18	7.60
		25	29.33	7.87
		30	29.33	7.81
Z169	Nov. 24	0 m.	29.76	7.7
		10	29.79	8.42
		25	29.83	8.31
		35	30.25	8.40

Table 3 (continued)

Section off Glace Bay.

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
145	June 12	0 m.	29.52	6.9
		10	29170	6.51
		25	31.64	2.08
		50	32.09	0.26
		75	32.41	-0.84
		100	32.59	-0.35
		125	33.57	1.89
146		0	29.14	6.8
		10	29.23	5.05
		25	31.46	0.51
		50	32.10	-1.04
		75		-1.12
147		0	28.98	7.3
		10	30.08	2.38
		25	31.33	0.00
		50	31.94	-1.24
		65	32.12	-1.22
148		0	29.09	6.9
		10	30.28	-0.21
		25	31.33	-0.29
		50	32.10	-0.82

Table 3 (continued)

Section off Ingonish.

HYDROGRAPHIC DATA

Sta.	Date 1935	Depth	Sal.	Temp.
Z173	June 11	0 m.	28.17	7.2
		10	30.23	1.37
		25	31.47	-0.41
Z174		0	28.77	8.2
		10	29.97	2.34
		25	31.47	0.50
		50	32.03	-0.44
		75	32.70	-0.32
		100	33.26	1.02
		120	33.80	2.27
Z175		0	30.01	8.1
		10	30.77	5.24
		25	31.91	1.81
		50	32.20	-0.04
		75	32.88	0.07
		100	33.35	1.20
		135	33.53	1.65
Z173	Nov. 20	0	29.45	6.7
		10	29.88	7.46
		25	31.13	6.08
Z174		0	30.17	7.3
		10	30.17	7.61
		25	30.30	7.55
		50	32.16	3.19
		75	32.68	0.51
		100	32.79	0.40
		110	32.70	0.50
175	Nov. 21	0	30.26	7.4
		10	30.25	7.51
		25	30.37	7.40
		50	32.14	4.11
		75	32.59	1.23
		100	32.79	0.66
		135	33.42	1.53

Table 3 (concluded)

Station	Latitude North	Longitude West
145	46 27 50	59 28 15
146	46 23 10	59 37 05
147	46 20 10	59 42 55
148	46 16 00	59 50 15
167	45 52 00	61 44 30
168	45 43 30	61 32 00
169	45 29 55	61 11 35
173	46 38 45	60 20 25
174	46 41 00	60 15 25
175	46 46 35	60 02 30

Location of Stations (other than those whose locations have been recorded in earlier reports).