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Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. ..... Office No. 5112

LOCALITY

State Massachusetts

General locality Georges Bank

Locality Eastern End.

1930

CHIEF OF PARTY

F. L. Peacock

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DATE .....

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Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. Patton, Director

State: Massachusetts
(Offshore)

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic } Sheet No. 5112
Project #63

5112a
5112b
5112c

LOCALITY

Georges Bank
Eastern End

1930

CHIEF OF PARTY

F. L. Peacock

U. S. GOVERNMENT PRINTING OFFICE: 1930

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DESCRIPTIVE REPORT

TO

ACCOMPANY HYDROGRAPHIC SHEET FIELD No. 201

PROJECT.

The hydrography executed on this sheet covers 7,000 square statute miles of the eastern end of Goerges Bank and immediately adjacent waters. It was done under instructions for Project No. 63, dated May 17, 1930.

LIMITS AND SCALE OF SHEETS.

5112

Hydrographic Sheet Field No. 201 is on a scale of 1:200,000 and covers the entire area surveyed including, two loops extending to Brown's Bank on the northeast, and to the 1000 fathom curve on the southeast. The completed western limit extends from Lat. 42° 20' N, Long. 67° 22' W, southerly to Lat. 42° 08' N, Long. 67° 20' W; thence south and east to Lat. 41° 51!7 N, Long. 67° 18' W; thence south and east to 41° 40' N, Long. 66° 14' W, thence south and east to 41° 28' N, Long. 67° 08' W; thence southeasterly to Lat. 40° 56' N, Long. 66° 26' W.

5112c

There are three subplans on larger scales. These have been plotted on separate sheets with field Nos. scales and limits as follows: Field No. 101, Scale 1:100,000; this subplan covers the northern part of the area from outside the 100 fathom curve on the north and east to the limit of work on the west.

5112a

Field No. 102, Scale 1:100,000; this subplan covers the southern part of the area from outside the 100 fathom curve on the east and south to the limits of work on the west. Field Nos. 101 and 102 join near the middle of the work.

5112b

Field No. 301, Scale 1:40,000; this subplan covers a rough area with numerous shoalings between Lat. 41° 40' N, and Lat. 42° 09' N, and between Long. 66° 53!2 W, and Long. 67° 22' W.

BOAT SHEETS.

Three boat sheets are submitted with this hydrographic sheet. They show all the rough plotting. They do not coincide in limits and scales with the completed hydrographic sheet or its subplans because, at the beginning, the logical layout of sheets could not be foreseen.

Many differences in the position of lines on the boat sheet and as finally plotted will be noted. This is because quantities of data obtained and used in the smooth plotting could not be handled fast enough to be incorporated into the boat sheet plotting.

PROJECTIONS.

The projections for the smooth plotting were prepared on the OCEANOGRAPHER at the close of the field season. Each projection was completed, checked, inked and had placed on it all buoy positions, lines of equal variation, and bomb distance arcs, the same day it was started. The paper was well seasoned and only small distortions have been noted during the plotting.

DEADRECKONING ABSTRACTS.

Much effort has been expended to make the deadreckoning abstracts as complete as possible. It was not possible to have all the entries on the several sheets entered by the same person or checked by the same person, but pains have been taken to insure that every entry thereon was adequately checked.

On account of the large number of these sheets, they have been bound into two cahiers together with their accompanying current graphs.

PLOTTING.

Three officers have performed the smooth plotting. It was impracticable to have a separate check on each detail of the plotting by another person. Each plotting officer was instructed to carefully check his own work. The chief of party closely supervised the plotting throughout, personally investigated all apparent discrepancies and personally participated in the final adjustment of each sounding line.

The plotting and adjusting was all done on tracing paper spread over the hydrographic sheets. The final positions together with all necessary construction points were then pricked through and inked.

With respect to the first plotting of hydrographic data obtained by this new combination of methods, it seemed desirable to show on the smooth sheets all the construction used in establishing the position of the soundings, in order that any desired further adjustment can be made with facility and with full consideration of all the data available.

The tracing papers used have all been preserved and are available for review if desired.

SCOPES.

One of the greatest complications of the work was the fact that all relations of soundings to points on the earth's surface had to be first related to floating objects swinging with wind and current at various scopes from anchors on the bottom. In plotting, the swinging scopes of the buoys, the station ship and the magnetophones had to be taken into account. These scopes could not be precisely arrived at. The probable scope was computed as accurately as practicable and the object (buoy, station ship's bridge, or magnetophone), was assumed to be on the scope circle in the same direction from its anchor as the set of the current then running.

On the hydrographic sheets and on the tracing papers buoy scope circles are shown in blue ink, station ship (bridge) scope circles are shown in green ink, and magnetophone scope circles are shown in brown ink.

ON-COMING COURSES.

A section of the on-coming course (true) to each regular position is shown on the smooth sheets in black ink.

CURRENTS.

The current data available consists of half hourly observations at the station ship. The full current observed has been applied except on the southeastern side of the bank outside the fifty fathom curve. In this area it was believed that a reduced current would produce more accurate plotting and accordingly one-half the observed current was used. The direction and amount of current set applied is shown on the sheets at the regular positions by a red ink line.

LEEWAY.

The OCEANOGRAPHER has a draft of 16' forward and 17' aft. She makes small leeway. In plotting, no attempt has been made to estimate and plot the leeway. It was believed that closure corrections and R.A.R. distances would tend to eliminate leeway error as practicably as any other method available.

CLOSURE.

Loop and line closures were applied according to elapsed time. The closure corrections at regular positions are shown by a ~~green~~ blue ink line.

BOMB ARCS.

Bomb arcs or bomb distances are shown on the sheets by brown ink arcs. The plotting of these was done as follows: Distance circles at regular and convenient intervals were swung from the buoy anchors as centers at the time the projections were made. These distance circles show in yellow ink on the sheets. An accepted bomb distance is then laid off from the buoy center, in the direction of the surveying vessel from said buoy at the time, and interpolating between the two nearest distance circles as necessary. This distance is then taken up on the beam compass and the arc is swung from the proper point on the magnetophone circle.

VISUAL BEARINGS.

Visual bearingswere used to tie in the ends of sounding lines and loops and to assist in controlling the sounding lines whenever the station ship or a buoy was in sight. More than 1100 were observed and recorded. They are plotted on the smooth sheets and show as a full violet ink line of short length passing through or close to the accepted position of the sounding vessel at the instant of observation.

RADIO COMPASS BEARINGS.

About 550 radio compass bearings were observed during the season. They were found to be of little assistance in controlling the position of sounding lines, partly because radio direction finder calibrations were not made frequently enough during the season, partly because the degree of bonding of the OCEANOGRAPHER'S rigging did not remain constant through the season but mainly because our present knowledge of the behavior of such radio ~~valves~~ waves and our present equipment for relating them to true north is insufficient to enable us to determine and apply the necessary corrections to make them precise.

A tabulation of these radio compass bearings corrected to true direction and compared with the true direction of the station ship from the accepted position of the surveying vessel at the instant of observation has been prepared and submitted under separate title.

A large percentage of these bearings have been plotted on the sheets and show as a short length of dashed violet ink lines passing

near the accepted position of the surveying ship at the time of observation.

MAGNETIC VARIATION.

The magnetic variation for correcting courses and bearings to their true value was determined by a comparison of ship swings off Provincetown, Massachusetts, and on the working grounds.

Lines of equal magnetic variation were placed on the smooth sheets at regular and conveniently spaced intervals. They appear as dashed lines in brick red ink. All corrections of magnetic courses and bearings to true courses and bearings were made during the course of the plotting when the proper value of the variation for the locality could readily be determined and used.

DESCRIPTION OF SOUNDING LINES.

A short description of each sounding line or loop will be found on the back of the deadreckoning abstracts. These state briefly any special adjustments made and enumerate visual bearings and bomb arcs rejected.

FINAL ADJUSTMENT.

Generally speaking, great confidence was reposed in distance as determined by bombing and in general the bomb arcs not obviously in error were rigidly held in the final adjustment. The distance and direction of the movement of positions due to the coordination of closed loop and line positions with accepted bomb arcs and visual bearings is shown on the sheets by a full green ink line.

BOMB DATA.

The bombing record of the season is believed to be rather remarkable considering all the attendant circumstances.

About 1500 bombs were attempted. Of these about 1450 exploded. Some 250 of these failed to give a return because of some lack of adjustment of the instrumental equipment (magnetophone, automatic key, receiver, amplifier, chronograph etc) or because of interference (another short wave set sounding or propeller disturbance caused by some ship near magnetophone).

There remained 1183 which gave a tape record apparently satisfactory.

Of these, 40 were obtained in the determination of the velocity of sound experiments, and 93 were obtained during the execution of the R.A.R. triangulation control. The remaining 1106 were obtained to control sounding lines.

Of these 1106, about 15% were rejected as obviously out of coordination with adjacent bombs or with positions strongly determined by other means. The reasons for these faulty records are believed to be interference with the direct path of the bomb wave by shoals and confused current conditions over rough bottom and by actuation of the automatic key, by other agent than the arrival of the bomb wave, at about the expected lapse of time.

The remaining 85%, or approximately 950 bomb distances, were rigidly held in fixing the position of the soundings.

TURNS.

A blueprint copy, showing a number of carefully plotted specimen turns of the ship OCEANOGRAPHER with full rudder, is attached to this report. These specimen turns were used in plotting all large changes of course of the sounding lines on the smooth sheets.

REDUCTION OF SOUNDINGS.

Soundings were reduced for tide up to depths of 100 fathoms. The best data on hand was that the various stages of the tide occur one hour and twenty minutes earlier in the area in question than at Boston, and that the range is.5 of that at Boston. These values were accordingly used in the reduction using the hourly readings obtained from the Boston Tide Station observations.

INDEX CORRECTION.

Numerous comparative soundings throughout the season indicated that the standard red light fathometer soundings were subject to a practically constant index correction of + 7 feet. To be on the safe side, + 6 feet was used up to depths of 200 fathoms at which depth it was customary to change from the standard red light soundings to slow motion red light soundings.

DRAFT SETTING CORRECTION.

The draft setting of the fathometer on the OCEANOGRAPHER was $2\frac{1}{2}$ fathoms. When sounding with the slow motion red light method the multiplication of the fathometer reading corrected for index correction gives the depth from bottom to oscillator $6 \times 2\frac{1}{2}$ or 15 fathoms too deep. Adding the draft of oscillator gives a net correction of 12 fathoms

3 feet, to be subtracted. This correction has been applied throughout the range of this kind of soundings, namely, 200 to 600 fathoms.

ECHO SOUNDING CORRECTIONS.

Echo sounding corrections have been applied to all soundings in accordance with the Hydrographic Manual for the accepted temperatures and salinities. (See temperature charts and salinity and correction tables attached to this report).

ENTERING CORRECTIONS AND REDUCERS.

All corrections and reducers except the 12½ fathom draft setting correction and echo sounding corrections in depths greater than 450 fathoms have been entered in the sounding volumes in integral feet.

SERIAL TEMPERATURES.

Serial temperatures were observed only on the bank in depths up to 36 fathoms. These temperatures indicated the advisability of dividing the season into three parts and using the mean temperature curve of each part for reducing soundings. These three periods are as follows: June 11, to July 15; July 16, to August 15; August 16 to September 29.

The probable temperature curve in the deeper waters up to depths of 275 fathoms was determined from "Bigelow's" compilation of temperatures and salinity data. Only observations obtained in the area sounded and during the months of the working season were considered.

The curve was extended to the maximum depths sounded by considering other Coast Survey observations for those depths obtained in approximately the same latitude.

SALINITIES.

The salinities of the water on the bank proper were adequately obtained by observation. The salinities of the deeper depths were obtained by the same means as enumerated for the temperatures in those depths.

VELOCITY OF SOUND.

Experiments of the season not being conclusive, the velocity of sound for the determination of bomb distances was assumed to be that corresponding to the bottom temperature on the bank. This assumption is in line with the results of the recent investigation by Mr.Shalowitz. There is little doubt that the sound passed through colder water off the bank, but such distances are comparatively short and no correction for them has been attempted. More important to the writer's mind is

the possible lengthening of the computed bomb distance through the sharp rise from that level to pass over the bank. It is also possible that the wave which dips to the level of easiest passage in deep water is not the one which trips the automatic key. It may be that a wave that has traveled at approximately the depth on the bank is the effective one.

SLOPE CORRECTIONS.

No slope corrections to soundings have been applied.

CROSSINGS.

In general, the numerous crossings of sounding lines are good. There are, however, a number of places where the crossings are in error owing to non-uniformity of the rigidity of control. Such crossings will not be discussed individually but certain examples illustrative of several types of conditions will be specified.

DEPTH CURVES.

All depth curves have not been penciled on the smooth sheets. The 100 fathom and 50 fathom curves have been sketched complete and various other curves have been sketched where necessary to assist the Chief of Party in his final scruting of the sheets.

BOTTOM CHARACTERISTICS.

Bottom characteristics have only been obtained at the anchorages of the season. These obtained have been penciled on the sheets.

ADJUSTMENT ON REVIEW.

It is deemed probable that some further adjustment of certain sounding loops will be desirable on review. The following considerations are recommended as the principal governing factors in any such readjustment to correct crossing errors. Owing to different strengths of control in the same localities, erroneous crossings should be remedied by holding the loops most rigidly controlled, and moving slightly the less rigidly controlled loops and lines. The principal cause of the crossing failures was the irregularity of the strong current encountered. Therefore, if it seems desirable to shift the outer position of any of the less rigidly controlled loops, such shifting should be based on a study of the current offsets and in general the movement should be that which would have resulted, had less current been applied as the water deepened.

SHEET FIELD No. 201 H.5112

Only comparatively deep soundings around the outer edge of the surveyed area have been plotted on this main sheet. All the shoaler depths have been plotted on the sub-plans.

Should any readjustment of any loop to remedy erroneous crossings be attempted, and portions of said loop be common to the main sheet and one of the sub-plans, or to two of the sub-plans, coordinate change should be made on all sheets affected.

SUB-PLAN, FIELD No. 301. H.5112b

The area covered by this 1:40,000 sheet is very rough and hilly. There follows the approximate latitude and longitude of a number of crests surrounded by deeper water noted during the Chief of Party's scruting of this sheet. It has been noted too, that very frequently a hole or deep occurs adjacent to the shoalings.

Latitude (North)	Longitude (West)	Depth (Fathoms)
42°04!9	67° 09!7	25
42 02.9	66 58.3	25
42 02.6	67 07.0	20
42 02.1	67 07.2	18
42 01.9	66 58.9	21
42 01.5	66 59.1	23
42 00.9	67 05.0	22
41 59.6	67 16.9	14
41 58.8	67 10.6	23
41 58.6	66 54.3	28
41 58.2	67 09.6	22
41 58.0	67 02.1	23
41 56.9	67 09.4	23
41 56.4	67 10.8	25
41 56.0	67 08.2	24
41 55.7	66 59.6	25
41 55.5	67 08.0	20
41 54.0	67 06.7	22
41 54.0	67 06.0	21
41 53.0	67 05.5	22
41 52.6	67 04.1	22
41 52.3	66 55.3	28
41 51.2	67 14.3	18
41 50.8	67 13.9	16
41 50.3	67 13.1	10
41 52.0	67 18.0	9 (36RR & 103TT check by two lines)
41 50.0	67 08.0	22

Latitude (North)	Longitude (West)	Depth (Fathoms)
41° 49.4	67° 06.0	25
41 49.1	67 02.2	22
41 48.9	67 05.1	26
41 49.9	67 02.9	23
41 48.7	67 11.0	22
41 47.5	67 11.0	15
41 48.4	67 12.0	17
41 47.3	67 09.6	23
41 46.6	67 00.7	21
41 46.2	66 59.4	25
41 45.4	66 58.9	23
41 44.9	67 09.8	22
41 44.0	66 55.0	25
41 43.5	67 14.5	23
41 43.3	66 55.2	25
41 42.8	66 54.0	26
41 41.8	67 12.8	20

In the consideration of any desired readjustments of sounding loops on the sheet, the loops run on B, D, G, E. N, and GG letter days are relatively weak.

It will be noted that there are several electric oscillator fathometer soundings on this sheet less than the acceptable 15 fathom minimum. It is recommended that the 13 and 14 fathom soundings be accepted but that the two 9 fathoms and the 10 fathom sounding be carefully considered before being placed on the chart. It is desirable to state, however, that these soundings are not strays and that they are believed to be at the most no more than one fathom in error.

SUB-BLAN, FIELD No. 102. -5112 a

Attention is directed to the spots of depths of from 20 to 24 fathoms south and a little east of buoy "A along the western edge of the completed area.

Soundings in the incompleted area between buoy "W" and buoys "V" and "U", indicate the general depths there to be about twenty-four fathoms with an occasional shoaling to 20 fathoms or perhaps less.

See reviewer's report

The location of buoy "F" is comparatively weak consisting of an unclosed line from buoy "F" to buoy "W". (See pos. 28 HH-Day to pos-54 HH-Day). It appears that this line and the section of line 69Z to 75Z should pass between the lines indicated by positions 108 to 120 MM day and 15 to 20 KK-Day.

There are several crossings on the steep slopes of the submarine valley in approximate position Lat. 41° 20' N, Long. 66° 10' W, which appear slightly in error. Buoy "H" has the strongest location of any point in that area. The lines strongly controlled by that buoy might well be held and the remaining lines developing this valley be brought into coordination therewith.

ANDROSCOGGIN SHOAL – ? Name not on Charts 1000 + 1107 R

Latitude 41 08' N, Longitude 66° 30' West.

This reported 11 fathom shoal is charted about 8 miles inside the completed area plotted on sub-plan field No. 102. There are no indications of such a shoal in this immediate vicinity. If existant, it must be situated further to the westward and probably a little south of the charted position.

SUB-PLAN SHEET FIELD No. 101 – 5112 ?

Crossings on this sub-sheet are in general, good. In a few localities where the strength of control was not rigid, lines failed to cross by small distances. The following are examples:

Latitude 41° 46' N., Longitude 65° 43' W.

Coming on to the bank from deep water positions, 86 to 87 V-Day, the officer at the fathometer became somewhat flustered by the rapid change in depth and expressed doubt as to the uncertainty of his readings. Subsequently three loops were directed into the area for the purpose of removing any uncertainty as to the depths there. These loops are: Positions 49 to 137 MM-Day, 25 to 60 Z-Day, 1 to 78 X Day. Rigid control of the outer end of these loops was impossible under the circumstances encountered. However, it appears that only slight readjustment of the outer portion of these loops, in line with general principles previously expressed, and in the vicinity of the latitudes and longitudes mentioned, will bring all into good coordination.

See reviewer's report

Latitude 42° 09'.1 N. Longitude 66° 39'.7 W.

A five fathom crossing failure in this vicinity between the two loops of K-Day (positions 17 to 18 and 62 to 63) can be corrected by slight readjustment.

N-DAY.

The involved loop on N-Day is weak in its outer portion and fails to cross on itself. Such loops are now recognized by the Chief of Party as poor practice.

Latitudes 42° 10.5 N. Longitude 66° 53!3 W.

The 9 fathom crossing failure in this vicinity (positions 41 to 42 N Day and 36-D-Day) can be corrected by slight readjustment as the slope is fairly steep. The bomb ~~area~~ arcs should be held as nearly as practicable and the readjustment be made by azimuth alterations. ¶ The long loops on R, S, and V letter days are lacking in rigid azimuth control somewhat in proportion to their length. Minor crossing failures occur as follows:

Latitude (North)	Longitude (West)	Positions (Between)	Difference in Depth	
42° 08!3	66° 04'	15-R to 16 R 50-T to 51 T	14 fathoms	(Steep Slope)
42° 03.6	65° 54'.5	31-U to 32-U 52-R to 54-R	9 fathoms	(Steep Slope)
41° 54'.7	65° 43'	43-S to 44-S 76-V to 77-V		Very steep slope

The following crossing failures result from a combination of hilly bottom, non-rigid azimuth control and possibly some lack of care on the part of the fathometer officer or failure of the fathometer to function properly.

Latitude (North)	Longitude (West)	Positions (Between)	Depths
41° 55!7	66° 48'.5	9-A 69-K to 70-K	32 and 36 fathoms
41° 44!7	66° 36'.2	~~34~~ 3-U 68-U to 69-U	36 and 38 fathoms
41° 37!5	66° 48'	27-AA to 28-AA 28-W to 29-W	34 and 36 fathoms

No very important shoalings occur in the soundings plotted on this sub-sheet.

The following crests arising from depths of 35 to 36 fathoms are noted:

Latitude (North)	Longitude (West)	Depth (Fathoms)
41° 41'.4	66° 52'.4	30
41 41.8	66 52.0	30
41 41.3	66 41.8	30
41 49.3	66 46.8	31
41 46.8	66 41.8	30
41 45.7	66 39.5	30
41 41.9	66 41.7	30

TIDE RIPS AND OVERFALLS.

Tide rips and overfalls mark the crests of hills and ridges such as are frequent in the area plotted on sub-sheet 301. Such disturbances are, however, not over the shoalest depths but are alongside and close to them.

A line of rips is commonly visible extending in a N.W. and S. E. direction alongside the shoaler depths in the vicinity of Buoy T.

Small detached overfalls are frequently to be seen in the area immediately north and a little east of Buoy "A" although the least depth encountered there was 20 fathoms.

The shoaler areas in the vicinity of Buoy "K" frequently show disturbed water close to.

Respectfully submitted,

Fred L. Peacock

Fred L. Peacock,
Chief of Party, Project No. 63

May 2, 1931.

LIST OF STATISTICS

Hydrographic Sheet Field No. 201

Sub-sheets Field Nos. 101-102-301

Date 1930	Day Letter	No. of Positions	No. Soundings	Stat. miles Sounding Lines
June 11	A	24	128	33.8
21	B	95	441	154.5
22	C	92	337	108.8
23	D	130	601	209.9
24	E	86	465	184.8
26	F	81	385	136.8
27	G	39	103	34.31
July 8	H	75	626	125.0
9	J	89	657	151.9
10	K	81	626	152.6
11	L	20	99	17.1
12	M	109	735	133.6
14	N	81	560	132.2
15	O	36	157	30.1
16	P	68	504	82.3
22	R	76	473	157.4
23	S	84	567	184.9
24	T	70	415	132.3
25	U	106	562	171.2
26	V	117	601	185.3
27	W	50	272	61.0
28	X	78	528	162.5
29	Y	75	537	130.2

Date 1930	Day letter	No. of Positions	No. Soundings	Stat. miles Sounding lines
August 7	Z	90	607	188.6
8	AA	73	653	132.6
9	BB	77	585	110.7
11	CC	95	758	184.3
12	DD	111	718	258.3
13	EE	70	429	122.8
14	FF	34	256	66.8
21	GG	78	634	135.0
25	HH	49	358	115.3
26	JJ	71	340	116.2
Sept. 4	KK	28	166	55.5
5	LL	84	497	167.0
6	MM	137	780	264.6
8	NN	51	286	58.9
9	PP	93	821	181.1
10	QQ	71	489	128.6
19	RR	44	292	44.8
20	SS	149	956	224.0
21	TT	108	612	126.9
22	UU	8	11	12.0
24	VV	131	790	127.4
25	WW	141	881	151.5
26	XX	51	200	61.9
Totals		3606	22,498	5,907.3

Area surveyed, 7,000 square statute miles.

H-5112

OBSERVATIONS OF TEMPERATURES AND SPECIFIC GRAVITIES TO OBTAIN THE VELOCITY OF SOUND

GEORGES BANK, 1930.

NOV 15 1930

(British Admiralty Tables used -- using the bottom temperature and specific gravity)

DATE 1930	TIME 60TH Mer.	LOCATION	DEPTH (BOTTOM) Fathoms	TEMPERATURE (BOTTOM)	SPECIFIC GRAVITY (BOTTOM)	VELOCITY OF SOUND m/s
June 8		Buoy A	28	9.2	1.0258	1483.0
June 9		Buoy Z	30	8.6	1.0256	1480.5
June 10		Buoy Z	30	8.5	1.0255	1480.0
June 23		Buoy Y	28/2	10.9	1.0252	1488.9
July 8	2 P.M.	Buoy Z	30	11.8	1.0254	1492.6
July 8	7 P.M.	Buoy Z	30	12.0	1.0251	1492.9
July 9	8 A.M.	Buoy Z	30	11.9	1.0250	1492.4
July 9	1 P.M.	Buoy Z	30	11.8	1.0251	1492.1
July 9	6 P.M.	Buoy Z	30	12.2	1.0251	1493.6
July 10	8:30 A.M.	Buoy Z	30	11.8	1.0251	1492.1
July 10	1 P.M.	Buoy Z	30	11.9	1.0252	1492.7
July 11	8 A.M.	Buoy Z	30	11.7	1.0252	1492.0
July 11	1 P.M.	Buoy Z	30	11.2	1.0250	1489.7
July 15	10:30 A.M.	Buoy Z	30	11.9	1.0251	1492.5
July 15	6:30 P.M.	Buoy W	30	11.7	1.0252	1492.0
July 16	8:30 A.M.	Buoy W	30	11.9	1.0252	1492.8
July 16	1:00 P.M.	Buoy W	30	11.7	1.0250	1491.7
July 22	11:00 A.M.	Buoy X	35	11.5	1.0250	1491.0
July 22	4:00 P.M.	Buoy X	35	11.4	1.0250	1490.6
July 23	8:30 A.M.	Buoy X	36	11.4	1.0250	1490.6
July 23	1:00 P.M.	Buoy X	36	11.8	1.0250	1492.1
July 23	6:15 P.M.	Buoy X	36	11.4	1.0250	1490.6
July 24	9:30 A.M.	Buoy X	36	11.4	1.0250	1490.6
July 24	7:30 P.M.	Buoy X	36	11.6	1.0250	1491.3
July 25	9:30 A.M.	Buoy X	36	11.0	1.0252	1489.5
July 25	1:15 P.M.	Buoy X	36	11.8	1.0250	1492.1
July 26	8:30 A.M.	Buoy X	36	11.3	1.0250	1490.4
July 26	1:15 P.M.	Buoy X	36	11.7	1.0251	1492.0
July 26	6:15 P.M.	Buoy X	36	9.3	1.0253	1483.0
July 28	8:30 A.M.	Buoy X	36	12.1	1.0250	1493.4
July 28	1:15 P.M.	Buoy X	39	11.5	1.0250	1491.1
July 28	6:45 P.M.	Buoy X	39	12.5	1.0250	1494.9
July 29	8:30 A.M.	Buoy X	39	12.4	1.0250	1494.5
July 29	1:30 P.M.	Buoy X	39	11.4	1.0250	1490.7
Aug. 7	10:30 A.M.	Buoy W	30	12.2	1.0250	1493.6
Aug. 9	6:00 P.M.	Buoy W	28	13.0	1.0249	1496.2
Aug. 11	6:30 P.M.	Buoy W	28	12.4	1.0249	1493.9
Aug.13	8:00 A.M.	Buoy W	28	12.8	1.0248	1495.4
Aug. 14	1:30 P.M.	Buoy U	25	15.9	1.0244	1505.6
Aug. 25	3:15 P.M.	Buoy W	26	14.4	1.0245	1500.5
Aug. 26	4:00 P.M.	Buoy W	26	14.9	1.0242	1501.8
Sept. 4		Buoy W	28	14.3	1.0244	1500.2
Sept. 5		Buoy W	28	13.8	1.0246	1497.9

DATE	TIME 60th Mer.	LOCATION	DEPTH (BOTTOM)	TEMPERATURE (BOTTOM)	SPECIFIC GRAVITY (BOTTOM)	VELOCITY OF SOUND m/s
Sept. 6		Buoy W	28	14.0	1.0246	1499.3
Sept. 8		Buoy E	23	15.2	1.0244	1503.2
Sept 9		Buoy T	24	15.3	1.0245	1503.7
Sept. 10		Buoy T	24	15.5	1.0244	1504.2
Sept. 19	5:00 P.M.	Buoy L	30	15.7	1.0243	1505.0
Sept. 20	2:00 P.M.	Buoy L	30	15.6	1.0243	1504.7
Sept. 21	4:00 P.M.	Buoy L	30	15.3	1.0244	1503.8
Sept. 22	8:30 A.M.	Buoy Tam	28	16.0	1.0244	1506.2
Sept. 24		Buoy T	27	15.8	1.0242	1505.1
Sept. 25		Buoy T	22	16.1	1.0242	1506.0
Sept. 26		Buoy U	25	16.9	1.0240	1508.3
Sept. 27		Buoy B	21	16.4	1.0238	1506.3
Sept. 28		Buoy B	21	17.1	1.0238	1508.6
Sept. 29	7:00 A.M.	Plymouth	20	9.0	1.0252	1481.1

Table No. 1

Computation of Mean Salinity - Georges Bank 1930.

Pos.	Date	Mean temp.	Mean Sp. Grav.	Salinity.
Buoy A	June 8	9.4	1.0256	33.3
Buoy Z	June 9	8.45	1.0257	33.3
Buoy Y	June 23	11.1	1.0256	33.6
Buoy Z	July 8	12.1	1.0252	33.3
Buoy X	July 22	12.8	1.0249	33.1
Buoy W	Aug. 7	12.9	1.0249	33.1
Buoy U	Aug. 14	16.0	1.0244	33.2
Buoy E	Sept. 8	15.4	1.0244	33.0
Buoy L	Sept. 20	16.0	1.0242	33.0
Buoy U	Sept. 26	17.1	1.0239	32.6
Buoy B	Sept. 28	17.3	1.0239	32.9
				33.16 Mean Salinity

Comp. EHK
Ch. JM.
Ctg. EHK

Table No. 2.

STANDARD VELOCITY 820

Fathometer factors and corrections for soundings of 40 fathoms or less. Georges Bank 1930. Mean Salinity 33.

Depth in fathoms	Temperature in Degrees C	Mean Temp.	Factor	Correction in fathoms	Correction in feet
2	12°		- .001	0	
7	11.5		- .002	0	
12	11.4	11.6	- .002	0	
17	11.4	11.6	- .002	0	
22	11.3	11.5	- .002	0	- .26
27	11.3	11.5	- .002	- .1	- .3
32	11.2	11.4	- .0025	- .1	- .48
37	11.2	11.4	- .0025	- .1	- .56
42	11.2	11.4	- .0025	- .1	- .63

NOTE: Use these corrections from beginning of season to July 15th inclusive.

Comp. 6.74K
" 7.K.
copy 6.74K

Table No. 3

STANDARD VELOCITY 820

Fathometer factors and corrections for soundings of 40 fathoms or less. Georges Bank 1930. Mean Salinity 33.

Depth in fathoms	Temperature in Degrees C	Mean Temp.	Factor	Correction in fathoms
2	14.1		+ .003	0
7	13.0		+ .001	0
12	12.3	13.1	+ .001	0
17	12.1	12.9	+ .001	0
22	12.0	12.7	000	0
27	12.0	12.6	00	0
32	12.0	12.5	00	0
37	12.0	12.4	00	0
42	12.0	12.4	00	0

NOTE: Use these corrections from July 16 to August 15, inclusive.

Comp. E.T.K.
J.M.
Copy. E.T.K.

STANDARD VELOCITY 820

Fathometer factors and corrections for soundings of 40 fathoms or less. Georges Bank 1930. Mean Salinity 33.

Depth in fathoms	Temperature in Degrees C	Mean Temp.	Factor	Correction in fathoms	Correction in feet
2	16.0			0	0
7	15.3	15.6	+ .006	0	0
12	14.9	15.4	+ .006	+ .1	+ .4
17	14.7	15.2	+ .005	+ .1	+ .5
22	14.6	15.1	+ .005	+ .1	+ .7
27	14.6	15.0	+ .005	+ .1	+ .8
32	14.6	15.0	+ .005	+ .2	+ 1.0
37	14.5	14.9	+ .005	+ .2	+ 1.1
42	14.5	14.9	+ .005	+ .2	+ 1.3

NOTE: Use these corrections from Aug. 16 to end of season.

Comp. G.H.K.
J.M.
Copy G.H.K.

STANDARD VELOCITY 820

Fathometer factors and corrections for soundings between 40 fathoms and 450 fathoms. Georges Bank 1930.

Mean salinities
(40 to 80 - 33.5)
(80 to 120 - 34.0)
(120 to 200 - 34.5)
(200 to 300 - 35.0)
(300 to 450 - 35.4)

(For mean temp. of 12.4 at 42 fathoms - See Table No. 3).

Depth in fathoms	Temperature in Degrees C	Mean Temp.	Factor	Correction in fathoms	Correction in feet
		S = 33.5			
42	12.0	12.4	0	0	
47	11.6	12.3	0	0	
52	10.7	12.2	0	0	
57	9.9	12.0	- .000	0	
62	9.6	11.8	- .001	- .1	- .4
67	9.3	11.6	- .001	- .1	- .4
72	9.1	11.4	- .001	- .1	- .4
77	8.9	11.3	- .003	- .2	- 1.4
		S = 34.0			
82	8.7	11.1	- .002	- .2	- 1.0
87	8.5	11.0	- .002	- .2	- 1.0
92	8.3	10.8	- .002	- .2	- 1.1
97	8.1	10.7	- .003	- .3	- 1.7
102	8.0	10.6	- .003	- .3	- 1.8

STANDARD VELOCITY 820

Fathometer factors and corrections for soundings between 40 fathoms and 450 fathoms. Georges Bank 1930.

Mean salinities
(40 to 80 - 33.5)
(80 to 120 - 34.0)
(120 to 200 - 34.5)
(200 to 300 - 35.0)
(300 to 450 - 35.4)

(For mean temp. of 12.4 at 42 fathoms - See Table No. 3).

Depth in fathoms	Temperature in Degrees C	Mean Temp.	Factor	Correction in fathoms	Correction in feet
		S = 34.5			
120 †	7.5	10.2	- .003	- .4	- 2.2
140	7.0	9.7	- .004	- .6	- 3.4
160	6.7	9.4	- .005	- .8	- 4.8
180	6.3	9.0	- .006	- 1.1	- 6.5
		S = 35.0			
200	6.0	8.7	- .007	- 1.4	- 8.4
220	5.8	8.4	- .008	- 1.8	- 10.6
240	5.6	8.2	- .008	- 1.9	- 11.5
260	5.5	8.0	- .009	- 2.3	- 14.0
280	5.4	7.8	- .010	- 2.8	- 16.8
		S = 35.4			
300	5.3	7.6	- .010	- 3.0	- 18.0
350	5.0	7.3	- .010	- 3.5	- 21.0
400	4.8	7.0	- .011	- 4.4	- 26.4
450	4.5	6.7	- .012	- 5.4	- 32.4

† Weighted from this point downward.

Comp. E.T.K.
J.M.
Copy E.T.K.

STANDARD VELOCITY 820

Fathometer factors for soundings over 450 fathoms.
Georges Bank 1930. Salinity 35.9

Depth in fms.	Temp. in Degrees C	Velocity per second	Adiabatic Correction per second	Corrected Velocity per second	Mean Velocity per second	Depth range	Factor
		fms.	fms.	fms.	fms.	fms.	
100	8	809	1	809			
300	5	807	1	808			
500	4	809	1	810	809	450 to 650	- .0134
700	3	811	1	812	810	650 to 850	- .0122
900	3	814	1	815	810	850 to 1050	- .0122

Comp. E.H.K.
J.M.
Chkd. E.H.K.

STANDARD VELOCITY 820

Table of Corrections from 43 fathoms to 450 fathoms
Georges Bank 1930.

This table was taken from a curve which was constructed from the data in Table No. 5.

Range in fms.	Correction in feet.	Range in fms.	Correction i in feet.
43 - 59	0	290 - 318	- 18.0
60 - 95	- 1.0	319 - 330	- 19.0
96 - 122	- 2.0	331 - 354	- 20.0
123 - 137	- 3.0	355 - 374	- 21.0
138 - 152	- 4.0	375 - 379	- 22.0
153 - 167	- 5.0	380 - 384	- 23.0
168 - 178	- 6.0	385 - 389	- 24.0
179 - 189	- 7.0	390 - 394	- 25.0
190 - 198	- 8.0	395 - 399	- 26.0
199 - 210	- 9.0	400 - 407	- 27.0
211 - 221	- 10.0	408 - 415	- 28.0
222 - 231	- 11.0	416 - 424	- 29.0
232 - 245	- 12.0	425 - 431	- 30.0
246 - 254	- 13.0	432 - 441	- 31.0
255 - 263	- 14.0	441 - 450	- 32.0
264 - 270	- 15.0		
271 - 276	- 16.0		
277 - 289	- 17.0		

Comp. E.H.K.
" F.M.
Copy. E.H.K.

May 22, 1931

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
15 volumes of sounding records for

HYDROGRAPHIC SHEET 5112

Locality Georges Bank, east end, New England Coast

Chief of Party: F. L. Peacock, in 1930
Plane of reference is mean low water, reading
3.3 ft. on tide staff at Commonwealth Pier No. 5, Boston, Mass
18.2 ft. below B. M. 7

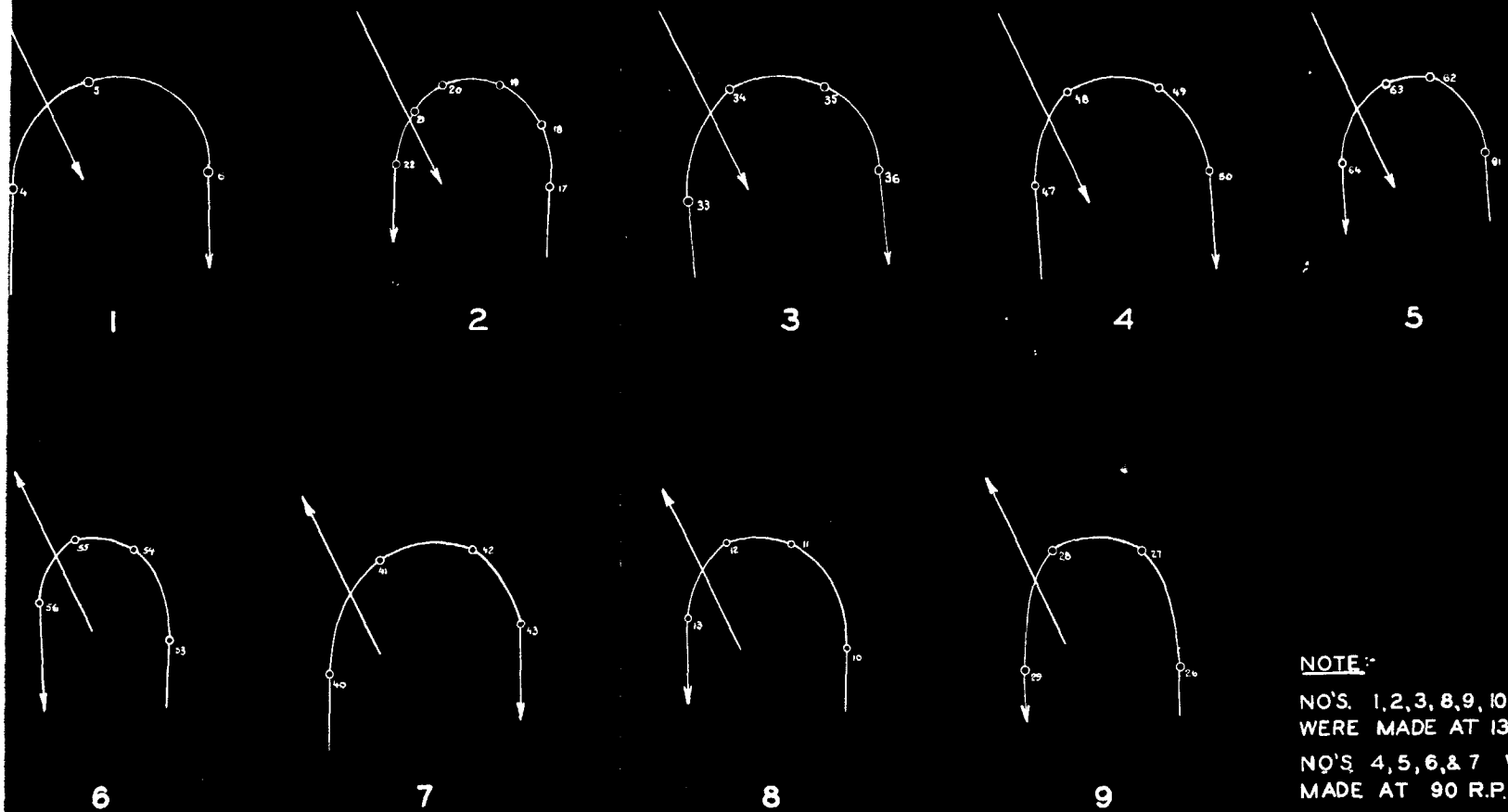
Allowance made for time and range of tide on the working grounds:

Time - 1^h 20^m ; range 0.5 as large

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

H A Marmer
Actg Chief, Division of Tides and Currents.



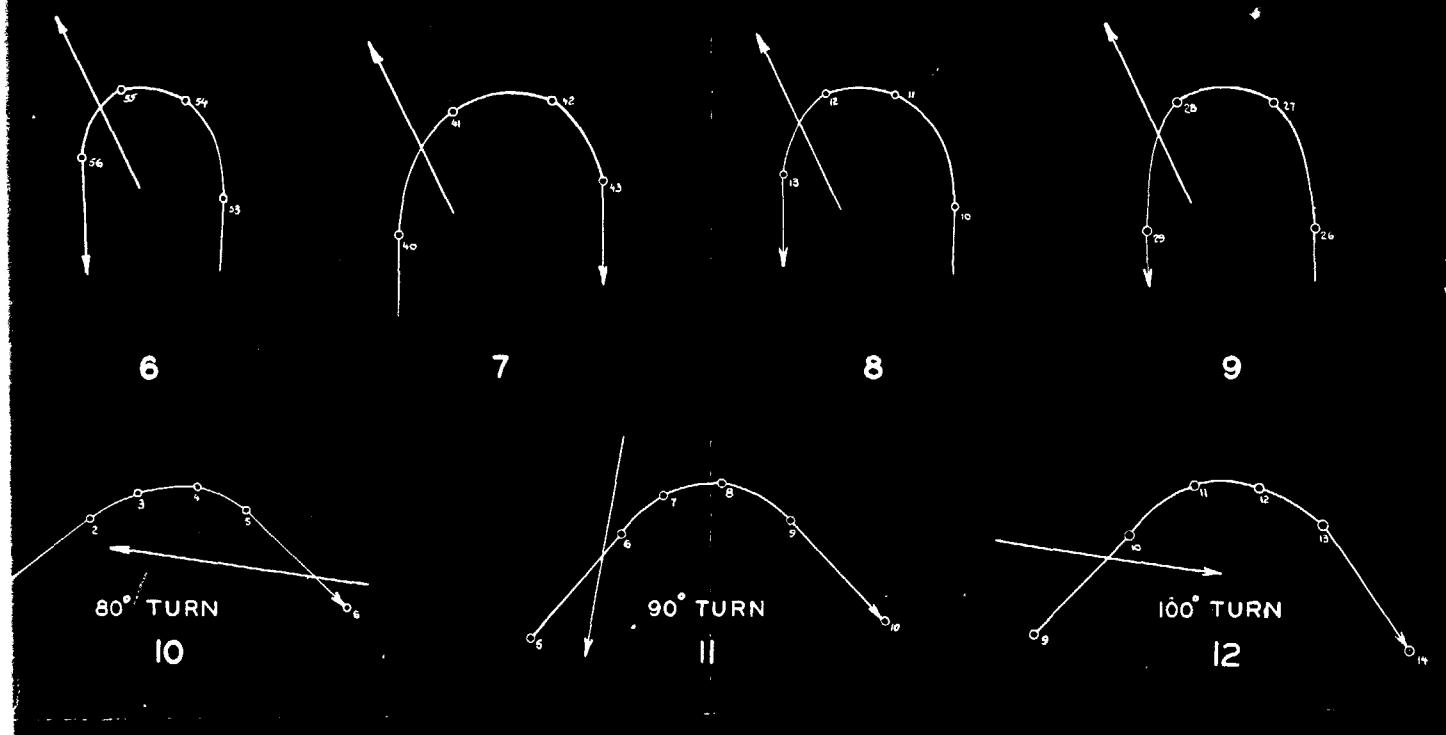
NOTE:-

NO'S. 1, 2, 3, 8, 9, 10, 11, & 12 WERE MADE AT 130 R.P.M.

NO'S. 4, 5, 6, & 7 WERE MADE AT 90 R.P.M.

→ LT. WNW BREEZE

SCALE = 1:20,000



NOTE:-

NO'S. 1, 2, 3, 8, 9, 10, 11, & 12 WERE MADE AT 130 R.P.M.

NO'S. 4, 5, 6, & 7 WERE MADE AT 90 R.P.M.

→ LT. WNW BREEZE

SCALE = 1:20,000

SPECIMEN TRACKS OF SHIP ON HARD-OVER TURNS

U.S.C.&G.S.S. OCEANOGRAPHER

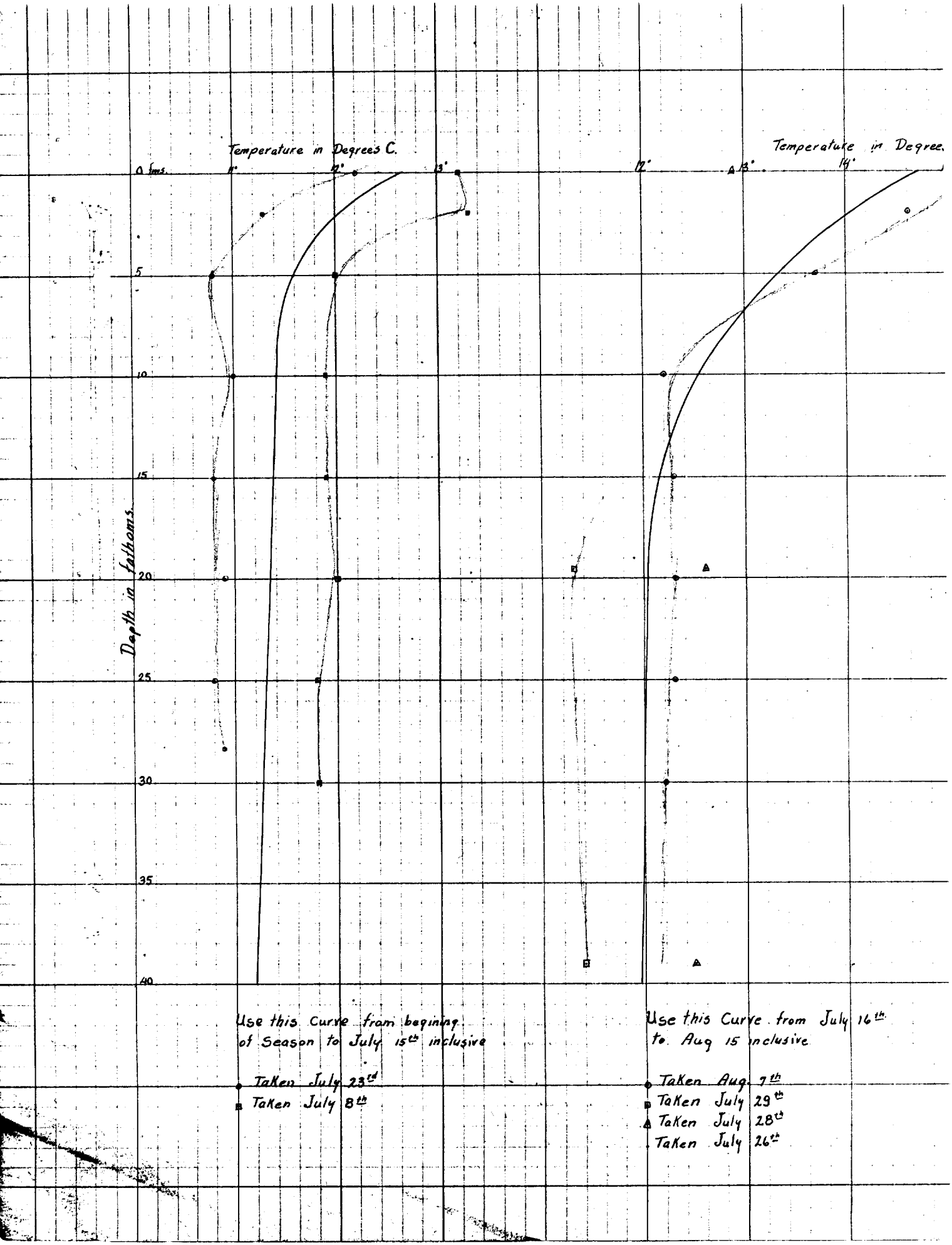
1930

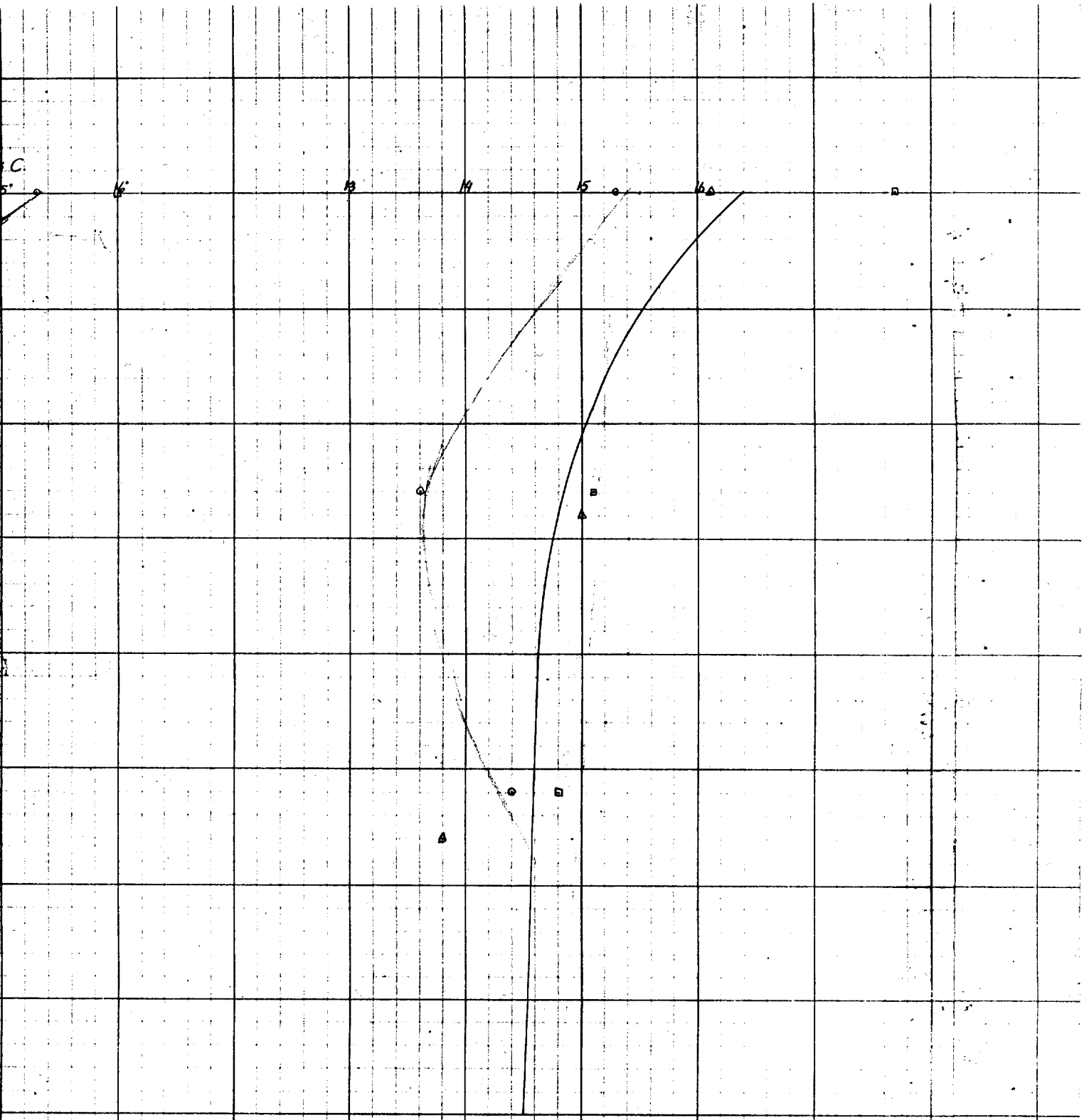
GEORGES BANK

SEASON OF 1930

Temperature Curves

From 0 to 42 fms.


Temperature in Degrees C.
Temperature in Degree.
0 fms.
5
10
15
20
25
30
35
40
Depth in fathoms.
11°
12°
13°
12°
13°
14°
Use this Curve from begining of Season to July 15th inclusive
Taken July 23rd
Taken July 8th
Use this Curve from July 16th to Aug 15 inclusive
Taken Aug. 7th
Taken July 29th
Taken July 28th
Taken July 26th



Use this Curve from Aug. 16th
to end of season.

- ● Taken Aug. 25th
- ▣ Taken Aug. 26th
- △ Taken Sept. 5th
- . Taken Sept 8th

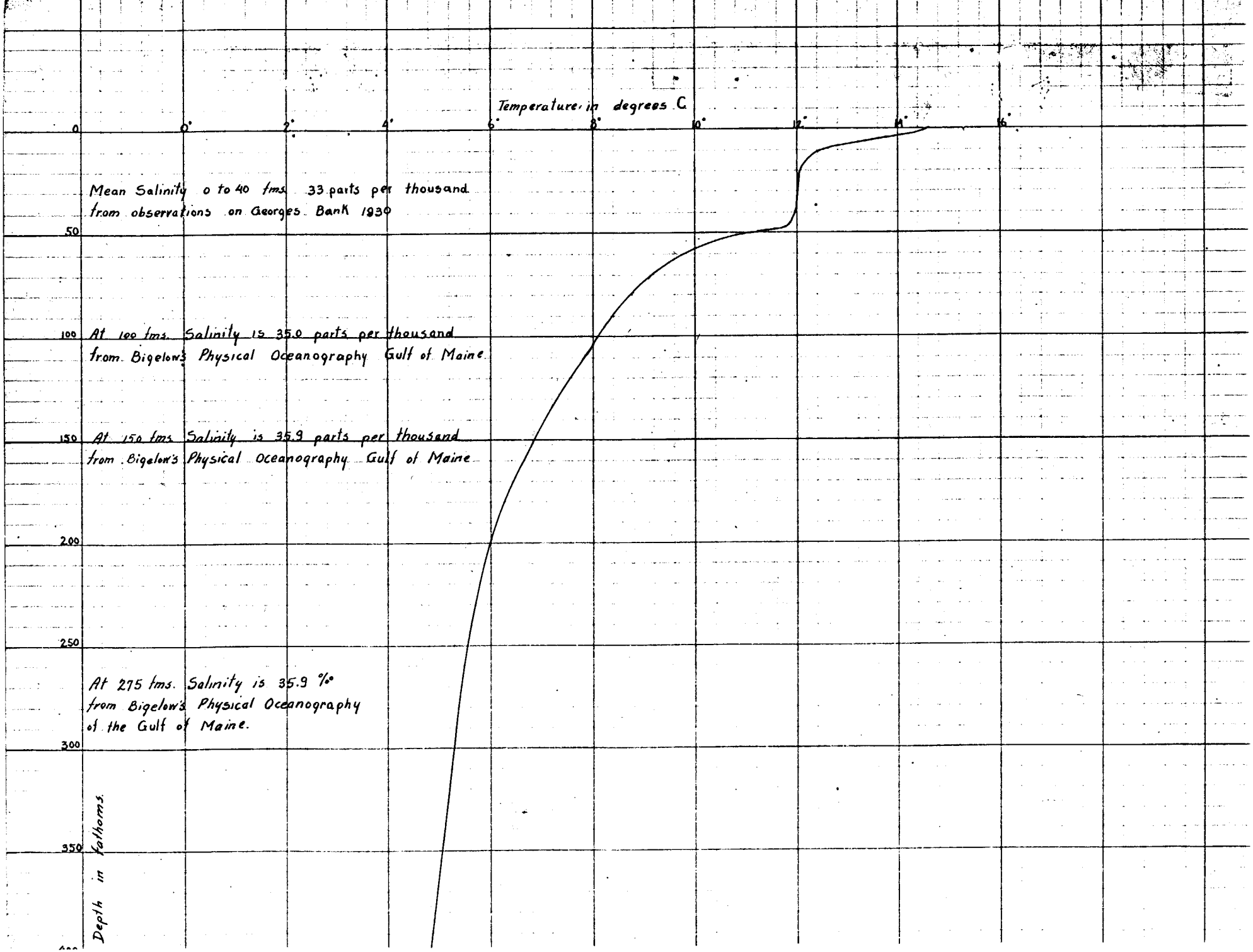
Copied from original by. CHK.

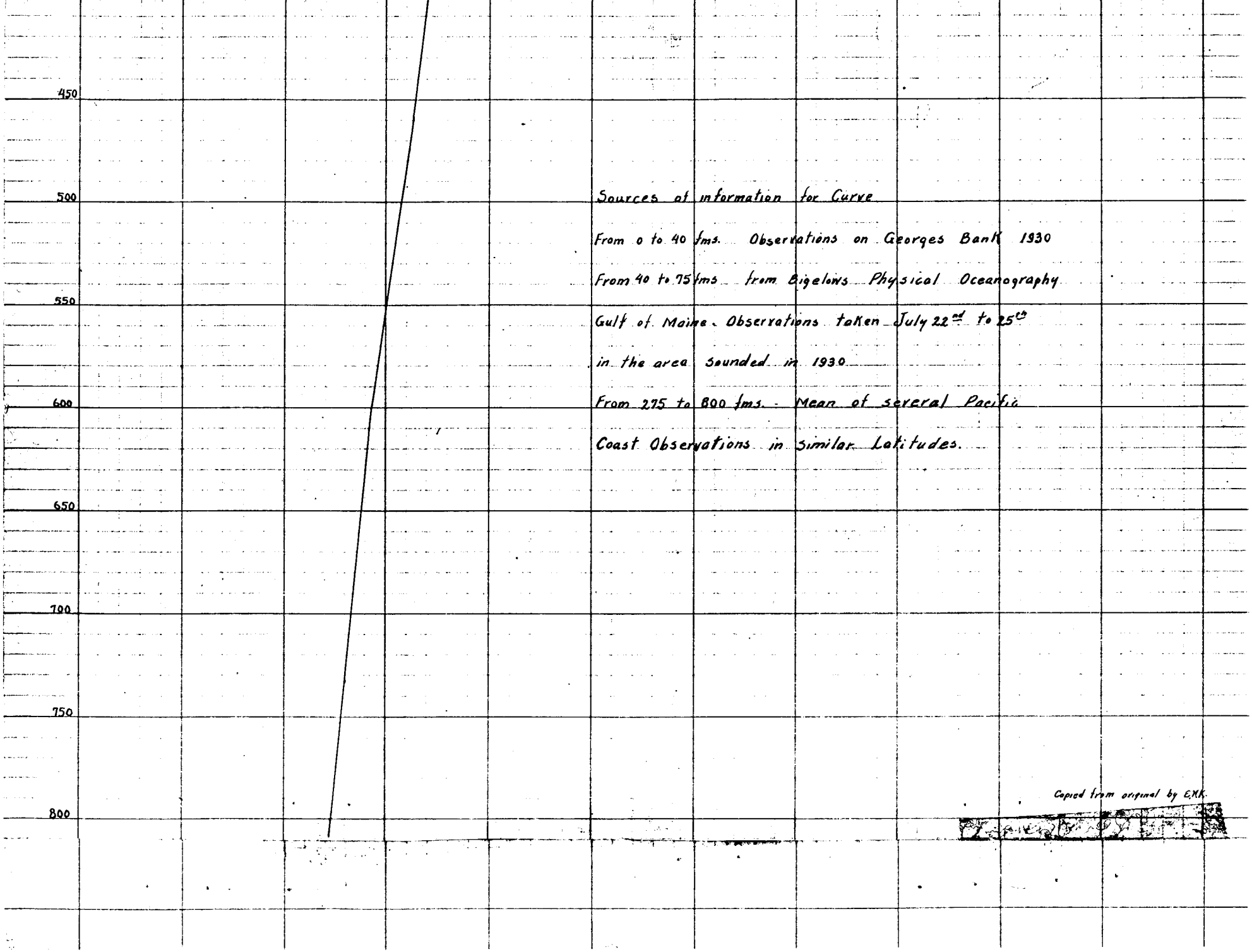
GEORGES BANK

SEASON OF 1930

TEMPERATURE CURVE.

FROM 0 TO 800 FMS.


Temperature in degrees C
0
0°
2°
4°
6°
8°
10°
12°
14°
16°
Mean Salinity 0 to 40 fms 33 parts per thousand
from observations on Georges Bank 1930
50
100
At 100 fms. Salinity is 35.0 parts per thousand
from Bigelow's Physical Oceanography Gulf of Maine.
150
At 150 fms Salinity is 35.9 parts per thousand
from Bigelow's Physical Oceanography Gulf of Maine
200
250
At 275 fms. Salinity is 35.9 ‰
from Bigelow's Physical Oceanography
of the Gulf of Maine.
300
350
Depth in fathoms.

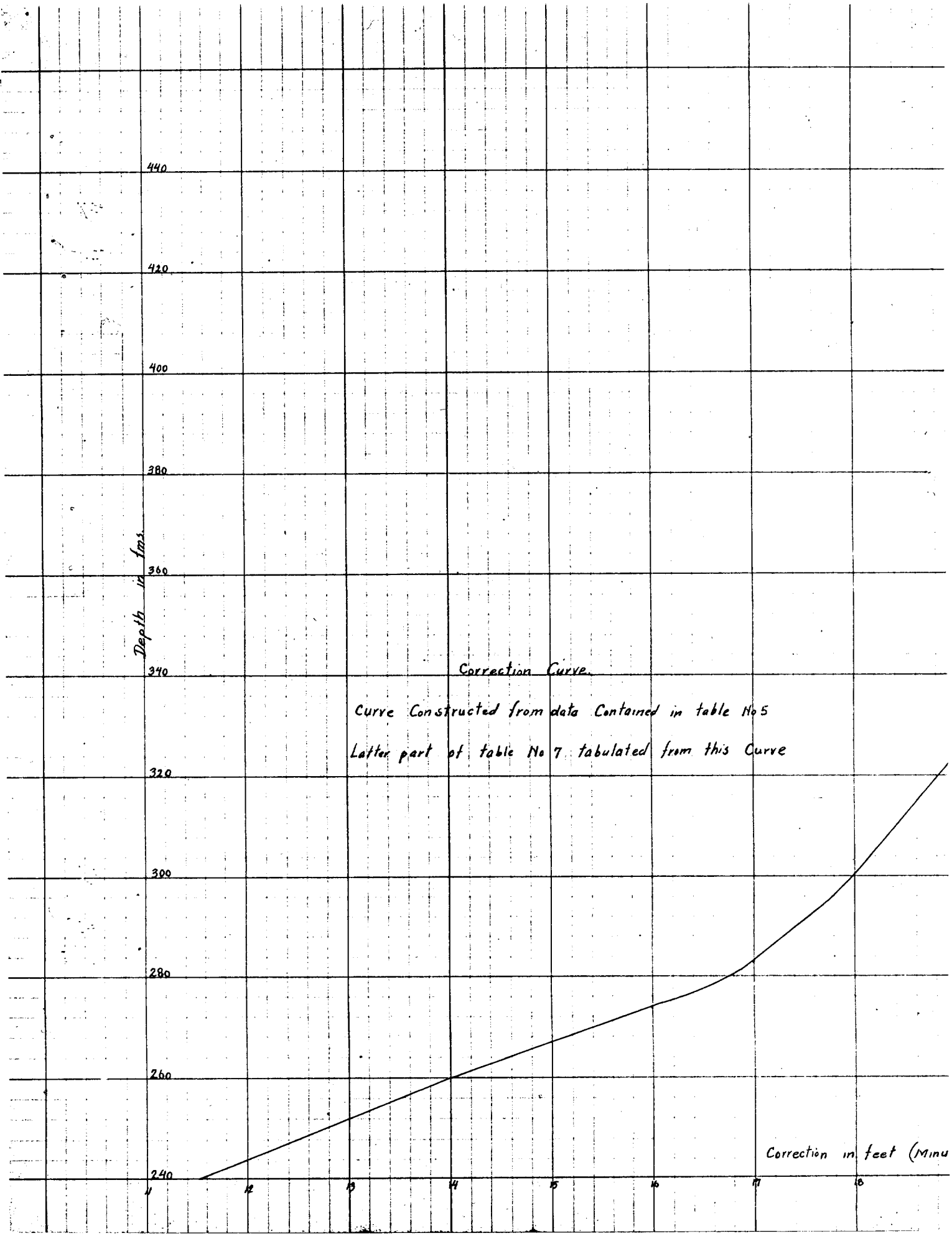

450
500
550
600
650
700
750
800
Sources of information for Curve
From 0 to 40 fms. Observations on Georges Bank 1930
From 40 to 75 fms from Bigelows Physical Oceanography
Gulf of Maine. Observations taken July 22nd to 25th
in the area sounded in 1930
From 275 to 800 fms. Mean of several Pacific
Coast Observations in similar Latitudes.
Copied from original by E.H.K.

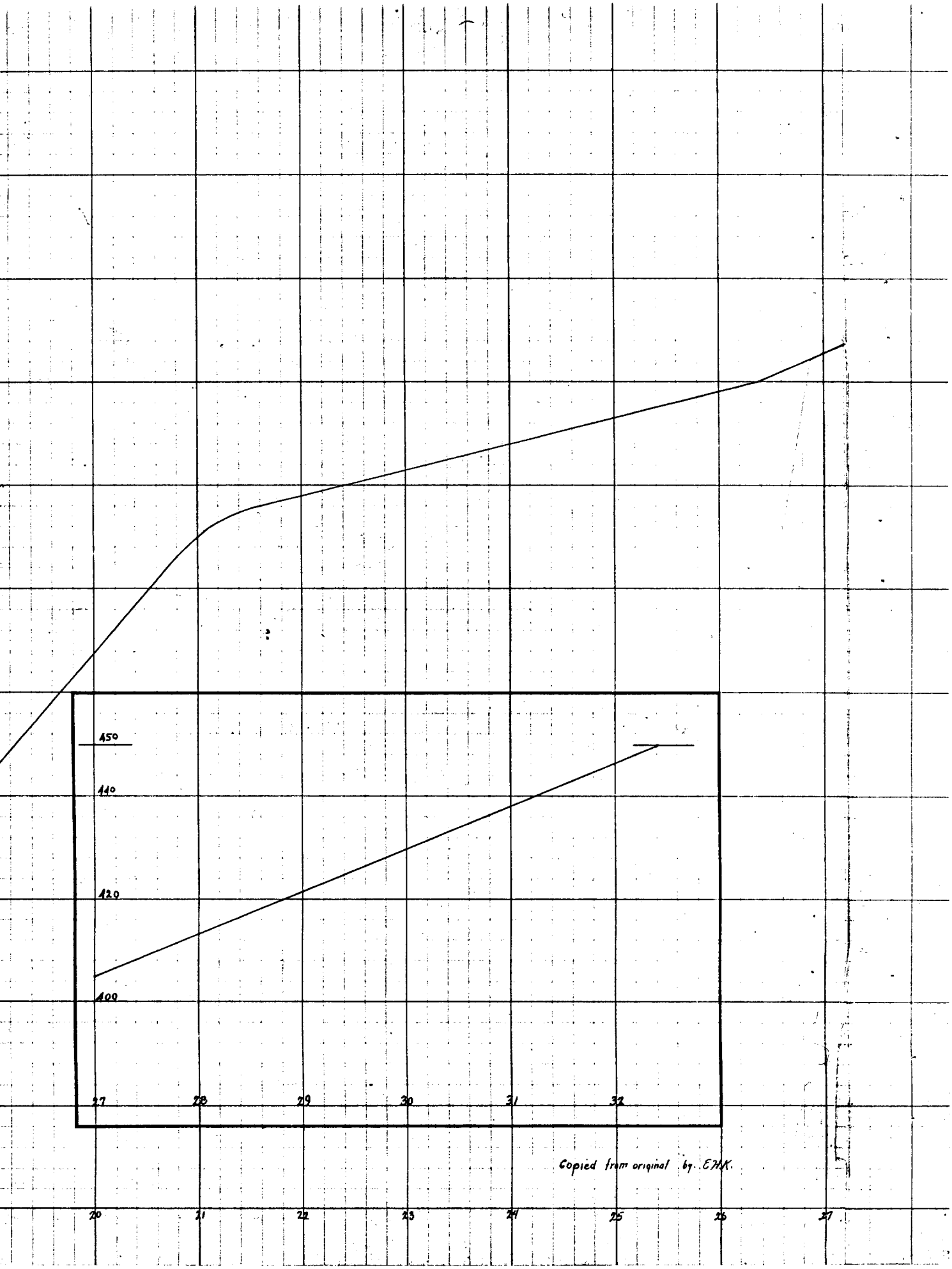
GEORGES BANK

SEASON OF 1930

Correction Curve

From 240 to 450 fms.


Correction Curve.
Curve Constructed from data Contained in table No 5
Latter part of table No 7 tabulated from this Curve
Depth in fms.
440
420
400
380
360
340
320
300
280
260
240
11
12
13
14
15
16
17
18
Correction in feet (Minu



Copied from original by. EMK.

GEORGES BANK.

SEASON 1930

CORRECTION CURVE

FROM 42 TO 260 FMS.

IN REPLY ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY
AND NOT THE SIGNER OF THIS LETTER

AND REFER TO No. 80-DRM

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

SECTION OF FIELD RECORDS

Review of Hydrographic Sheets Nos. 5112, 5112a, 5112b, 5112c

Georges Bank - Offshore - Mass.

Surveyed in 1930

Instructions dated May 17, 1930 (LYDONIA)

Chief of Party, F. L. Peacock

Surveyed by F.L.P.

Plotted by G. E. Morris, J. C. Tribble, Jr. (5112)
G.E.M., J.C.T.Jr., F. Natella (5112a)
E. Brown, Jr. (5112b)

Soundings pencilled by C. R. Reed (5112)
F. Natella (5112a)
E. Brown Jr. (5112b)
J. C. Tribble Jr., C. R. Reed (5112c)

Verified and inked by G. Risegari

1. The records conform to the requirements of the General Instructions.

2. The plan and character of development fulfill the requirements of the General Instructions.

3. The plan and character of development satisfy the specific instructions. Exceptions:- Failure to make leeway allowances as per paragraph 32. While the instructions called for allowances for leeway it is believed that the small amount of leeway as explained in the Descriptive Report, page 3, is sufficiently taken care of by the closure corrections and R.A.R. distances.

   Paragraph 44 of specific instructions. The electric oscillator was used to take soundings in less than the minimum of 15 fathoms in several cases. See page 10, Chief of Party's report. See also paragraph 7, this report.

   Although the specific instructions specified a bottom characteristic for each 25 square miles and more frequently on shoals, there is an average of only one bottom for each 550 square miles.

4. The sounding line crossings are adequate for sheet b. The crossings on sheets a and c are scarce beyond the 45 fathom contour, and on sheet 5112 there are only two.

5. The usual depth curves can be completely drawn within the area covered by the survey.

6. The sheets make good junctions with one another.

7. Attention is called to the two 9-fathom soundings, which check each other (sheet b, 36 RR and 103 TT), lat. 41 52'.0, long. 67 18'.0 and which are the shoalest of the entire survey. The Chief of Party, (see p. 10, descriptive report) expresses a hesitancy as to acceptance of these depths on account of their being recorded by the use of the electric oscillator in connection with the fathometer work. He further expresses his opinion that these soundings are not strays and cannot be in error by more than one fathom.

According to paragraph 44, specific instructions the electric oscillator should not be used under 15 fathoms and owing to the known uncertainty of this oscillator to register accurately in these depths, it leaves a doubt as to what should be the actual sounding registered. It is recommended that these soundings be accepted, since the error as stated by the Chief of Party cannot be more than one fathom.

Attention is called to a PD shoal sounding which plots on H. 5112a. The source of this information is letter No. 253, year 1914, sent by the Division of Revenue-Cutter Service. The letter also gives data for plotting several other shoal soundings which when plotted on the sheet show that the reported shoal is evidently out of place. It is possible that this shoal exists, but certainly not on H. 5112a, as there is no indication of such in this area. It is recommended that final action regarding the shoal soundings reported in this letter be deferred until the 1931 Georges Bank work is completed.

The beginning and ending of practically all the dead reckoning lines were checked by me and I found the work correctly plotted, but some of the lines required adjustment as indicated in the following paragraphs:

There are four places on three of the sheets where the sounding lines were very bad, as follows:

5112a,	vicinity	of	lat.	41 20',	long.	66 10'
5112b	"	"	"	42 06	"	67 16
"	"	"	"	42 00	"	66 58
5112c	"	"	"	41 47	"	65 45

Considerable study was given to the lines involved in these areas, which included checking the dead reckoning construction lines and abstracts, replotting on tracing paper the soundings for shifting purposes. In all cases bomb arcs were given due consideration and the shifts were maintained along them. The changes made by me were inspected and accepted by the Chief of Field Work Section as being about the most probable solutions.

The rearrangement of the lines in the case of 5112a mentioned above, has not been inked in, pending the arrival of the 1931 work in this area.

Numerous minor changes were made necessary by poor crossings, which in practically all the cases required only a slight adjustment of the soundings concerned.

In the case under 5112c, mentioned above, it was necessary and recommended by the Chief of Field Work Section to omit soundings from position 34 Z to position 57 Z day. No bomb arcs were obtained during a considerable part of Z day and the zig-zagged course used throughout this area made it impossible to determine the ship's position. At no place could the sounding line be held rigid to soundings of another line of known accuracy without making bad crossings at some other part of the same line or bad disagreement with nearby lines.

Attention is called to page 11, Descriptive Report, 1st paragraph. The lines, Z day and HH day, H. 5112a, may be out of place and it is believed that further consideration should be given to the Chief of Party's suggestion mentioned therein. The suggested change would help smooth the 50 fathom curve near Buoy F. If no change is finally decided, the 50 fathom curve, it is believed, should be charted as a smooth curve and not as shown on sheet near Buoy F. It may be of interest to know the facts regarding Buoy F. As I understand them, Buoy F was intended to be dropped at the position of Buoy F marker and when ready to drop the buoy into position it could not be found on account of the heavy fog that had set in. Giving up the search Buoy F was dropped and position bombed and then the line was run to Buoy W. Buoy F was sunk before it could be tied in and the

method used for locating it on the sheet is by back-plotting from pos. 40 to 28 HH and bomb distance. It can readily be seen that Buoy F is relatively weak and could move north on a bomb arc, thus moving the line into the position as suggested by Chief of Party. Z day could also effect a similar movement without disturbing the harmony thus effected.

Soundings between 79 Z and 81 Z day were omitted on the recommendation by Chief of Field Work Section. The soundings appear erroneous as plotted and it is believed that the fathometer was in error. The area, however, is sufficiently covered by other lines.

On sheet 5112a, all the hydrography between lat. 41 10' and 41 25' and between long. 66 00' and 66 18' should be omitted from the chart as the work is subject to adjustment when the 1931 work is reviewed. Several lines in this area, and that immediately to the eastward on H. 5112, have been left in pencil pending receipt of the 1931 work.

Comparison with the work on old surveys of this area was made and in several instances the soundings made good agreement with the 1930 work but in general the soundings of the old work appear out of position. The methods used for the control and running of the lines on the old work not being comparable with the present improved methods, apparatus, etc., it is recommended that the work on the H. 5112 sheets supersede the work of the old surveys.

8. A suggestion is offered which I believe would in the future be well to follow where many tracings pertaining to dead reckoning lines are involved. Mr. G. E. Morris, who plotted part of H. 5112a, kept the tracings for this sheet intact on an uncut roll of tracing paper. This served as an easy way to locate a particular day's work as well as keeping all the plotting work for this sheet together.

The tracings for the other sheets were separated and it became a task, on account of the large number of them, to keep them together and it required making three cumbersome bundles in order not to get the tracings mixed or lost. Each time a day's tracing was wanted it necessitated a search and resulted in loss of time.

Another point in favor of keeping the tracings intact on a roll is the ease of filing them, while with the tracings for the other sheets it will require rolling one sheet over another and vice versa when unrolling, which is a laborious and time-consuming task.

9. The areas in the vicinity of lat. 41 15', long. 66 10' and lat. 41 05', long. 66 25', H. 5112a, appear not sufficiently developed.

10. Character and scope of the surveying - good
Field drafting - good.

11. Reviewed by G. Risegari, August 27, 1931.

Notwithstanding the meritorious character of the field work, the verification of these sheets was difficult, and I consider Mr. Risegari has displayed excellent judgment in handling the problems involved.

E. P. Ellis

Later experience on this work showed that better control was desirable. Two hydrophone stations eliminated much of the uncertainty apparent on these sheets.

Approved:

A. M. Sobieralski
Chief, Section of Field Records

J. S. Borden
Chief, Section of Field Work

Supplement Report

Attention is called to the final adjustments made to various sounding lines in the submarine valley district on this sheet.

The changes made were based on the 1931 survey, H. 5153, which work is considered the ~~best~~ better controlled and the plotting of the lines more accurate.

The shifts of the lines from their original positions are indicated by a straight yellow line on this sheet or on H. 5112, where the field construction lines are plotted.

G. Risegari, Oct. 18, 1932.

~~(over)~~

Attention is called to the shifting of Buoy Able of the 1931 series (Georges Bank Surveys) determined to be west 150 south 404 ~~east - 144 meters, north - 426 meters, which means that the projection on the 1931 sheets will have to be shifted west - 144 meters, south 426 meters.~~

For further information regarding this shift, see the Descriptive Report H. 5173 by the reviewer of that sheet.

~~G.R. April 4, 1933.~~

Note for H. 5112[a].

The 11 fathom P. D. sounding previously charted in lat. 41 - 08 long. 66 - 30 (auth. chart letter 253 - 1914) has been further considered in the light of all the recent work in this area. It is impossible to find anywhere on the bank a formation similar to that indicated by the shoal and deep soundings obtained by the revenue cutter. The deep soundings, which appear to be soundings taken with the vessel stopped, can be fitted to the modern surveys with only a slight shift in position, which might indicate that the shoal soundings were taken underway, perhaps with tubes, and are of questionable accuracy. The 11 fathom sounding should therefore be disregarded in all future charting. Adjustment was made of several lines in the vicinity of Corsair Gorge to obtain agreement with lines run in 1931 on 5153 over the same area. The more accurate controlled lines in 1931 were held fixed. There was a shift of 2½ miles in some soundings. Considering the distance from the main control buoy, this is not excessive.

Information relative to final adjustment of the NA. 1927, NA. & Astronomic Datums covering entire Georges Bank Project.

An examination of the junction between the surveys of 1930 and 1931 was made after the verification of the latter work. Buoy A (Able) was a Lighthouse Service buoy whose position was determined in 1930 and this position was carried forward to the 1931 work. It was the only buoy, whose position was well determined, to be used in both the 1930 and 1931 work.

A part of the area on this sheet was resurveyed on H. 5173 in 1931. A comparison between the soundings in the same area covered on both sheets presents some difficulties because of wide spacing of lines, the large difference in scale, and the uneven bottom where frequent jumps in the depths occue between adjacent soundings on the same line. The latter precludes the use of a single sounding a few fathoms shoaler than the adjacent ones for use as a comparison between the two sheets. It is necessary to consider groups of shoals rather than individual soundings.

An inspection of the two sheets discloses that on each sheet there are shown groups of shoals of the same general character and depths and which bear the same relation to each other; so that it can be presumed that these shoals are identical.

A comparison of these common shoals indicated that their locations on H. 5112b are approximately 400 meters SSW of their positions on H. 5173. It is considered that the 1931 locations are more accurate because of the better method of control. This discrepancy could be attributed to either a shifting of buoy A during the winter of 1930 and 1931 or to an insufficient adjustment of some of the lines on the 1930 work.

The assumption that the buoy had shifted would introduce a discrepancy of 575 meters in latitude and 180 meters in longitude in the shore connection instead of the accepted difference. It would also reflect upon the astronomical observations at buoy W which are considered to be of greater accuracy than this, due to the number of observations and care taken in making them. Buoy W was the initial station in the control scheme. It is possible that the expansion of the scheme may have accumulated this discrepancy.

The determination of the positions of the sounding lines in the 1930 work was based upon a bomb distance from a single station ship only. Considerable adjustments of the sounding lines were necessary due to excessive current, poor visibility and other causes. The bomb distances of these shoals from buoy A should be constant, but it appears that most of them are dependent upon bomb distances from another buoy so that a shift could be made along the bomb distance and a better agreement obtained with the 1931 work.

To shift the locations of these groups of shoals would involve a replotting and readjustment of numerous lines of the 1930 work. It was not considered that the difference in position was sufficient to warrant this, and the more expedient course was followed by holding the work on H. 5112b fixed and transferring the important soundings from H. 5173 to H. 5112b and adjusting them to their post probable positions on the latter sheet. In order that no confusion result from the different locations of the same shoals on both H. 5173 and H. 5112b, the area affected was marked with a dotted red line on H. 5173 as superseded.

The original projection on this sheet, as well as on all sheets of the 1930 and 1931 surveys, were based on the astronomical position of buoy W. On account of the variable and unknown errors accumulating in the entire control scheme, it was decided that a minimum change would be effected in the 1930 and 1931 surveys by a shift in those projections of the amount of the discrepancy found when the shore connection was made in 1932. This placed all sheets of the Georges Bank project on the North American 1927 datum.

A. L. Shalowitz

L. O. Colbert

Chief, Section of Field Records

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO. 5112

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 201

REGISTER NO. 5112

State Massachusetts (Offshore)

General locality Georges Bank ~~and vicinity~~

Locality Eastern end

Scale 1:200,000 Date of survey June to September, 1930

Vessel OCEANOGRAPHER

Chief of Party Fred L. Peacock, H. & G. E.

Surveyed by Chief of Party

Plotted ~~Protracted~~ by G. E. Morris and J. C. Tribble, Jr.

Soundings penciled by C. R. Reed

Soundings in fathoms ~~feet~~

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated May 17, 1930

Remarks: See sub-plans plotted on separate sheets.

U. S. GOVERNMENT PRINTING OFFICE: 1929

1 Des. Rept.
3 Boat Sheets
1 Brows Chart
1 Shiel Book
(?) Cahiers Comp. of Bing (Pos; Log Factor, Tes, & Orbs. of Sun & Ag. R.A.R. Sec)
4 Cahiers D'Echoing

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO. 5112a

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Sub-plan Field No. 102 of Field No. 201

REGISTER NO. 5112a

State Massachusetts (Offshore)

General locality Georges Bank

Locality Eastern end (~~South~~)

Scale 1:100,000 Date of survey July-Aug.Sept., 1930

Vessel OCEANOGRAPHER

Chief of Party Fred L. Peacock, H. & G. E.

Surveyed by Chief of Party

plotted ~~Protracted~~ by G.E.Morris, Fred Natella, and J.C.Tribble, Jr.

Soundings penciled by Fred Natella

Soundings in fathoms ~~feet~~

Plane of reference M.L.W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated May 17, 1930

Remarks: See submarine valley development on this sheet.

U. S. GOVERNMENT PRINTING OFFICE: 1929

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO. 5112b

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Sub-plan Field No. 301 of Field No. 201

REGISTER NO. 5112b

State Massachusetts (offshore)

General locality Georges Bank

Locality ~~Between Lat. 41° 41' N. and Lat. 42° 09' N, and between Long. 66° 53'2 W and Long. 67° 22' W.~~ Eastern End (~~West~~)

Scale 1:40,000 Date of survey June-Aug-Sept., 1930

Vessel OCEANOGRAPHER

Chief of Party Fred L. Peacock, H. & G. E.

Surveyed by Chief of Party

~~Protracted~~ Plotted by E. B. Brown, Jr.

Soundings penciled by E. B. Brown, Jr.

Soundings in fathoms ~~feet~~

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated May 17, 1930

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1929

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO. 5112C

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Sub-plan Field No. 101 of Field No. 201

REGISTER NO. 5112C

State Massachusetts, (Offshore)

General locality Georges Bank

Locality Eastern End (~~Northeast~~)

Scale 1:100,000 Date of survey June, July, Aug. Sept., 19 30

Vessel OCEANOGRAPHER

Chief of Party Fred L. Peacock, H. & G. E.

Surveyed by Chief of Party

Plotted ~~Protracted~~ by J. C. Tribble, Jr., and C. R. Reed

Soundings penciled by J. C. Tribble, Jr., and C. R. Reed

Soundings in fathoms ~~feet~~

Plane of reference M. L. W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated May 17, 19 30

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1929

5112d

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic } Sheet No. H-5112d

State Massachusetts

LOCALITY

Georges Bank

Vicinity of Corsair Gorge

1939

CHIEF OF PARTY

Executed in Office

U.S. GOVERNMENT PRINTING OFFICE: 1934

5112d

REPORT ON OFFICE ADJUSTMENTS ON H-5112d (1939)

1. Purpose of Supplemental Sheet

In order to compile Chart 1107 and obtain the best value of the depth curves proposed to be shown, a careful study, particularly in the vicinity of CORSAIR GORGE has been made of H-5112 (1930), H-5112a (1930) and H-5153 (1931). This study revealed anomalies inconsistent with other known gorges in the vicinity of GEORGES BANK, the most outstanding being the unusually sharp gradient on H-5112a in lat. 41°19', long. 66°04' existing between a 505 fm. sounding on line 34-35 LL which fell 4 tenths miles north of an 812 fms. on line 31 to 32 DD. An inspection of the records in this general vicinity showed that office adjustments varying from ½ to 2½ miles had been made on H-5112a in order to improve crossline agreement with H-5153. The present adjustments being of an extensive nature, the work was replotted on a new sheet and numbered H-5112d.

2. Extent of Adjustment.

In deciding the best position of sounding lines, all of which were more or less based on weak control, several sets of contours were made on tracing paper and the most probable set in the light of present knowledge of the continental slope selected as a basis for readjustment and final contouring.

On H-5112a; lines 23-37 DD, 40-42 DD, 28-47 EE, 39-60 JJ and 30-44 LL were shifted back to their original plotted positions as recorded. Line 8 to 23 DD was also shifted back but held about $\frac{1}{8}$ mile north at Pos. 23 DD. Sounding line spacing with respect to time intervals was also improved on line 56-57 LL and 54-55 MM.

On H-5153; Pos. 21, 27, 48, 50, 54 and 60 J were shifted to where they appeared to agree best with the depth contours and other crosslines. Pos. 33 and 68 J were held as recorded in the records. The remainder of the line between Pos. 33 and 68 J was then adjusted by dead reckoning. Ten soundings taken after Pos. 68 J which were rejected by the field party, apparently because of no position control other than dead reckoning, were also utilized in order to get additional information on the approximate position of the 1000 fm. curve.

3. <u>Results of Adjustment.</u>

The present adjustment involves less departure from the recorded data and in only one case is the maximum shift required by the new adjustment as great as 2 miles (Pos. 54 J blue; Lat. 41°15', Long. 66°01'). It also gives a more logical definition of submarine features. The development in this vicinity, however, is deficient and doubtless if additional lines were to be run in this area, the configuration as shown could be altered.

4. March 1, 1939. Harold W. Murray