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U. S. COAST AND GEODETIC SURVEY
E. LESTER JONES, Director

TIDAL BENCH MARKS

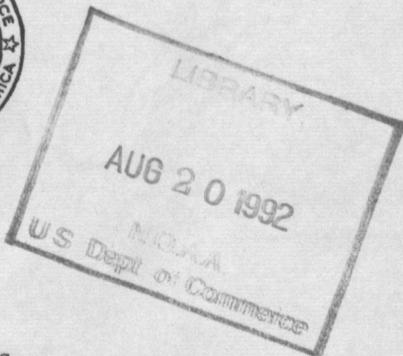
STATE OF
CONNECTICUT

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By

L. A. COLE

Associate Mathematician, U. S. Coast and Geodetic Survey



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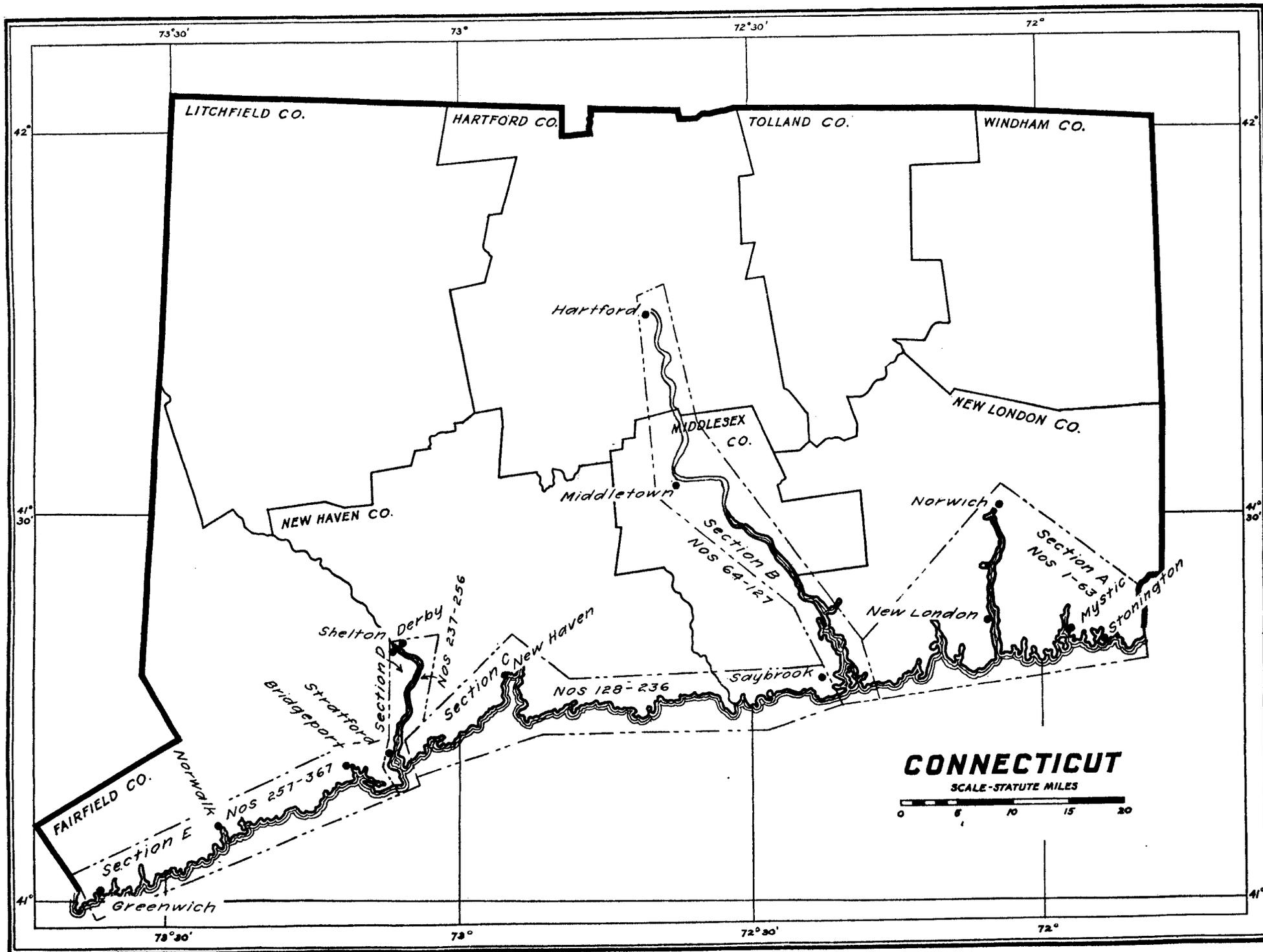
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TIDAL BENCH MARKS, STATE OF CONNECTICUT

By L. A. COLE, *Associate Mathematician, United States Coast and Geodetic Survey*

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INTRODUCTION

In connection with its hydrographic operations the United States Coast and Geodetic Survey has established from time to time many tidal bench marks along our coasts. Numerous requests from engineers and others for descriptions and elevations of these bench marks have led the bureau to begin publishing the data which are in manuscript form in the files, in order to be able to furnish the information more promptly and economically. In addition to the bench marks established by this survey, it is proposed to include in these publications the descriptions and elevations of any well-determined bench marks which have been furnished by other organizations, such as municipal, State, and Federal engineers.

This information is being made available by sections of the coast. Because of the many requests for the information for the vicinity of New York City, the first section to be published was for the State of New York as given in Special Publication No. 83, issued in 1922; the second section, for the District of Columbia, is given in Special Publication No. 119; and the third section, for the State of Rhode Island, in Special Publication No. 128. The present volume is

the fourth of the series and will be followed from time to time by similar volumes covering other sections of the coast.

STANDARD DATUM

In all engineering work where it is necessary to determine differences in elevation by spirit levels, and especially where it is desired to coordinate the work of various surveys, it is in the interest of efficiency and economy that a uniform datum be used. It has frequently happened that the various engineers operating in the same locality have used different arbitrary datums, which has led to much confusion. This condition can be obviated by the adoption of a single reliable datum. Datums based on tidal definition are the best for both practical and scientific work, since they may be recovered even though all bench-mark connections be destroyed.

Of all the tidal datums, mean sea level is the most nearly fixed, and therefore the best. It is now used by this bureau as the datum for all land surveys. By a network of first-order levels it has been carried to many parts of the interior of the country, and new lines are being added to this level net each year.

Mean sea level, as determined at the primary tide stations on the open coast, may be considered for all practical engineering and surveying purposes to be in the same equipotential surface and may be defined as the level about which the tide oscillates. As determined by this bureau, it is derived from the hourly heights of the tide as referred to the zero of a fixed tide staff which has been connected with a primary bench mark by spirit levels. Because of the disturbing influences of wind and weather an accurate determination of mean sea level must be based on observations extending over a considerable period of time. In general, a series of tidal observations three years in length will, when corrected by comparison with the results from a suitably located primary station, determine mean sea level within 0.02 foot; observations covering a period of a year will determine it to 0.05 foot, and a month of observations may be considered to determine it within 0.10 foot.

DATUM PLANES USED

Except for the bench marks along the Housatonic River (Section D), which are referred to only the mean low water of the United States Army Engineers, the elevations of the bench marks in this publication are referred to five different tidal datums. Those marks which have been connected with the first-order level net are referred to mean sea level, which is the standard datum for that work. All other bench marks are referred to mean tide level. In addition to either mean sea level or mean tide level, as the case may be, the elevations are also referred to mean high water, mean low water, highest tide, and lowest tide.

Mean tide level is determined from the high and low water readings and is a datum midway between mean high water and mean low water. It should be distinguished from mean sea level, which is determined from the hourly heights of the tide. For most places on the open coast mean tide level does not differ much from mean sea level, and for practical purposes the two planes may be used as if

identical. Based on long series of tidal observations at New London and New Haven, Conn., supported by another long series of observations at Willets Point, N. Y., the two datums are found to be practically at the same elevation along the Connecticut shore of Long Island Sound and for the purposes of this publication are assumed to be identical.

Up the Connecticut River, however, there is an increasing difference from Saybrook Breakwater to Hartford, between the mean sea level of Long Island Sound and the mean tide level of the river. This difference is due to the slope of the river bed, together with the fresh water flow, and amounts to approximately 2.2 feet at Hartford. (See fig. 1.)

The mean tide level for the Connecticut River (Section B) is based on simultaneous tidal observations by the United States Army Engineers at Saybrook Breakwater, Deep River, Higganum, Middletown and Two Piers, and by the United States Weather Bureau at Hartford. The observations were made in the fall of 1909 during a dry season when the river was at about a normal mean summer stage. The zeros of all these gauges were referred to the Hartford datum of the United States Army Engineers through a line of spirit levels run by them on each side of the river in 1909.

The Hartford datum has been connected with the first-order level net at both Hartford and Saybrook, and through these connections the relation of mean tide level of the Connecticut River to the mean sea level of Long Island Sound has been determined.

The elevations of many of the United States Army Engineer bench marks along Long Island Sound were furnished this bureau as referred to their Bridgeport datum. Some of these marks have been connected by this bureau with the first-order level net. Through these connections the relations of the Bridgeport datum to mean sea level for the different points along the coast from Saybrook Junction to Greenwich have been derived.

Mean high water is the mean height of all the high waters and mean low water the mean height of all low waters for the period of the observations. The difference in height between mean high water and mean low water corresponds to the mean range of tide. The relation of mean high water and mean low water to mean tide level at any point is equal to one-half the mean range of tide above and below that datum. The mean range of tide varies considerably from place to place, depending in a large measure on the location, depth of water, and configuration of the coast line. Therefore, mean high water and mean low water are not uniform datums over a large area like mean sea level and mean tide level, but vary in accordance with the differences in the range of tide over that area. Mean low water on the Atlantic coast of the United States is of importance as the hydrographic datum to which all soundings on charts and the predicted heights in tide tables are referred.

The highest and lowest tides represent the probable extreme heights for each locality and, in places where long series of observations are not available, have been estimated to the nearest half-foot based on the highest and lowest values observed in that region.

A record of some of the highest and lowest stages of the Connecticut River at Hartford for a number of years to 1923, including the years

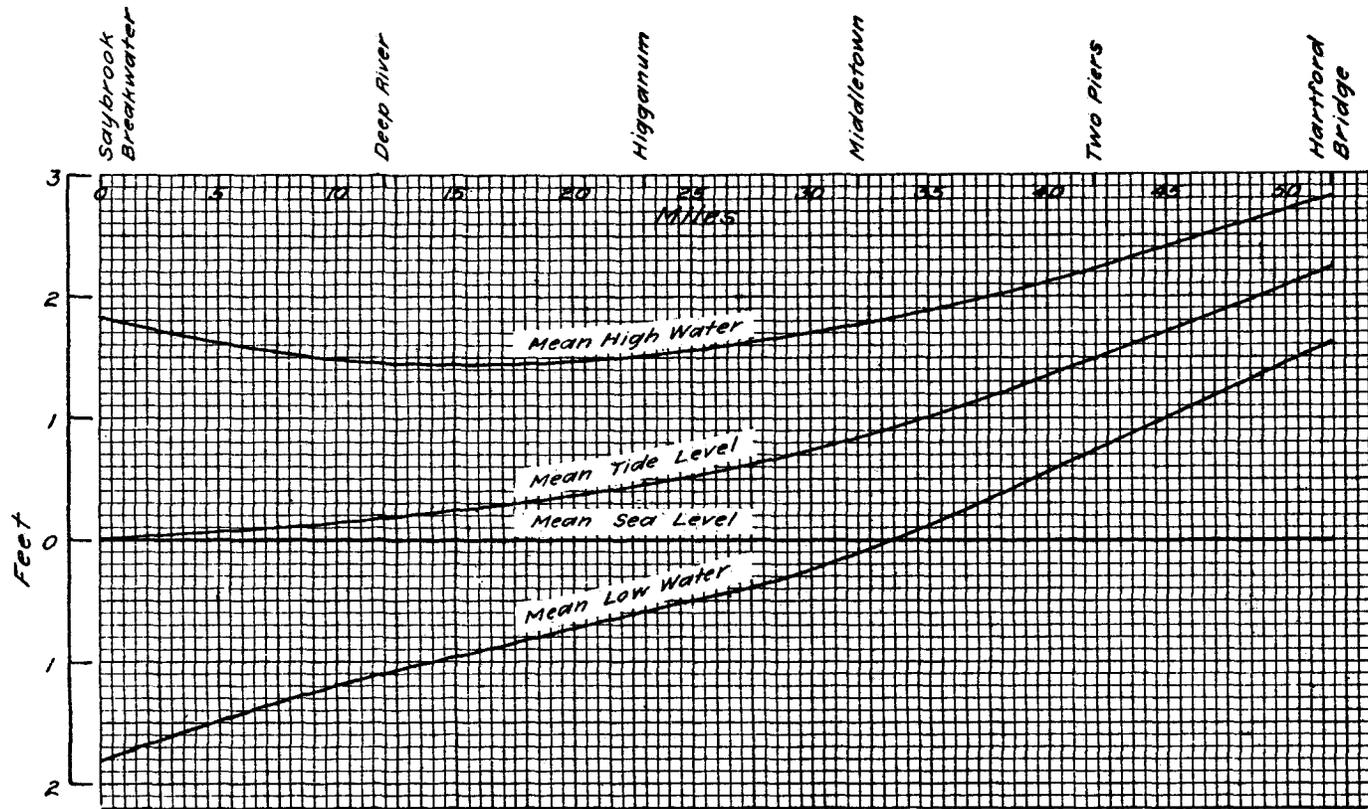


FIG. 1.—Connecticut River datums referred to mean sea level

1683 and 1692, has been furnished by the United States Weather Bureau, as follows:

Year	Highest	Lowest	Year	Highest	Lowest	Year	Highest	Lowest
1683	26.0		1877	22.6	1.2	1913	26.3	0.5
1692	26.2		1903	23.3		1914	21.9	.2
1801	27.5		1904	19.5		1915	20.6	.6
1841	26.3		1905	24.0		1916	20.8	.9
1854	29.8		1906	19.8	.9	1917	18.3	.5
1871	18.5	1.0	1907	20.3	.7	1918	18.8	-.2
1872	19.6	1.6	1908	18.5	-.5	1919	19.8	.7
1873	20.8	.9	1909	24.7	-.2	1920	22.5	.3
1874	23.5	.4	1910	20.2	.4	1921	19.9	.0
1875	18.7	1.2	1911	16.0	.6	1922	24.5	.3
1876	21.8	.7	1912	21.2	.5	1923	22.0	.2

The above heights are referred to the zero of the Hartford gauge, which is 2.02 feet below mean low water.

The Corps of Engineers, United States Army, reports in regard to the highest and lowest stages of the Connecticut River, as follows:

The principal freshets are caused by the melting snows and spring rains. The highest freshets are generally of short duration, but the period during which the river at Hartford is at a level of 10 feet or more above the zero of that gauge averages nearly two months in the year. Freshets of at least 18 feet above the zero of the Hartford gauge occur practically every year, and the maximum height to which the water ordinarily rises on that gauge appears to be between 23 and 24 feet. It is stated that a freshet of 22 feet at Hartford gives a freshet of about 15 feet at Middletown, and below that point it rapidly decreases.

The zero of the Hartford gauge is the low water of 1801, which, previous to 1858, was the lowest water on record. Since then the water has occasionally fallen below this zero, but generally this has been due to closing the gates at Windsor Locks or some such abnormal reason. (From House Document No. 1294, 61st Cong., 3d sess., p. 21.)

EXPLANATION OF TABLES

For convenience of reference the bench marks have been divided into five groups or sections, each section being designated by a letter of the alphabet in accordance with its geographical position from east to west along the coast, as shown on key map. (See frontispiece.) The marks have also been given consecutive serial numbers and arranged, in a general way, in accordance with their order of occurrence in the sections.

Except as noted for section D (see "Datum planes used," p. 2), the table of elevations at the beginning of each section gives the elevations of the bench marks above five principal tide planes. Following the table of elevations a detailed description of each bench mark is given under the same serial number as is used in the table of elevations. In addition to the serial number there is also given the number assigned to the bench mark by the organization which established it or has furnished its description and elevation. Except in cases where the bench mark is a Coast and Geodetic Survey or a United States Geological Survey standard disk, the initials of the organization are given in parentheses following the number, as follows:

United States Coast and Geodetic Survey-----	Initials (C. & G. S.)
United States Army Engineers-----	(U. S. E.)

For convenience the mean low water elevation and the mean tide level or mean sea level elevation of each bench mark are also given at the end of each description.

ACCURACY OF THE ELEVATIONS

In general, the accuracy of the elevations of the bench marks above the different tide planes will vary in accordance with the length of the tidal series upon which they depend. The elevations of the bench marks which have been connected with the first-order level net are based on the standard datum of mean sea level as used in the adjustment of the first-order level net for this region. A well-determined plane of reference is thus afforded for all such bench marks. Bench marks not connected with the first-order level net are referred to mean tide level as determined independently in each locality from observed high and low waters. Many of the United States Army Engineers' bench marks, however, which are referred to mean tide level have been connected by lines of levels with either their Hartford datum or Bridgeport datum. (See "Datum planes used," p. 2.) Elevations referred to mean sea level or mean tide level are given to hundredths of a foot.

The elevations above the planes of mean high water and mean low water are obtained from mean sea level or mean tide level through the local mean range of tide and are given to the nearest tenth of a foot.

The elevations above the planes of highest and lowest tides are based on values estimated to the nearest half foot above and below mean low water. These values have been adopted after consideration of all the highest and lowest observed values for the region. The purpose of these elevations is to give the engineer an approximation of the extreme stages of the water that may occur in that locality.

If accurate differences in elevation between bench marks are desired, the values for the elevations above mean sea level and mean tide level which are given to hundredths of a foot should be used. Mean sea level, being the datum of the first-order level net, shows the relative elevations of all bench marks referred to it, while mean tide level in some cases is based on local tidal observations without any level connection with other localities and will give accurate relations only for bench marks in the same group and approximate relations for bench marks in different groups.

STANDARD BENCH MARK

Various kinds of bench marks have been used to indicate the point of which the elevation was determined. Among these are nails in piles or on structures, small crosses and squares cut in curbstones and doorsteps, bolts in ledges, bowlders, and the foundations of buildings, and sometimes just a well-defined point on a fixed object has been used. Since such marks may lack permanence and are often hard to identify, this bureau has adopted a standard brass disk identification mark. The standard brass disk is $3\frac{5}{8}$ inches in diameter and has a shank or stem on the back 3 inches long for insertion in a building or other substantial support.



FIG. 2.—STANDARD BENCH MARK

At present there are two types of the standard disk bench mark, as shown in Figures 2 and 3. The type shown in Figure 2 was formerly used in all leveling work of the bureau but is now used chiefly by hydrographic parties running short lines of levels; while the type shown in Figure 3, which provides a place for inserting the elevation above mean sea level, is used for lines of the first-order level net of the United States. The other forms of the standard brass disk shown in Figure 3, though not intended primarily for bench marks, may be used as such when their elevations have been determined.

CHANGES IN ELEVATION

Although a bench mark may appear to be quite permanent in character and correspond with its description, the elevation may have changed materially since its determination because of settling of the immediate locality from construction work or from other causes. Engineers are therefore cautioned to make use of at least two bench marks where possible. They will confer a favor on the profession and on this bureau by reporting to the Director, United States Coast and Geodetic Survey, any changes in elevation or destruction of bench marks noted in order that information in regard to these marks may be kept up to date and this publication revised when necessary.

Section A.—ELEVATIONS OF BENCH MARKS, SERIAL NOS. 1 TO 63: LONG ISLAND SOUND, PAWCATUCK TO LYME

Serial No.	Locality	Elevation of bench marks above—					
		Highest tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
1	Pawcatuck	26.5	29.0	30.28	31.5	34.5	
2	do	28.8	31.3	32.60	33.8	36.8	
3	Stonington	9.4	11.7	13.06	14.4	16.9	
4	do	3.8	6.1	7.43	8.8	11.3	
5	do	4.0	7.2	8.50	9.9	12.4	
6	do	19.7	22.0	23.35	24.7	27.2	
7	do	17.7	20.0	21.39	22.7	25.2	
8	do	17.4	19.7	21.09	22.4	24.9	
9	do	1.0	3.3	4.67	6.0	8.5	
10	Mystic	12.3	14.8	16.07	17.3	19.8	
11	West Mystic	- 3	2.2	3.48	4.7	7.2	
12	do	4.0	6.5	7.76	9.0	11.5	
13	do	7.6	10.1	11.37	12.6	15.1	
14	Noank	15.8	18.2	19.50	20.8	23.3	
15	Poquonock Bridge	12.1	14.6	15.85	17.1	19.6	
16	Groton	30.0	32.5	33.75	35.0	37.5	
17	do	42.5	45.0	46.28	47.5	50.0	
18	do	40.3	42.8	44.02	45.3	47.8	
19	do	38.1	40.6	41.84	43.1	45.6	
20	New London Harbor Lighthouse	5.0	7.5	8.74	10.0	12.5	
21	Pequot House Dock, Thames River Entrance	4.0	6.5	7.75	9.0	11.5	
22	do	- 2	2.3	3.63	4.8	7.8	
23	do	1.7	4.2	5.48	6.7	9.2	
24	New London	26.0	28.5	29.76	31.0	33.5	
25	do	4.4	6.9	8.20	9.4	11.9	
26	do	7.5	10.0	11.23	12.5	15.0	
27	do	14.6	17.1	18.34	19.6	22.1	
28	do	30.9	33.4	34.63	35.9	38.4	
29	do	28.9	31.4	32.65	33.9	36.4	
30	do	15.3	17.8	19.04	20.3	22.8	

SECTION A.—Elevations of bench marks, Serial Nos. 1 to 63: Long Island Sound, Pawcatuck to Lyme—Continued

Serial No.	Locality	Elevation of bench marks above—					
		High- est tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
		<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>
31	New London.....	16.0	18.5	-----	19.70	21.0	23.5
32	do.....	22.4	24.9	-----	26.18	27.4	29.9
33	do.....	21.6	24.1	-----	25.40	26.6	29.1
34	New London, Fort Trumbull.....	10.0	12.5	-----	13.79	15.0	17.5
35	do.....	-2.5	0.0	1.21	-----	2.5	5.0
36	New London, Shaws Cove.....	10.1	12.6	-----	13.87	15.1	17.6
37	do.....	.2	2.7	-----	3.98	5.2	7.7
38	do.....	3.5	6.0	-----	7.27	8.5	11.0
39	New London, naval station.....	3.6	6.6	7.81	-----	9.1	12.1
40	Allyns Point, Thames River.....	3.4	6.2	7.51	-----	8.9	11.9
41	do.....	2.9	5.7	7.03	-----	8.4	11.4
42	do.....	16.6	19.4	20.70	-----	22.1	25.4
43	do.....	20.1	22.9	24.24	-----	25.6	28.6
44	do.....	.4	3.2	4.55	-----	5.9	8.9
45	Norwich.....	-5.1	8.0	9.58	-----	11.1	14.1
46	do.....	6.5	9.4	10.94	-----	12.5	15.5
47	do.....	8.8	11.7	13.23	-----	14.8	17.8
48	Waterford.....	35.2	37.5	-----	38.90	40.2	42.7
49	do.....	41.7	44.0	-----	45.39	46.7	49.2
50	do.....	12.5	14.8	-----	16.12	17.5	20.0
51	Millstone.....	29.3	31.6	-----	32.95	34.3	36.8
52	Niantic.....	11.1	13.4	-----	14.74	16.1	18.6
53	do.....	9.1	11.4	-----	12.77	14.1	16.6
54	do.....	7.1	9.4	-----	10.73	12.1	14.6
55	do.....	11.0	13.3	-----	14.63	16.0	18.5
56	Crescent Beach.....	16.4	18.5	-----	19.96	21.4	23.9
57	do.....	6.8	8.9	-----	10.30	11.8	14.3
58	South Lyme.....	14.1	16.1	-----	17.60	19.1	21.6
59	do.....	28.4	30.4	-----	31.95	33.4	35.9
60	Sound View.....	38.8	40.8	-----	42.26	43.8	46.3
61	do.....	27.5	29.5	-----	30.97	32.5	35.0
62	Lyme.....	29.1	31.9	-----	33.51	35.1	37.6
63	do.....	19.3	22.1	-----	23.73	25.3	27.8

DESCRIPTIONS OF BENCH MARKS, SERIAL NOS. 1 TO 63: LONG ISLAND SOUND, PAWCATUCK TO LYME

SERIAL No. 1. *Pawcatuck*.—B. M. Q 6 is a Coast and Geodetic Survey standard disk embedded in the southwest corner of the southwest parapet of railroad bridge 18.12 over the Boston Post Road. The bench mark is about 7 feet west of the west rail and about 2 feet below the tracks. Elevation: 31.5 feet above mean low water, 30.28 feet above mean sea level.

SERIAL No. 2. *Pawcatuck*.—B. M. P 6 is a Coast and Geodetic Survey standard disk embedded in the first natural rock ledge west of railroad bridge 18.11 where the track crosses the Boston Post Road. The bench mark is about 300 feet southwest of the road crossing, about 20 feet north of the north rail, and about 2½ feet above the track. Elevation: 33.8 feet above mean low water, 32.60 feet above mean sea level.

SERIAL No. 3. *Stonington*.—B. M. O 6 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 2 miles east of Stonington and about 160 feet northeast of milepost N. L. 15. The bench mark is about one-half mile east of highway bridge 14.77 over the New York, New Haven & Hartford Railroad track, about 6 feet north of the north rail and about 1 foot above the track. Elevation: 14.4 feet above mean low water, 13.06 feet above mean sea level.

SERIAL No. 4. *Stonington*.—B. M. N 6 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 30 feet east of the section tool house at Stonington. The bench mark is about 500 feet east of the New York,

New Haven & Hartford Railroad depot at Stonington and about 30 feet south of the south rail of the main line and about level with the tracks. Elevation: 8.8 feet above mean low water, 7.43 feet above mean sea level.

SERIAL No. 5. Stonington.—B. M. M 6 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 2 miles west of Stonington and about 600 feet east of railroad bridge 10.73 over a stream. The bench mark is about 100 feet south of a private road crossing and is about 6 feet west of the west rail and about 1 foot above the track. The bench mark is near the center of the second curve east of Mystic. Elevation: 9.9 feet above mean low water, 8.50 feet above mean sea level.

SERIAL No. 6. Stonington.—B. M. 7 is a Coast and Geodetic Survey standard disk on the third step from the top of a concrete stairway leading to the basement of the public library. The stairway is on the north side of the building. Elevation: 24.7 feet above mean low water, 23.35 feet above mean sea level.

SERIAL No. 7. Stonington.—B. M. 8a is a Coast and Geodetic Survey standard disk set in the top of the corner stone on the southwest corner of the intersection of Broad and Water Streets. Corner stone is 3 feet high. This bench mark supersedes bench mark 8, which was moved to new position on account of the change in grade of Water Street. Elevation: 22.7 feet above mean low water, 21.39 feet above mean sea level.

SERIAL No. 8. Stonington.—B. M. 9 is a Coast and Geodetic Survey standard disk set in corner stone on the southeast corner of Gold and Broad Streets. The corner stone is 3 feet high. Elevation: 22.4 feet above mean low water, 21.09 feet above mean sea level.

SERIAL No. 9. Stonington.—B. M. 10 is a Coast and Geodetic Survey standard disk set in a rock on the water front of Whalen's Dock, 1½ feet from a pergola, 66 feet from the property line fence, 15 feet from the corner of the stone wall, and 35.8 feet from the intersection of two lines of piling. The disk is stamped "1918—B. M. 10." Elevation: 6.0 feet above mean low water, 4.67 feet above mean sea level.

SERIAL No. 10. Mystic.—B. M. L 6 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 250 feet northwest of milepost N. L. 10. The bench mark is in the first rock cut east of the New York, New Haven & Hartford Railroad depot at Mystic and is about 10 feet south of the south rail and level with the track. Elevation: 17.3 feet above mean low water, 16.07 feet above mean sea level.

SERIAL No. 11. West Mystic.—B. M. 1 is a Coast and Geodetic Survey standard disk set in a granite ledge 20 feet long which forms part of the shore on the west bank of the Mystic River. The rock is 235 feet east of the New York, New Haven & Hartford Railroad tracks at a point 400 feet north of the West Mystic station. Elevation: 4.7 feet above mean low water, 3.48 feet above mean sea level.

SERIAL No. 12. West Mystic.—B. M. 2 is a Coast and Geodetic Survey standard disk set at the center of the west wing wall of the culvert of the New York, New Haven & Hartford Railroad 600 feet north of the station house at West Mystic. The culvert is over the outlet of a small cove which flows into the Mystic River. Elevation: 9.0 feet above mean low water, 7.76 feet above mean sea level.

SERIAL No. 13. West Mystic.—B. M. 3 is a Coast and Geodetic Survey standard disk set on the high point of a granite ledge which is about 15 feet long and 6 feet wide and is 60 feet east from the center line of the New York, New Haven & Hartford Railroad at a point 200 feet north of the culvert over the outlet of Reams Cove. The culvert is the same one on which B. M. 2 is set and is about 600 feet north of the West Mystic station. Elevation: 12.6 feet above mean low water, 11.37 feet above mean sea level.

SERIAL No. 14. Noank.—B. M. K. 6 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 150 feet west of the trolley bridge over the New York, New Haven & Hartford Railroad track just west of the depot at Noank. The bench mark is about 8 feet south of the south rail and about 1 foot above the track. Elevation: 20.8 feet above mean low water, 19.50 feet above mean sea level.

SERIAL No. 15. Poquonock Bridge.—B. M. J 6 is a Coast and Geodetic Survey standard disk embedded in the south end of the west parapet of railroad bridge 4.46 over a highway. The bench mark is about 125 feet southeast of the depot at Midway, about 30 feet south of the south rail of the main line, and about 1 foot below the track. Elevation: 17.1 feet above mean low water, 15.85 feet above mean sea level.

SERIAL No. 16. Groton.—B. M. H 6 is a Coast and Geodetic Survey standard disk about 2.1 miles east of Groton, embedded in the south parapet of the west abutment of railroad bridge 3.41 over the Boston Post Road. The bench mark is in the center of the parapet, is about 15 feet south of the south rail of the main line, and about 1 foot below the track. Elevation: 35.0 feet above mean low water, 33.75 feet above mean sea level.

SERIAL No. 17. Groton.—B. M. G 6 is a Coast and Geodetic Survey standard disk about $1\frac{1}{2}$ miles east of Groton, embedded in a natural rock ledge about $\frac{1}{4}$ mile west of railroad bridge 3.41 where the New York, New Haven & Hartford Railroad track crosses the Boston Post Road. The rock ledge is the first one west of this bridge. The bench mark is about 30 feet north of the north rail of the main line and about 3 feet above the track. Elevation: 47.5 feet above mean low water, 46.28 feet above mean sea level.

SERIAL No. 18. Groton.—B. M. F 6 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge at the junction of the Worcester Division and the Boston Division of the New York, New Haven & Hartford Railroad. The bench mark is about 600 feet northeast of the depot at Groton, about 125 feet east of a semaphore signal tower, about 35 feet east of the east rail of the Worcester Division, and about 3 feet above the track. Elevation: 45.3 feet above mean low water, 44.02 feet above mean sea level.

SERIAL No. 19. Groton.—B. M. E 6 is a Coast and Geodetic Survey standard disk embedded in the south end of the east abutment of railroad bridge 1.31. The bench mark is about 100 feet west of the depot at Groton and is at the junction of the Worcester Division of the New York, New Haven & Hartford Railroad. It is 7 feet south of the south rail of the Boston Division track and about $\frac{1}{2}$ foot above the track. Elevation: 43.1 feet above mean low water, 41.84 feet above mean sea level.

SERIAL No. 20. New London Harbor Lighthouse.—B. M. 1 (C. & G. S.) is the head of a $\frac{3}{8}$ -inch copper bolt leaded into the solid rock 2.9 feet from the base of the lighthouse on the water side. The letters "B. M." are cut beside the bolt. Elevation: 10.0 feet above mean low water, 8.74 feet above mean tide level.

SERIAL No. 21. Pequot House Dock, Thames River Entrance.—B. M. 2 (C. & G. S.) is the surface inclosed in a rough circle about 3 inches in diameter, cut into the high point of a rock about 8 feet from the end of the sea wall on the south side of the stone pier. The letters "U. S. B. M." are cut in the rock on the north side of the mark. Elevation: 9.0 feet above mean low water, 7.75 feet above mean tide level.

SERIAL No. 22. Pequot House Dock, Thames River Entrance.—B. M. 3 (C. & G. S.) is the top of a $\frac{3}{8}$ -inch copper bolt leaded into the rock about 12 feet north of the stone pier and 5 feet east of the sea wall. The letters "B. M." are cut into the rock to the eastward of the mark. Elevation: 4.8 feet above mean low water, 3.53 feet above mean tide level.

SERIAL No. 23. Pequot House Dock, Thames River Entrance.—B. M. 12 is a Coast and Geodetic Survey standard disk set in a ledge of rock forming part of the bank on the west side of the Thames River about 300 feet south of the stone pier. The mark is 16 feet from the foot of a stone stairway leading from the beach to the top of the cliff. Elevation: 6.7 feet above mean low water, 5.48 feet above mean tide level.

SERIAL No. 24. New London.—B. M. D 6 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 200 feet west of the intersection of the Central Vermont and the New York, New Haven & Hartford Railroad about 400 feet east of the railroad bridge 0.55 where the Boston Post Road crosses the track, about 15 feet south of the south rail of the New Haven track, about 50 feet north of the center line of the Boston Post Road, and about $1\frac{1}{2}$ feet above the ground. Elevation: 31.0 feet above mean low water, 29.76 feet above mean sea level.

SERIAL No. 25. New London.—B. M. C 6 (C. & G. S.) is also a city of New London bench mark and is the top of the ring around manhole cover at the intersection of State Street and Railroad Avenue. The bench mark is about 10 feet northeast of a steel column supporting the corner of the second story of the Winthrop Hotel, about 45 feet south-southwest of the southwest corner of the Union Station. The point of the ring used is at a small lateral extension on the top of the manhole cover. Elevation: 9.4 feet above mean low water, 8.20 feet above mean sea level.

SERIAL No. 26. New London.—B. M. A 6 (C. & G. S.) is also a United States Army Engineer bench mark and is the north end of the top step and the adjoin-

ing brickwork of the main entrance on the west side of the Union Railroad Station. The bench mark is about 70 feet north of the south face of the building and is about 3 feet above the sidewalk. Elevation: 12.5 feet above mean low water, 11.23 feet above mean sea level.

SERIAL No. 27. *New London.*—B. M. 8 is a Coast and Geodetic Survey standard disk embedded in the west end of the stone banister on the north side of the stone stairway on the east side of the Soldiers' and Sailors' Monument. The bench mark is 6 inches north of the north end of the top step and is about 3 feet above the ground. The monument is on State Street just west of the Union Depot. Elevation: 19.6 feet above mean low water, 18.34 feet above mean sea level.

SERIAL No. 28. *New London.*—B. M. Z 5 is a Coast and Geodetic Survey standard disk embedded in the northeast corner of the post-office building at the corner of State Street and Union Street. The bench mark is 1 foot west of the east side of the building and 1 foot above the ground. The post office is diagonally across the street from the city hall. Elevation: 35.9 feet above mean low water, 34.63 feet above mean sea level.

SERIAL No. 29. *New London.*—B. M. Y 5 is a Coast and Geodetic Survey standard disk embedded in the west end of the second step from the bottom of the State Street entrance to the city hall. The city hall is at the corner of State Street and Union Street. Elevation: 33.9 feet above mean low water, 32.65 feet above mean sea level.

SERIAL No. 30. *New London.*—B. M. 7 is a Coast and Geodetic Survey standard disk embedded in the stone which forms part of the sidewalk at the northwest corner of the customhouse building on Bank Street. The bench mark is about 8 feet west of the northwest corner of the building and is flush with the sidewalk. Elevation: 20.3 feet above mean low water, 19.04 feet above mean sea level.

SERIAL No. 31. *New London.*—B. M. X 5 is a Coast and Geodetic Survey standard disk embedded in the top of the east side of the south pier of railroad bridge 49.96 of the New York, New Haven & Hartford Railroad over Walbach Street at Howard Street. The bench mark is about $\frac{1}{2}$ mile south of the railroad bridge over Shaws Cove. Elevation: 21.0 feet above mean low water, 19.70 feet above mean sea level.

SERIAL No. 32. *New London.*—B. M. W 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 225 feet southwest of railroad bridge 49.87. The bench mark is about 50 feet west of the northwest corner of the J. N. Lapoint Co.'s building. It is about 400 feet north of the center line of Maple Avenue, about 8 feet west of the west rail and about 1.5 feet above the track. Elevation: 27.4 feet above mean low water, 26.18 feet above mean sea level.

SERIAL No. 33. *New London.*—B. M. V 5 (C. & G. S.) is a city of New London bench mark and is the top of an iron ring around the cover of the sewer manhole on Maple Avenue, 153 feet west of the center line of Pequot Avenue and is about 75 feet east of the New York, New Haven & Hartford Railroad tracks. The point used is at the slight lip or lateral extension, on the ring around the manhole cover. Elevation: 26.6 feet above mean low water, 25.40 feet above mean sea level.

SERIAL No. 34. *New London, Fort Trumbull.*—B. M. 11 is a Coast and Geodetic Survey standard disk set in a ledge of rock 11 feet south of the road leading to the wharf and 37 feet south of a long shed measured from a point 20 feet from west corner. It is also 136 feet west of the shore end of wharf. Elevation: 15.0 feet above mean low water, 13.79 feet above mean sea level.

SERIAL No. 35. *New London, Fort Trumbull.*—B. M. 3 (C. & G. S.) is a recess with two grooves leading to it, cut in a solid ledge of rock which forms the southern end of the sea wall and is about 70 feet south of the south side of the wharf. The rock is of peculiar shape, 33 feet long, 2 to 5 feet high, and 8 feet broad on top. The mark is about 9 inches back from the vertical face of the rock. Elevation: 2.5 feet above mean low water, 1.21 feet above mean tide level.

SERIAL No. 36. *New London, Shaws Cove.*—B. M. 9 is a Coast and Geodetic Survey standard disk set in the west side (top stone) of the south pier of the girder span over the subway which takes Hamilton Street under the New York, New Haven & Hartford Railroad tracks. It is 1,125 feet south of B. M. 10. Elevation: 15.1 feet above mean low water, 13.87 feet above mean sea level.

SERIAL No. 37. *New London, Shaws Cove.*—B. M. 9a (C. & G. S.) is also a United States Army Engineer bench mark and is the top of the northwest

corner of the second stone from the west side of the south bridge seat of the New York, New Haven & Hartford Railroad drawbridge over Shaws Cove. This projects about 1 foot from beyond the pier wall which rises to the level of the base rail of the bridge. Elevation: 5.2 feet above mean low water, 3.98 feet above mean sea level.

SERIAL No. 38. *New London, Shaws Cove*.—B. M. 10 is a Coast and Geodetic Survey standard disk set on the third stone from the top of the west side of the south pier of the New York, New Haven & Hartford Railroad swingbridge across Shaws Cove, about one-third mile south of the customhouse wharf. Elevation: 8.5 feet above mean low water, 7.27 feet above mean sea level.

SERIAL No. 39. *New London, Naval Station*.—B. M. 1 (C. & G. S.) is the top of a half-inch drill hole in a sloping striated rock at the ordnance ice house dock at naval station, 21.5 feet shoreward from a large boulder in the water, and 66 feet south of southeast corner of main building on wharf. On September 9, 1904, it was reported that ice house had been partly torn down, the walls however remaining intact. Between the ice house and the river a large boat-house has been built, and immediately adjoining the ice house on the south is a small machine shop. The bench mark and buildings are not at the naval station, but on land belonging to the Isham Boat Building Co., a short distance south of it. Elevation: 9.1 feet above mean low water, 7.81 feet above mean tide level.

SERIAL No. 40. *Allyns Point, Thames River*.—B. M. 1 (C. & G. S.) is high point of rough foundation stone on the west side of annex to the brick building, at a point about 15 inches from the main part of the building and underneath a ten-penny nail driven in the mortar above the second course of brick. Elevation: 8.9 feet above mean low water, 7.51 feet above mean tide level.

SERIAL No. 41. *Allyns Point, Thames River*.—B. M. 2 (C. & G. S.) is the high point on a ledge of rock surrounded by a rough circle cut in the rock. The rock lies to the eastward of the brick building and is about 7 feet back from the high-water line. Elevation: 8.4 feet above mean low water, 7.03 feet above mean tide level.

SERIAL No. 42. *Allyns Point, Thames River*.—B. M. 3 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set in a large field stone half way between the railroad station and the coal dock on the path between the two. The bench mark is 2.5 meters southwest of a large oak tree which is 3.2 meters south of the path. Elevation: 22.1 feet below mean low water, 20.76 feet above mean tide level.

SERIAL No. 43. *Allyns Point, Thames River*.—B. M. 4 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set in a large field stone a short distance north of the northeast corner of the old cemetery at Allyns Point. Elevation: 25.6 feet above mean low water, 24.24 feet above mean tide level.

SERIAL No. 44. *Allyns Point, Thames River*.—B. M. 5 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set in the brown stone of the west end of the south abutment of a small bridge just south of the point. Elevation: 5.9 feet above mean low water, 4.55 feet above mean tide level.

SERIAL No. 45. *Norwich, Thames River*.—B. M. 1 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set in a granite slab 36 feet from the west end of the retaining wall north of the New York, New Haven & Hartford Railroad freight house, on a level with the sidewalk. Elevation: 11.1 feet above mean low water, 9.58 feet above mean tide level.

SERIAL No. 46. *Norwich, Thames River*.—B. M. 2 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set in about the middle of the river side of a retaining wall of an embankment just east of the New York, New Haven & Hartford Railroad freight house. The bench mark is about 4 feet higher than the tracks. Elevation: 12.5 feet above mean low water, 10.94 feet above mean tide level.

SERIAL No. 47. *Norwich, Thames River*.—B. M. 3 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set 21 feet from the north end of the retaining wall on the east bank of the Shetucket River. Elevation: 14.8 feet above mean low water, 13.23 feet above mean tide level.

SERIAL No. 48. *Waterford*.—B. M. 93 (U. S. E.) is a knob cut on the southeast corner of the first step down from the top of the south wingwall of the east abutment of railroad bridge 47.64, over a highway just east of the Waterford Station. The bench mark is about 110 feet east of signal tower 110, about 125 feet east of the depot at Waterford, about 6 feet south of the south rail,

and about 2 feet below the tracks. The bench mark is described as being on the southwest corner of this step by the United States Army Engineers. Elevation: 40.2 feet above mean low water, 38.90 feet above mean sea level.

SERIAL No. 49. *Waterford*.—B. M. U 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge 325 feet west of the New York, New Haven & Hartford Railroad Depot in Waterford. The bench mark is about 6 feet northwest of the end of a stone wall which begins at the depot and runs east and west about 12 feet north of the north rail and about 3 feet above the track. Elevation: 46.7 feet above mean low water, 45.39 feet above mean sea level.

SERIAL No. 50. *Waterford*.—B. M. 94 (U. S. E.) is a square cut on the northeast corner of the northwest concrete parapet of railroad bridge 46.68 over Jordan Cove about 1 mile west of Waterford. The bench mark is 6 feet north of the north rail and 1 foot below the tracks. Elevation: 17.5 feet above mean low water, 16.12 feet above mean sea level.

SERIAL No. 51. *Millstone*.—B. M. S 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 300 feet west of the railway depot at Millstone. The bench mark is about 20 feet north of the north rail and is about even with the track. Elevation: 34.3 feet above mean low water, 32.95 feet above mean-sea level.

SERIAL No. 52. *Niantic*.—B. M. 95 (U. S. E.) is a knob cut on the northwest corner of the top of the second course of stone from the top of the west abutment of the old railroad bridge across the Niantic River. The bridge has been removed, but the abutment is still in good condition. The bench mark is about 15 feet south of the south rail of the New York, New Haven & Hartford Railroad tracks and about 3 feet below the tracks. It is about 75 feet southwest of railroad bridge 44.50 across the Niantic River. Elevation: 16.1 feet above mean low water, 14.74 feet above mean sea level.

SERIAL No. 53. *Niantic*.—B. M. 1 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set on the north side of the west abutment of the old railroad bridge across the Niantic River. All that remains of the old bridge is the abutments and embankments leading to them. The old embankment is between the highway and the present location of the railway. Elevation: 14.1 feet above mean low water, 12.77 feet above mean sea level.

SERIAL No. 54. *Niantic*.—B. M. 2 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set on the east abutment of the old bridge. What is left of the old abutment is arranged in such a way as to form a flight of stairs. The bench mark is on the southwest corner of the third stair from the bottom. Elevation: 12.1 feet above mean low water, 10.73 feet above mean sea level.

SERIAL No. 55. *Niantic*.—B. M. 3 is a Coast and Geodetic Survey standard disk, marked with number and year 1917, set on the northwest part of the west abutment of the culvert east of the Niantic River on the existing railroad line. Elevation: 16.0 feet above mean low water, 14.63 feet above mean sea level.

SERIAL No. 56. *Crescent Beach*.—B. M. Q 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 300 feet west of the beginning of the first rock ledge about half a mile west of Crescent Beach. The bench mark is about 7 feet south of the south rail and about half a foot below the track. Elevation: 21.4 feet above mean low water, 19.96 feet above mean sea level.

SERIAL No. 57. *One mile west of Crescent Beach*.—B. M. 96 (U. S. E.) is a square cut on the northwest corner of the concrete parapet of the west abutment of railroad bridge 42.06 over the Pataguasett River. The bench mark is about 6 feet north of the north rail and about 1 foot below the track. Elevation: 11.8 feet above mean low water, 10.30 feet above mean sea level.

SERIAL No. 58. *Three-fourths mile east of South Lyme*.—B. M. 97 (U. S. E.) is a square cut on the northwest corner of the bridge seat of the east abutment of railroad bridge 40.58 over a highway. The square cut is about 6 feet north of north rail and about 3 feet below the track. Elevation: 19.1 feet above mean low water, 17.60 feet above mean sea level.

SERIAL No. 59. *South Lyme*.—B. M. N 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 70 feet west of the west end of the wooden station platform. The bench mark is about 8 feet north of the north rail and about 2 feet above the track. Elevation: 33.4 feet above mean low water, 31.95 feet above mean sea level.

SERIAL No. 60. *Three-fourths mile east of Sound View*.—B. M. M 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 28

feet west of the west end of the north wing wall abutment of highway bridge 39.29, where the State-aid road crosses the New York, New Haven & Hartford Railroad tracks just east of Sound View. The bench mark is about 8 feet north of the north rail and about 2.5 feet above the track. Elevation: 43.8 feet above mean low water, 42.26 feet above mean sea level.

SERIAL No. 61. *One-fourth mile west of Sound View.*—B. M. L. 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 170 feet west of a private road crossing about 30 feet north of the north rail of the main line and about level with the track. Elevation: 32.5 feet above mean low water, 30.97 feet above mean sea level.

SERIAL No. 62. *Lyme.*—B. M. 99 (U. S. E.) is a knob cut on the northeast corner of the bottom step of the east wing wall of the south abutment of highway bridge 36.27 over the New York, New Haven & Hartford Railroad track. The bench mark is about 3 feet south of the south rail and about 2 feet above the track. Elevation: 55.1 feet above mean low water, 33.51 feet above mean sea level.

SERIAL No. 63. *Lyme.*—B. M. J 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge 600 feet east of the New York, New Haven & Hartford depot at Lyme and Black Hall, about 225 feet east of the railroad bridge over an important highway, 35 feet north of a semaphore signal about 30 feet north of the north rail, and 1.5 feet above the track. It is about 300 feet east of signal-control tower No. 105. Elevation: 25.3 feet above mean low water, 23.73 feet above mean sea level.

Section B.—ELEVATIONS OF BENCH MARKS, SERIAL NOS. 64 TO 127: CONNECTICUT RIVER, SAYBROOK BREAKWATER TO HARTFORD

Serial No.	Locality	Elevation of bench marks above—					
		Highest tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
64	Saybrook Breakwater	5.2	7.6	9.45	11.2	13.7	
65	Saybrook Lighthouse	4.7	7.1	8.91	10.7	13.2	
66	Connecticut River railroad bridge	21.4	25.2	26.81	28.4	30.9	
67	do	21.2	25.0	26.85	28.2	30.7	
68	do	21.7	25.5	27.13	28.7	31.2	
69	Old Lyme	41.9	46.7	48.31	49.9	52.4	
70	do	16.2	21.0	22.55	24.2	26.7	
71	Essex	3.7	9.8	11.26	12.7	15.2	
72	do	-3.2	2.9	4.35	5.8	8.8	
73	do	-2.2	3.9	5.31	6.8	9.3	
74	do	-2.6	3.5	4.93	6.4	8.9	
75	Hamburg	-1.5	5.7	7.10	8.5	11.0	
76	Brockways Landing	-4.3	4.0	5.35	6.7	9.2	
77	Opposite Deep River	-6.4	3.1	4.35	5.6	8.1	
78	Chester	.8	10.3	11.51	12.8	15.3	
79	do	.1	9.6	10.86	12.1	14.6	
80	Hadlyme	-7.9	1.6	1.85	4.1	6.6	
81	do	12.8	22.3	23.56	24.8	27.3	
82	do	15.9	25.4	26.61	27.9	30.4	
83	Goodspeeds	1.4	12.0	13.17	14.4	16.9	
84	East Haddam	-4.2	7.5	8.63	9.8	12.3	
85	do	-8.4	3.3	4.45	5.6	8.1	
86	Haddam	13.9	26.7	27.76	28.9	31.4	
87	Harris Landing	-4.4	8.4	9.52	10.6	13.1	
88	Higganum	-4.8	9.1	10.13	11.2	13.7	
89	do	1.1	15.0	16.07	17.1	19.6	
90	do	3.8	17.7	18.70	19.8	22.3	
91	do	11.0	24.9	25.95	27.0	29.5	
92	do	.8	14.7	15.73	16.8	19.3	
93	do	-9.1	4.8	5.83	6.9	9.4	
94	Middle Haddam	-4.9	11.1	12.06	13.1	15.6	
95	Middletown	13.4	31.7	32.51	33.4	35.9	
96	do	-10.5	7.8	8.67	9.6	12.0	
97	do	-7.8	10.5	11.37	12.2	14.7	
98	do	-8.9	9.4	10.27	11.1	13.6	

¹ These elevations are based on observations at Hadlyme Ferry Slip for the period from June 28 to 30, 1917, inclusive, at which time the river was unusually high.

SECTION B.—Elevations of bench marks, Serial Nos. 64 to 127: Connecticut River, Saybrook Breakwater to Hartford—Continued

Serial No.	Locality	Elevation of bench marks above—					
		Highest tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
99	Middletown.....	Feet -6.5	Feet 11.8	Feet 12.68	Feet	Feet 13.5	Feet 16.0
100	do.....	8.3	26.6	27.44		28.3	30.8
101	do.....	13.4	31.7	32.60		33.4	35.9
102	do.....	4.3	22.6	23.48		24.3	26.8
103	Portland.....	13.2	31.5	32.31		33.2	35.7
104	do.....	-10.5	7.8	8.69		9.5	12.0
105	Gildersleve.....	-15.4	4.0	4.84		5.6	8.1
106	do.....	-3.8	15.6	16.41		17.2	19.7
107	South Glastonbury.....	-4.5	16.1	16.77		17.5	20.0
108	do.....	-4.6	16.0	16.69		17.4	19.9
109	Glastonbury.....	-10.0	13.7	14.35		15.0	17.5
110	do.....	-9.3	14.4	15.06		15.7	18.2
111	do.....	-14.3	9.4	10.04		10.7	13.2
112	do.....	-12.1	11.6	12.20		12.9	15.4
113	do.....	-4.7	19.0	19.64		20.3	22.8
114	do.....	1.3	25.0	25.65		26.3	28.8
115	Hockanum.....	9.7	35.5	36.06		36.7	39.2
116	Hartford.....	-5.7	20.9	21.48		22.1	24.6
117	do.....	4.9	31.5	32.11		32.7	35.2
118	do.....	-5.7	20.9	21.47		22.1	24.6
119	do.....	28.3	54.9	55.54		56.1	58.6
120	do.....	22.9	49.5	50.11	52.34	50.7	53.2
121	do.....	-2.9	23.7	24.34		24.9	27.4
122	do.....	-8.8	17.8	18.37		19.0	21.5
123	do.....	40.9	67.5	68.09	70.32	68.7	71.2
124	do.....	7.5	34.1	34.75	36.98	35.3	37.8
125	do.....	2.4	29.0	29.62	31.85	30.2	32.7
126	East Hartford.....	-1.3	25.3	25.92		26.5	29.0
127	do.....	15.9	42.5	43.10	45.33	43.7	46.2

DESCRIPTIONS OF BENCH MARKS, SERIAL NOS. 64 TO 127: CONNECTICUT RIVER, SAYBROOK BREAKWATER TO HARTFORD

SERIAL No. 64. *Saybrook Breakwater*.—B. M. 26 (U. S. E.) is a point marked by a crowfoot cut on top of the iron foundation on the north side of the outer light. Elevation: 11.2 feet above mean low water, 9.45 feet above mean tide level.

SERIAL No. 65. *Saybrook Lighthouse*.—B. M. 25 (U. S. E.) is on the southwest corner of the corner stone on the northerly end of the retaining wall southwest of the lighthouse cottage on Lynde Point. Elevation: 10.7 feet above mean low water, 8.91 feet above mean tide level.

SERIAL No. 66. *Connecticut River railroad bridge*.—B. M. 27 (U. S. E.) is on the northeast corner of top stone of west abutment of north wing wall of railroad bridge over the Connecticut River. Elevation: 28.4 feet above mean low water, 26.81 feet above mean tide level.

SERIAL No. 67. *Connecticut River railroad bridge*.—B. M. G 5 is a Coast and Geodetic Survey standard disk embedded in the west parapet of railroad bridge No. 34.65 over the Connecticut River. The bench mark is about 3 feet south of the south rail and about 1 foot below the track. Elevation: 28.2 feet above mean low water, 26.65 feet above mean sea level.

SERIAL No. 68. *Connecticut River railroad bridge*.—B. M. 28 (U. S. E.) is the southwest corner of the top step of the east wing wall abutment of the New York, New Haven & Hartford Railroad bridge 34.65 over Connecticut River. The bench mark is about 15 feet south of the south rail and about 1 foot below the track. It has no mark to designate the exact point used. Elevation: 28.7 feet above mean low water, 27.13 feet above mean sea level.

SERIAL No. 69. *Old Lyme*.—B. M. 28a (U. S. E.), established by the Connecticut River Bridge Commission, is on a boulder northeast of east approach to

highway bridge over the Connecticut River. Elevation: 49.9 feet above mean low water, 48.31 feet above mean tide level.

SERIAL No. 70. *Old Lyme*.—B. M. 29 (U. S. E.) is a brass plug set in a ledge on the east side of the highway leading from Lyme to Hamburg and opposite Lyme coal dock at south end of Calves Island. Elevation: 24.2 feet above mean low water, 22.55 feet above mean tide level.

SERIAL No. 71. *Essex*.—B. M. 3 (C. & G. S.) is the top of a stone about 3 by 7 inches, embedded in the ground, the top projecting about 1 inch above the ground, located 1 meter inside of corner of terrace supported by dry stone retaining wall on east side of Ferry Road, 74 yards north of main street in Essex. Elevation: 12.7 feet above mean low water, 11.26 feet above mean tide level.

SERIAL No. 72. *Essex*.—B. M. 23 (U. S. E.) is a brass plug in a brownstone monument in front of stairway to the Dauntless Club. Elevation: 5.8 feet above mean low water, 4.35 feet above mean tide level.

SERIAL No. 73. *Essex*.—B. M. 23a (U. S. E.) is the most northerly iron staple in the center of the retaining wall at the south end of Essex Dock. Elevation: 6.8 feet above mean low water, 5.31 feet above mean tide level.

SERIAL No. 74. *Essex*.—B. M. 23b (U. S. E.) is a railroad spike driven into the lower cap log at the southeast corner of Essex steamboat dock, on the downstream face of the dock. Elevation: 6.4 feet above mean low water, 4.93 feet above mean tide level.

SERIAL No. 75. *Hamburg*.—B. M. 30 (U. S. E.) is a knob cut on bowlder in front of third house west of bridge on north side of Eight Mile River. Elevation: 8.5 feet above mean low water, 7.10 feet above mean tide level.

SERIAL No. 76. *Brockways Landing*.—B. M. 31 (U. S. E.) is a brass plug set in a ledge at the water's edge at the westerly end of the road to the landing 100 feet west of the most westerly house. Elevation: 6.7 feet above mean low water, 5.35 feet above mean tide level.

SERIAL No. 77. *Opposite Deep River*.—B. M. 32 (U. S. E.) is a knob cut on ledge about 150 feet up the river from old log dock. Elevation: 5.6 feet above mean low water, 4.35 feet above mean tide level.

SERIAL No. 78. *Chester*.—B. M. 21 (U. S. E.) is a crowfoot cut on the east bridge seat at the north abutment of the railroad bridge over Chester Creek, between Hadlyme and Chester stations. Elevation: 12.8 feet above mean low water, 11.51 feet above mean tide level.

SERIAL No. 79. *Chester*.—B. M. 22 (U. S. E.) is a brass plug in a ledge about 625 feet north of the railroad bridge crossing the creek between Deep River and Chester and about 200 feet east of the railroad tracks. Elevation: 12.1 feet above mean low water, 10.86 feet above mean tide level.

SERIAL No. 80. *Hadlyme*.—B. M. 2 is a Coast and Geodetic Survey standard disk, marked "2/1917," set near the foot of a cliff 725 feet, by the path along the river, south of the Chester-Hadlyme ferry slip. It is on a projecting ledge at the entrance to Whalebone Creek and 7 feet from an iron ring. It is also about 100 feet south of a small boathouse. Elevation: 4.1 feet above mean low water, 2.85 feet above mean tide level.¹

SERIAL No. 81. *Hadlyme*.—B. M. 3 is a Coast and Geodetic Survey standard disk, marked "3/1917," set in a bowlder on the north side of the Hadlyme road. It is 50 feet south of the private driveway which, is the first road to the right after leaving the ferry, and is at the base of the wall about 4 feet above the surface of the road. Elevation: 24.8 feet above mean low water, 23.56 feet above mean tide level.¹

SERIAL No. 82. *Hadlyme*.—B. M. 4 is a Coast and Geodetic Survey standard disk, marked "4/1917," set in a large bowlder on the Parson property. The private driveway just to the west of the property leads down to the bowlder, which is 5 feet in diameter and 3 feet above ground. Elevation: 27.9 feet above mean low water, 26.61 feet above mean tide level.²

SERIAL No. 83. *Goodspeeds*.—B. M. 20 (U. S. E.) is the southeast corner of the coping of the east head wall of concrete culvert about 1 mile south of station. Elevation: 14.4 feet above mean low water, 13.17 feet above mean tide level.

SERIAL No. 84. *East Haddam*.—B. M. 33 (U. S. E.) is a brass plug set in a ledge at the base of the retaining wall south of the East Haddam general store and post-office building. Elevation: 9.8 feet above mean low water, 8.63 feet above mean tide level.

¹ These elevations are based on observations at Hadlyme ferry slip for the period from June 28 to 30, 1917, inclusive, at which time the river was unusually high.

SERIAL No. 85. *East Haddam*.—B. M. 33a (U. S. E.) is a railroad spike driven in the lower dock log of Goodspeeds Landing, about 10 feet north of the south end of the dock and 4 feet below upper dock log. Elevation: 5.6 feet above mean low water, 4.45 feet above mean tide level.

SERIAL No. 86. *Haddam*.—B. M. 19 (U. S. E.) is a cross cut in the southeast corner of the capstone on the head wall of the 24-inch iron pipe culvert about halfway between Haddam Station and Arnold Station. Elevation: 28.9 feet above mean low water, 27.76 feet above mean tide level.

SERIAL No. 87. *Harris Landing*.—B. M. 34 (U. S. E.) is a brass plug in high point of a ledge at Harris Landing about one-half mile south of Rock Landing. Elevation: 10.6 feet above mean low water, 9.52 feet above mean tide level.

SERIAL No. 88. *Higganum*.—B. M. 1 (C. & G. S.) is the base of a triangular cut in the stone at the northeast corner of the main north pier of the railroad bridge across Higganum Creek, about 5 feet above the level of the ground. Elevation: 11.2 feet above mean low water, 10.13 feet above mean tide level.

SERIAL No. 89. *Higganum*.—B. M. 5 is a Coast and Geodetic Survey standard disk, stamped "5/1917," set on the northeast corner of the capstone of the north pier of the plate girder bridge over Higganum Creek. Elevation: 17.1 feet above mean low water, 16.07 feet above mean tide level.

SERIAL No. 90. *Higganum*.—B. M. 6 is a Coast and Geodetic Survey standard disk, stamped "6/1917," set in the top of a retaining wall, 24 feet east of the east railroad track and about one-third of the distance from the railroad station to the plate girder bridge over Higganum Creek. Elevation: 19.8 feet above mean low water, 18.70 feet above mean tide level.

SERIAL No. 91. *Higganum*.—B. M. 7 is a Coast and Geodetic Survey standard disk, stamped "7/1917," set in the brownstone foundation of the trestle bent of the foot bridge south of the Higganum railroad station. It is 3 feet from the north end of the east foundation. Elevation: 27.0 feet above mean low water, 25.95 feet above mean tide level.

SERIAL No. 92. *Higganum*.—B. M. 18 (U. S. E.) is on the northerly pier, southeast corner of bridge seat of bridge over Higganum Creek. Elevation: 16.8 feet above mean low water, 15.73 feet above mean tide level.

SERIAL No. 93. *Higganum*.—B. M. 17 (U. S. E.) is a brass plug in drill hole in ledge near water's edge, one-half mile north of Higganum Station, opposite telegraph pole No. 1043. Point is marked "B. M. U. S." Elevation: 6.9 feet above mean low water, 5.83 feet above mean tide level.

SERIAL No. 94. *Middle Haddam*.—B. M. 35 (U. S. E.) is a brass plug in ledge about 700 feet south of middle Haddam Landing in front of last house south of landing. Elevation: 13.1 feet above mean low water, 12.06 feet above mean tide level.

SERIAL No. 95. *Middletown*.—B. M. 4 (C. & G. S.) is the upper south edge of the capstone of the western pier of the railroad bridge across the Connecticut River. Elevation: 33.4 feet above mean low water, 32.51 feet above mean tide level.

SERIAL No. 96. *Middletown*.—B. M. 5 (U. S. E.) is a "V" chiseled on southeast top corner of first stone on second course at south end of sea wall east of the freight shed of the Hartford & New York Transportation Co. Elevation: 9.5 feet above mean low water, 8.67 feet above mean tide level.

SERIAL No. 97. *Middletown*.—B. M. 7 is a Coast and Geodetic Survey standard disk stamped "7/1917," set in a retaining wall of the Hartford & New York Transportation Co. Building. The retaining wall is on the west side of the building, and the bench mark is 21 feet from the north end of the retaining wall. Elevation: 12.2 feet above mean low water, 11.37 feet above mean tide level.

SERIAL No. 98. *Middletown*.—B. M. 8 is a Coast and Geodetic Survey standard disk stamped "8/1917," set in the sea wall 26 feet from the south end. It is set in a brownstone slab on the top of the wall. It is 55 feet north of the Hartford & New York Transportation Co. Building. Elevation: 11.1 feet above mean low water, 10.27 feet above mean tide level.

SERIAL No. 99. *Middletown*.—B. M. 9 is a Coast and Geodetic Survey standard disk stamped "9/1917," set on top of the sea wall in a brownstone slab north of the freight house. It is 50 feet north of the railroad signal, which is just north of the freight shed. Elevation: 13.5 feet above mean low water, 12.68 feet above mean tide level.

SERIAL No. 100. *Middletown*.—B. M. A 8 (U. S. E.) is on extreme southeast corner of bridge seat of west abutment of highway bridge leading from Middletown to Portland. Elevation: 28.3 feet above mean low water, 27.44 feet above mean tide level.

SERIAL No. 101. *Middletown*.—B. M. A 9 (U. S. E.) is a 2-inch circle chiseled roughly in the stone on the northeast corner of the bridge seat at the first pier from the west end of the railroad bridge across Connecticut River. Elevation: 33.4 feet above mean low water, 32.60 feet above mean tide level.

SERIAL No. 102. *Middletown*.—B. M. A 12 (U. S. E.) is a crosscut in the parapet, at east end of north abutment of railroad bridge No. 928 south of town farm. Elevation: 24.3 feet above mean low water, 23.48 feet above mean tide level.

SERIAL No. 103. *Portland*.—B. M. 36 (U. S. E.) is the southwest corner of the bridge seat at the east abutment of the railroad bridge over Connecticut River. Elevation: 33.2 feet above mean low water, 32.31 feet above mean tide level.

SERIAL No. 104. *Portland*.—B. M. 36a (U. S. E.) is a "V" cut in the second course of the sea wall near the Hartford & New York Transportation Co. freight house. Elevation: 9.5 feet above mean low water, 8.69 feet above mean tide level.

SERIAL No. 105. *Gildersleeve*.—B. M. 37 (U. S. E.) is an iron bar 1 inch in diameter countersunk into the rock and marked "U. S. B. M." at the highest point of a ledge jutting out into the water 100 feet below Gildersleeve Dock. Elevation: 5.6 feet above mean low water, 4.84 feet above mean tide level.

SERIAL No. 106. *Gildersleeve*.—B. M. 38 (U. S. E.) is a brass plug in the southwest corner stone of the protection wall around the east wire crossing tower. Elevation: 17.2 feet above mean low water, 16.41 feet above mean tide level.

SERIAL No. 107. *South Glastonbury*.—B. M. 40 (U. S. E.) is a brass plug set in brownstone monument at bottom of slope of hill north of Roaring Brook. Elevation: 17.5 feet above mean low water, 16.77 feet above mean tide level.

SERIAL No. 108. *South Glastonbury*.—B. M. 41 (U. S. E.) is a point on a stone marked "U. S. B. M." and bedded firmly among the roots of a large maple tree about 4 feet in diameter and about 500 feet from the bank of the river, 2 miles upstream from Roaring Brook. Elevation: 17.4 feet above mean low water, 16.69 feet above mean tide level.

SERIAL No. 109. *Glastonbury*.—B. M. 42 (U. S. E.) is a brass plug set in a brownstone monument on the westerly line of the property of H. Fisher. Elevation: 15.0 feet above mean low water, 14.35 feet above mean tide level.

SERIAL No. 110. *Glastonbury*.—B. M. 43 (U. S. E.) is a knob cut in the corner of the easterly side of the foundation wall at the entrance to the Hartford & New York Transportation Co. Building, 2 feet above the ground and is marked "B. M." Elevation: 15.7 feet above mean low water, 15.06 feet above mean tide level.

SERIAL No. 111. *Glastonbury*.—B. M. 43a (U. S. E.) consists of two sets of one screw and four nails. One set is in the first pile north (upstream) of the low-water gangway at the new steamboat dock, and the other is in the fender pile just outside the above pile. Elevation: 10.7 feet above mean low water, 10.04 feet above mean tide level.

SERIAL No. 112. *Glastonbury*.—B. M. 5 is a Coast and Geodetic Survey standard disk, stamped "5/1917," set in the foundation stone at the southeast corner of the Hartford & New York Transportation Co. Building at the steamboat wharf. The stone is almost flush with the ground and projects from the side of the building a little more than a foot. Elevation: 12.9 feet above mean low water, 12.20 feet above mean tide level.

SERIAL No. 113. *Glastonbury*.—B. M. 6 is a Coast and Geodetic Survey standard disk, stamped "6/1917," set on the northeast corner of east concrete pier at the coal pockets 50 yards south of the Hartford & New York Transportation Co. Building. It is about 3 feet above ground. Elevation: 20.3 feet above mean low water, 19.64 feet above mean tide level.

SERIAL No. 114. *Glastonbury*.—B. M. 7 is a Coast and Geodetic Survey standard disk, stamped "7/1917," set on the west side of the foundation for the east scale platform, about 2 feet north of the scale shed and on the ground level. Elevation: 26.3 feet above mean low water, 25.65 feet above mean tide level.

SERIAL No. 115. *Hockanum*.—B. M. 46 (U. S. E.) is a brass plug in a brownstone monument on the south fence line of the lane leading from the trolley line to the Shriner Clubhouse. It is near the corner of the lane fence separating

tobacco field and pasture. Elevation: 86.7 feet above mean low water, 86.06 feet above mean tide level.

SERIAL No. 116. *Hartford*.—B. M. A. (U. S. E.) is a one-half-inch drill hole, marked "U. S.," on outer edge of water table, center of curve at northwest corner of Woodruff and Beach's office, Commerce Street. Elevation: 22.1 feet above mean low water, 21.48 feet above mean tide level.

SERIAL No. 117. *Hartford*.—B. M. B. (U. S. E.) is the outer corner of water table of the foundation at north corner of Colt's office. Elevation: 32.7 feet above mean low water, 32.11 feet above mean tide level.

SERIAL No. 118. *Hartford*.—B. M. 2 (C. & G. S.) is on southeast corner of Grove and Commerce Streets, on the projecting stone-foundation course of the brick building of the Hartford Engineering Co. The upper surface of the stone course is horizontal, and the bench mark is at the junction of the two stones where the straight north side of the building begins to curve around the Commerce Street front. Elevation: 22.1 feet above mean low water, 21.47 feet above mean tide level.

SERIAL No. 119. *Hartford*.—B. M. 3 (C. & G. S.) is on the upper surface of the granite guard block on the east side of the north entrance to the post office on State Street. It is 1.96 feet above the granolithic pavement and about 0.2 foot above the water table. Elevation: 56.1 feet above mean low water, 55.54 feet above mean tide level.

SERIAL No. 120. *Hartford*.—B. M. 5 is a Coast and Geodetic Survey standard disk set in the second step of a flight leading to the basement of the post office. The flight is on the northeast side of the building. Elevation: 50.7 feet above mean low water, 50.11 feet above mean tide level.

SERIAL No. 121. *Hartford*.—B. M. 6 is a Coast and Geodetic Survey standard disk, stamped "6/1917," set in the retaining wall southeast of the railroad tunnel under the Morgan Street Bridge. The bench mark is at the south end of the retaining wall. Elevation: 24.9 feet above mean low water, 24.34 feet above mean tide level.

SERIAL No. 122. *Hartford*.—B. M. 7 is a Coast and Geodetic Survey standard disk, stamped "7/1917," set in the east end of the north abutment of the State Street railroad bridge. Elevation: 19.0 feet above mean low water, 18.37 feet above mean tide level.

SERIAL No. 123. *Hartford*.—B. M. C 8 is a Coast and Geodetic Survey standard disk set vertically in concrete foundation wall of Connecticut Electric Steel Co. Building at west end, and is 18 inches above ground. It is 36 feet east of east rail and 102 feet east of railroad crossing and is opposite supply yard No. 2, Hartford Water Department. Elevation: 68.7 feet above mean low water, 68.09 feet above mean tide level.

SERIAL No. 124. *Hartford*.—B. M. F 8 is a Coast and Geodetic Survey standard disk set in concrete post in Bushnell Park 6 feet south from high stone retaining wall of railroad, 10 feet west from Asylum Street, 60 feet west of railroad station, 15 feet south of south rail, and 30 feet below it. Elevation: 35.3 feet above mean low water, 34.75 feet above mean tide level.

SERIAL No. 125. *Hartford*.—B. M. W 8 is a Coast and Geodetic Survey standard disk set in top of south end of water abutment of New York, New Haven & Hartford Railroad bridge No. 29.93, Hartford to Willimantic Line, over Connecticut River. It is 10 feet south of south rail. Elevation: 30.2 feet above mean low water, 29.62 feet above mean tide level.

SERIAL No. 126. *East Hartford*.—B. M. (U. S. E.) is top of southwest corner of bridge seat, east abutment of the New York, New Haven & Hartford Railroad Bridge across the Connecticut River. Elevation: 26.5 feet above mean low water, 25.92 feet above mean tide level.

SERIAL No. 127. *East Hartford*.—B. M. T 8 is a Coast and Geodetic Survey standard disk set in top of south end of west abutment of railroad bridge over Main Street, 294 feet east of East Hartford Station, and 29 feet south of south rail (Hartford-Providence line of the New York, New Haven & Hartford Railroad). Elevation: 43.7 feet above mean low water, 43.10 feet above mean tide level.

**Section C.—ELEVATIONS OF BENCH MARKS, SERIAL NOS. 128 TO
236: LONG ISLAND SOUND, SAYBROOK JUNCTION TO DEVON**

Serial No.	Locality	Elevation of bench marks above—					
		Highest tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
		<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>
128	Saybrook Junction	17.0	19.4	-----	21.17	23.0	25.5
129	do	18.4	20.8	-----	22.57	24.4	26.9
130	do	19.8	22.2	-----	24.04	25.8	28.3
131	do	11.6	14.0	-----	15.76	17.6	20.1
132	do	14.1	16.5	-----	18.33	20.1	22.6
133	Westbrook	22.1	24.7	-----	26.88	29.1	31.6
134	do	24.1	26.7	-----	28.87	31.1	33.6
135	do	23.6	26.2	-----	28.38	30.6	33.1
136	Westbrook Harbor	19.0	21.6	23.75	-----	26.0	28.5
137	do	9.9	12.5	14.73	-----	16.9	19.4
138	Grove Beach Station	9.2	11.7	-----	13.97	16.2	18.7
139	Grove Beach	4.0	6.5	8.72	-----	11.0	13.5
140	Duck Island	14.6	17.1	19.38	-----	21.6	24.1
141	do	- .4	2.1	4.39	-----	6.6	9.1
142	West of Grove Beach	7.1	9.6	-----	11.86	14.1	16.6
143	Clinton	16.9	19.7	-----	22.05	24.4	26.9
144	do	20.4	23.2	-----	25.57	27.9	30.4
145	do	18.6	21.4	-----	23.78	26.1	28.6
146	Clinton Harbor	5.4	8.2	10.50	-----	12.9	15.4
147	do	-1.2	1.6	3.92	-----	6.3	8.8
148	do	.4	3.2	5.55	-----	7.9	10.4
149	do	2.3	5.1	7.41	-----	9.8	12.3
150	Hammonasset River	20.4	22.8	-----	25.35	27.9	30.4
151	Madison	25.9	28.3	-----	30.84	33.4	35.9
152	do	21.1	23.5	-----	26.09	28.6	31.1
153	do	22.0	24.4	-----	26.94	29.5	32.0
154	do	18.1	20.5	-----	23.01	25.6	28.1
155	East River	22.2	24.8	-----	27.55	30.2	32.7
156	do	23.9	26.5	-----	29.19	31.9	34.4
157	do	15.4	18.0	-----	20.68	23.4	25.9
158	do	15.6	18.2	20.94	-----	23.6	26.1
159	do	3.7	6.3	9.03	-----	11.7	14.2
160	Guilford	5.3	7.9	-----	10.63	13.3	15.8
161	do	1.1	3.7	-----	6.40	9.1	11.6
162	do	-1.2	1.4	4.07	-----	6.8	9.3
163	do	- .9	1.7	4.42	-----	7.1	9.6
164	do	3.3	5.9	8.58	-----	11.3	13.8
165	do	9.1	11.7	-----	14.40	17.1	19.6
166	do	12.0	14.6	-----	17.34	20.0	22.5
167	Falkner Island	30.7	33.3	42.01	-----	44.7	47.2
168	do	- .1	2.5	5.25	-----	7.9	10.4
169	Leetes Island	29.7	32.1	-----	34.88	37.7	40.2
170	do	24.3	26.7	-----	29.54	32.3	34.8
171	Hoadley Point	.9	3.3	6.13	-----	8.9	11.4
172	Money Island	4.7	7.1	9.92	-----	12.7	15.2
173	do	-3.8	-1.4	1.36	-----	4.2	6.7
174	Stony Creek	12.7	15.1	-----	17.94	20.7	23.2
175	do	28.7	31.1	-----	33.94	36.7	39.2
176	do	12.5	14.9	17.67	-----	20.5	23.0
177	Pine Orchard	32.4	34.6	-----	37.48	40.4	42.9
178	Branford	37.9	40.5	-----	43.40	46.4	48.9
179	do	-1.5	1.1	4.07	-----	7.0	9.5
180	do	-1.1	1.5	4.40	-----	7.4	9.9
181	do	.9	3.5	6.42	-----	9.4	11.9
182	do	24.1	26.7	-----	29.63	32.6	35.1
183	do	29.7	32.3	-----	35.26	38.2	40.7
184	Short Beach	22.1	24.6	27.56	-----	30.6	33.1
185	do	1.2	3.7	6.67	-----	9.7	12.2
186	do	2.0	4.5	7.50	-----	10.5	13.0
187	East Haven	27.0	29.3	-----	32.45	35.5	38.0

SECTION C.—Elevations of bench marks, Serial Nos. 128 to 236: Long Island Sound, Saybrook Junction to Devon—Continued

Serial No.	Locality	Elevation of bench marks above—					
		Highest tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
188	East Haven.....	25.6	27.9	30.98	Feet	34.1	36.6
189	do.....	59.2	61.5	64.63	Feet	67.7	70.2
190	Southwest Ledge Light.....	4	2.7	5.80	Feet	8.9	11.4
191	Five Mile Point.....	11.1	14.0	17.06	Feet	20.1	22.6
192	do.....	8.5	11.4	14.43	Feet	17.5	20.0
193	do.....	15.1	18.0	21.08	Feet	24.1	26.6
194	do.....	11.7	14.6	17.64	Feet	20.7	23.2
195	Fort Hale.....	2.7	5.5	8.65	Feet	11.7	14.2
196	do.....	8.6	11.4	14.54	Feet	17.6	20.1
197	New Haven.....	33.5	36.2	39.33	Feet	42.5	45.0
198	do.....	22.1	24.8	27.95	Feet	31.1	33.6
199	do.....	22.4	25.1	28.20	Feet	31.4	33.9
200	do.....	19.2	21.9	25.05	Feet	28.2	30.7
201	do.....	6.5	9.2	12.39	Feet	15.5	18.0
202	do.....	1.1	3.8	6.93	Feet	10.1	12.6
203	do.....	7.5	10.2	13.31	Feet	16.5	19.0
204	do.....	4.2	6.9	10.09	Feet	13.2	15.7
205	do.....	6.7	9.4	12.51	Feet	15.7	18.2
206	do.....	10.5	13.2	16.35	Feet	19.5	22.0
207	do.....	6.6	9.3	12.42	Feet	15.6	18.1
208	do.....	.6	3.3	6.48	Feet	9.6	12.1
209	do.....	13.7	16.4	19.56	Feet	22.7	25.2
210	do.....	11.0	13.7	16.84	Feet	20.0	22.5
211	do.....	3.5	6.2	9.38	Feet	12.5	15.0
212	do.....	11.9	14.6	17.71	Feet	20.9	23.4
213	do.....	2.4	5.1	8.23	Feet	11.4	13.9
214	do.....	4.6	7.3	10.44	Feet	13.6	16.1
215	do.....	8.2	10.9	14.09	Feet	17.2	19.7
216	do.....	.5	3.2	6.33	Feet	9.5	12.0
217	do.....	4.9	7.6	10.75	Feet	13.9	16.4
218	West Haven.....	1.4	4.0	7.20	Feet	10.4	12.9
219	do.....	26.3	28.9	32.14	Feet	35.3	37.8
220	do.....	30.8	33.4	36.60	Feet	39.8	42.3
221	do.....	40.9	43.5	46.73	Feet	49.9	52.4
222	do.....	46.9	49.5	52.75	Feet	55.9	58.4
223	Woodmont.....	70.4	72.9	76.11	Feet	79.4	81.9
224	do.....	53.6	56.1	59.33	Feet	62.6	65.1
225	do.....	44.6	47.1	50.36	Feet	53.6	56.1
226	do.....	35.7	38.2	41.45	Feet	44.7	47.2
227	Milford.....	13.0	15.9	19.21	Feet	22.5	25.5
228	do.....	-2.7	.2	3.45	Feet	6.8	9.8
229	do.....	.1	3.0	6.30	Feet	9.6	12.6
230	do.....	2.3	5.2	8.48	Feet	11.8	14.8
231	do.....	30.2	33.1	36.40	Feet	39.7	42.7
232	do.....	22.5	25.4	28.71	Feet	32.0	35.0
233	do.....	31.2	34.1	37.38	Feet	40.7	43.7
234	do.....	54.8	57.7	61.02	Feet	64.3	67.3
235	Devon.....	46.2	49.1	52.38	Feet	55.7	58.7
236	do.....	26.7	29.6	32.95	Feet	36.2	39.2

DESCRIPTIONS OF BENCH MARKS, SERIAL NOS. 128 to 236: LONG ISLAND SOUND, SAYBROOK JUNCTION TO DEVON

SERIAL No. 128. *Saybrook Junction*.—B. M. F 5 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-eighths mile east of the railroad depot at Saybrook. The bench mark is about 38 feet northeast of a whistle post about 400 feet west of a trolley-line bridge over the track and about 28 feet north of the north rail of the main line and 1.5 feet above the track. Elevation: 23.0 feet above mean low water, 21.17 feet above mean sea level.

SERIAL No. 129. *Saybrook Junction*.—B. M. E 5 is a Coast and Geodetic Survey standard disk embedded in the stone supporting the iron top to a small

sewer basin about 35 feet east of the railroad depot at Saybrook. It is about 8 feet south of the south rail of the main line of the shore division, about level with the track, and is directly opposite the water tank at the station. Elevation: 24.4 feet above mean low water, 22.57 feet above mean sea level.

SERIAL No. 130. *Saybrook Junction*.—B. M. 101 (U. S. E.) is the top of the east corner of the foundation of what was formerly an octagonal brick water-tank house. The south half of the foundation has already been removed, and the remaining half is to be moved in the near future. The mark is opposite the railroad depot and 21 feet north of the north rail of the main line of the Shore Division, about 100 feet south of the center line of the Valley Brook Railroad tracks. Elevation: 25.8 feet above mean low water, 24.04 feet above mean sea level.

SERIAL No. 131. *Saybrook Junction*.—B. M. 102 (U. S. E.) is the highest point of the southeast corner of the east parapet of railroad bridge 32.24 over Oyster River, about 4.5 feet south of the south rail and about 10 inches below the track. Elevation: 17.6 feet above mean low water, 15.76 feet above mean sea level.

SERIAL No. 132. *Saybrook Junction*.—B. M. 103 (U. S. E.) is a knob cut on the southwest corner of the bottom step of the northwest wing wall of highway bridge No. 31.38 over the New Haven tracks about 1.5 miles west of Saybrook Junction. It is 4 feet north of the north rail and about 2 feet above the track. Elevation: 20.1 feet above mean low water, 18.33 feet above mean sea level.

SERIAL No. 133. *Westbrook*.—B. M. 104 (U. S. E.) is a knob cut on the northeast corner of the bottom step of the southeast wing wall abutment of highway bridge No. 30.61 over the New Haven tracks about 1.6 miles east of Westbrook. It is about 4 feet south of the rail of the south freight track and about 4 feet above the track. Elevation: 29.1 feet above mean low water, 26.88 feet above mean sea level.

SERIAL No. 134. *Westbrook*.—B. M. Z 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 100 feet west of highway bridge No. 30.61 over the New York, New Haven & Hartford Railway tracks about 1.6 miles east of Westbrook. It is about 25 feet north of the north rail and about 4 feet above the tracks. Elevation: 31.1 feet above mean low water, 28.87 feet above mean sea level.

SERIAL No. 135. *Westbrook*.—B. M. Y 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 300 feet east of the New York, New Haven & Hartford Railway depot at Westbrook. The bench mark is about 8 feet east of the north abutment of highway bridge No. 29.12 over the railroad tracks, about 5 feet north of the north rail, and about one-half foot above the tracks. Elevation: 30.6 feet above mean low water, 28.38 feet above mean sea level.

SERIAL No. 136. *Westbrook Harbor*.—B. M. 105 (U. S. E.) is a knob cut on the north parapet of arch bridge of the railroad over the Patchogue River, 16.6 feet from the east end of the parapet. Elevation: 26.0 feet above mean low water, 23.75 feet above mean tide level.

SERIAL No. 137. *Westbrook Harbor*.—B. M. 106 (U. S. E.) is a knob cut on a ledge of rock 23 feet south of the track and a short distance east of the railroad trestle over the Menunketesuck River. An oak tree stands 17 feet east of bench mark. Elevation: 16.9 feet above mean low water, 14.73 feet above mean tide level.

SERIAL No. 138. *Grove Beach Station*.—B. M. 107 (U. S. E.) is on the concrete walk at the southwest corner of Grove Beach railway station. The point used by the Coast and Geodetic Survey first-order leveling party in 1922 was marked by a square cut about 2 inches southwest of the southwest corner of the depot. Elevation: 16.2 feet above mean low water, 13.97 feet above mean sea level.

SERIAL No. 139. *Grove Beach*.—B. M. 108 (U. S. E.) is a knob cut on the highest point, at the southwest corner of a light-colored boulder at the east end of the sea wall just west of the road running from the beach to the station. Elevation: 11.0 feet above mean low water, 8.72 feet above mean tide level.

SERIAL No. 140. *Duck Island*.—B. M. DI 2 (U. S. E.) is on a monument marked "C. S. F. C." on the west side of Duck Island and 130 feet north of the line of the western breakwater. Elevation: 21.6 feet above mean low water, 19.38 feet above mean tide level.

SERIAL No. 141. *Duck Island*.—B. M. DI 3 (U. S. E.) is an iron bolt set into the top of the southeast side of a large boulder 40 feet north of the break-

water and 53 feet out from the high-water shore line. Elevation: 6.6 feet above mean low water, 4.39 feet above mean tide level.

SERIAL No. 142. West of Grove Beach.—B. M. W 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge, 100 feet west of a private road crossing, three-eighths mile west of Grove Beach. The bench mark is about 25 feet north of the north rail and about $1\frac{1}{2}$ feet above the railroad track. The rock ledge is the first one west of Grove Beach. Elevation: 14.1 feet above mean low water, 11.86 feet above mean sea level.

SERIAL No. 143. Clinton.—B. M. 109 (U. S. E.) is a knob on the northwest corner of the west parapet of railroad bridge No. 24.80 over the Indian River. It is about 1,000 feet east of the railroad depot, 150 feet southwest of the southwest corner of the cemetery, and about $2\frac{1}{2}$ feet south of the south rail and about level with the track. Elevation: 24.4 feet above mean low water, 22.05 feet above mean sea level.

SERIAL No. 144. Clinton.—B. M. U 4 is a Coast and Geodetic Survey standard disk embedded in the south end of the west parapet of railroad bridge No. 24.65 over a highway. The mark is about 200 feet east of the railroad depot, about 12 feet south of the south rail, and about 6 inches above the track. Elevation: 27.9 feet above mean low water, 25.57 feet above mean sea level.

SERIAL No. 145. Clinton.—B. M. 110 (U. S. E.) is a small knob cut on the northeast corner of the northwest parapet of railroad bridge No. 24.36 over a highway about one-fourth mile west of the railroad depot. The mark is about 5 feet north of the north rail and about 1 foot below the track. Elevation: 26.1 feet above mean low water, 23.78 feet above mean sea level.

SERIAL No. 146. Clinton Harbor.—B. M. 2/1894 (C. & G. S.) is the center one of five holes drilled in the form of a cross in the stone wall forming the western line of the southwest corner of the Charles Redfield house, about 300 meters north of the water front, 150 meters east of the Bacon house, and about 70 meters east of the road to Clinton. The holes are one-half inch in diameter and one-half inch deep and are 4.5 feet above the ground. The letters "B. M." are cut one-fourth inch deep in the stone abreast of the horizontal line of holes. Elevation: 12.9 feet above mean low water, 10.50 feet above mean tide level.

SERIAL No. 147. Clinton Harbor.—B. M. 3/1911 (C. & G. S.) is the center of the zero in the number (1910) cut in the top of the concrete along the edge of the wharf which is at the junction of Commerce and Grove Streets. The mark is on the south side of the wharf 2.65 meters from the southwest corner of a coal shed, 9.14 meters from southeast corner of the same. Elevation: 6.3 feet above mean low water, 3.92 feet above mean tide level.

SERIAL No. 148. Clinton Harbor.—B. M. 2/1917, is a Coast and Geodetic Survey standard disk, stamped "2/1917," set in a large bowlder located in the center of a loop in the driveway of the first house on the road north of the coal pocket. Elevation: 7.9 feet above mean low water, 5.55 feet above mean tide level.

SERIAL No. 149. Clinton Harbor.—B. M. 3/1917 is a Coast and Geodetic Survey standard disk, stamped "3/1917," set in the granite foundation at one of the east flights of stairs leading to the piazza of the Bagon Hotel. Elevation: 9.8 feet above mean low water, 7.41 feet above mean tide level.

SERIAL No. 150. Hammonasset River.—B. M. 111 (U. S. E.) is a knob cut in the northwest corner of the west parapet of railroad bridge No. 22.59 over the Hammonasset River 1.7 miles east of Madison. The mark is 6 feet north of the north rail and about 1 foot below the track. Elevation: 27.9 feet above mean low water, 25.35 feet above mean sea level.

SERIAL No. 151. Madison.—B. M. R 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 350 feet west of railroad bridge No. 22.59 and about 1.6 meters east of Madison. The bench mark is about 18 feet north of the north rail and about $1\frac{1}{2}$ feet above the track. The rock ledge is the first one east of the depot at Madison. Elevation: 33.4 feet above mean low water, 30.84 feet above mean sea level.

SERIAL No. 152. Madison.—B. M. 112 (U. S. E.) is a knob cut on the northeast corner of the west parapet of railroad bridge No. 21.71 over a highway and about three-fourths mile east of Madison. The bench mark is about 15 feet north of the north rail of the main line and about 1 foot below the track. Elevation: 28.6 feet above mean low water, 26.09 feet above mean sea level.

SERIAL No. 153. Madison.—B. M. 113 (U. S. E.) is a knob cut on the northeast corner of the southeast wing wall abutment of highway bridge No. 19.58

(bridge 20.84 of United States Engineers description) over the railroad tracks. The bench mark is about 300 feet west of the railroad depot at Madison, about 5 feet south of the south rail, and about 2 feet above the track. Elevation: 29.5 feet above mean low water, 26.94 feet above mean sea level.

SERIAL No. 154. *Madison*.—B. M. O 4 is a coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-tenths mile east of highway bridge No. 19.58 over the railroad tracks and about 1 mile west of Madison. The bench mark is about 20 feet south of the fence around the State game farm, about 10 feet north of the north rail, and about level with the track. Elevation: 25.6 feet above mean low water, 23.01 feet above mean sea level.

SERIAL No. 155. *East River*.—B. M. 114 (U. S. E.) is a knob cut on the south-east corner of the northeast wing wall abutment of highway bridge No. 19.58 over the railroad tracks, three-fourths mile east of East River. Bench mark is about 5 feet north of the north rail and about 3 feet above the track. Elevation: 30.2 feet above mean low water, 27.55 feet above mean sea level.

SERIAL No. 156. *East River*.—B. M. M 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about one-eighth mile west of highway bridge No. 19.58 over the railroad tracks, about three-eighths mile east of East River. The bench mark is about 6 feet north of north rail and about 2 feet above the track. Elevation: 31.9 feet above mean low water, 29.19 feet above mean sea level.

SERIAL No. 157. *East River*.—B. M. L. 4 is a Coast and Geodetic Survey standard disk embedded in the south parapet of the west abutment of railroad bridge No. 18.94. The bench mark is about 300 feet east of the railroad depot at East River, about 8 feet south of the south rail, and about 1 foot below the track. Elevation: 23.4 feet above mean low water, 20.68 feet above mean sea level.

SERIAL No. 158. *East River*.—B. M. 115 (U. S. E.) is a knob cut on the north-west corner of the east parapet of railroad bridge No. 18.94 over a highway. Elevation: 23.6 feet above mean low water, 20.94 feet above mean tide level.

SERIAL No. 159. *East River*.—B. M. 116 (U. S. E.) is an arrow cut in the wooden parapet of the west abutment of railroad bridge No. 18.36 over East River. Elevation: 11.7 feet above mean low water, 9.03 feet above mean tide level.

SERIAL No. 160. *Guilford*.—B. M. 117 (U. S. E.) is the top of a hold down bolt on the northwest corner of the foundation of the northerly of two semaphore signals about three-fourths mile east of Guilford. The bench mark is about 17 feet north of the north rail of the main line and about level with the track. It is about 38 feet west of the concrete whistle post at this point. Elevation: 13.3 feet above mean low water, 10.63 feet above mean sea level.

SERIAL No. 161. *Guilford*.—B. M. J. 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-eighths mile east of the railroad depot. The bench mark is about 125 feet southwest of a double semaphore signal, about 100 feet south of the south rail of the main line, and about 2 feet below the track. Elevation: 9.1 feet above mean low water, 6.40 feet above mean sea level.

SERIAL No. 162. *Guilford*.—B. M. 1 is a Coast and Geodetic Survey standard disk, stamped "1/1917," set at the north end of the old coal dock. It is set in a granite slab with a few feet of a water pipe of the town supply which is flowing all the time in the form of a drinking fountain. Elevation: 6.8 feet above mean low water, 4.07 feet above mean tide level.

SERIAL No. 163. *Guilford*.—B. M. 2 is a Coast and Geodetic Survey standard disk stamped "2/1917," set in the dike which keeps the tide out of the meadow lying to the north. It is across the bridge over the tide gate from bench mark 1, and directly in front of a fisherman's hut. Elevation: 7.1 feet above mean low water, 4.42 feet above mean tide level.

SERIAL No. 164. *Guilford*.—B. M. 3 is a Coast and Geodetic Survey standard disk, stamped "3/1917," set in the end of a concrete sidewalk leading down from the town of Guilford toward the coal dock. It is 3 feet 3 inches from the first telephone pole north of the second house from the coal dock on the west side. It is 23 feet 10 inches south of a fire hydrant north of the second house. Elevation: 11.3 feet above mean low water, 8.58 feet above mean tide level.

SERIAL No. 165. *Guilford*.—B. M. H 4 is a Coast and Geodetic Survey standard disk set in a natural rock ledge about 650 feet east of a highway bridge over the New Haven Railroad tracks. It is about 10 feet south of the south rail and about 1 foot above the track. It is also about 625 feet east of a trolley

bridge over the track and is 0.9 mile west of Guilford. Elevation: 17.1 feet above mean low water, 14.40 feet above mean sea level.

SERIAL No. 166. Guilford.—B. M. 119 (U. S. E.) is a knob cut on the southeast corner of the west parapet of railway bridge No. 15.55 over a highway. The bench mark is about 150 feet east of the railroad depot at Sachem's Head, about 7 feet south of the south rail, and about 1 foot below the track. It is 1.3 miles west of Guilford. Elevation: 20.0 feet above mean low water, 17.34 feet above mean sea level.

SERIAL No. 167. Falkner Island.—B. M. 1 (C. & G. S.) is a mark on the top of the brick coping at the base of the lighthouse. Elevation: 44.7 feet above mean low water, 42.01 feet above mean tide level.

SERIAL No. 168. Falkner Island.—B. M. 2 (C. & G. S.) is the center of a cross within a circle, marked in the surface of lead filling in a drill hole in a large rock just northward from the two wharves. Elevation: 7.9 feet above mean low water, 5.25 feet above mean tide level.

SERIAL No. 169. Leetes Island.—B. M. F 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge, about 150 feet west of the railroad depot at Leetes Island. The bench mark is about 20 feet north of the north rail and about 3.6 feet above the track. It is 2.9 miles west of Guilford. Elevation: 37.7 feet above mean low water, 34.88 feet above mean sea level.

SERIAL No. 170. Leetes Island.—B. M. (U. S. E.) is a knob cut on the northeast corner of the west parapet of railroad bridge No. 13.93 over a highway. The bench mark is about 200 feet west of the railroad depot, about 5 feet north of north rail, and about one-half foot below the track. It is 2.9 miles west of Guilford. Elevation: 32.3 feet above mean low water, 29.54 feet above mean sea level.

SERIAL No. 171. Hoadley Point.—B. M. 121 (U. S. E.) is a brass plug on a flat projecting ledge of rock on the point northwest of Beatties west dock (probably Hoadley Point). Elevation: 8.9 feet above mean low water, 6.13 feet above mean tide level.

SERIAL No. 172. Money Island.—B. M. 1 (C. & G. S.) is a cross cut on the water face of a large rock near the summer hotel called Money Island House on the southwest end of the island. Elevation: 12.7 feet above mean low water, 9.92 feet above mean tide level.

SERIAL No. 173. Money Island.—B. M. 2 (C. & G. S.) is the center of a cross cut in the rock between the two wharves on the southwest end of Money Island. The hole in the center where the lines cross is filled with lead. Elevation: 4.2 feet above mean low water, 1.36 feet above mean tide level.

SERIAL No. 174. Stony Creek.—B. M. 122 (U. S. E.) is a knob cut on the southeast corner of the east parapet of railroad bridge No. 13.17 over a creek. The bench mark is about three-fourths mile east of the railroad depot at Stony Creek, about 7 feet south of the south rail, and about 1 foot below the track. Elevation: 20.7 feet above mean low water, 17.94 feet above mean sea level.

SERIAL No. 175. Stony Creek.—B. M. C 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-eighths mile east of the railroad depot at Stony Creek, in the center of the second rock cut east of said depot, about 10 feet north of the north rail, and about 3 feet above the track. Elevation: 36.7 feet above mean low water, 33.94 feet above mean sea level.

SERIAL No. 176. Stony Creek.—B. M. 123 (U. S. E.) is a knob cut on the northeast corner of the east parapet of railroad bridge No. 12.17 over a creek 0.3 mile west of Stony Creek station. Elevation: 20.5 feet above mean low water, 17.67 feet above mean tide level.

SERIAL No. 177. Pine Orchard.—B. M. B 4 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 325 feet west of the railroad depot at Pine Orchard. The bench mark is about 50 feet northwest of railroad bridge No. 11.34, about 35 feet north of the north rail, and about level with the track. Elevation: 40.4 feet above mean low water, 37.48 feet above mean sea level.

SERIAL No. 178. Branford.—B. M. 124 (U. S. E.) is a knob cut on the northeast corner of the top of the south stone pier of a wooden truss highway bridge across the railroad tracks about $1\frac{1}{2}$ miles east of Branford. The bench mark is 5 feet south of the south rail and about 2 feet from the track. This description does not agree fully with the one furnished by the United States

Engineers, as the bridge mentioned above has no number. Elevation: 46.4 feet above mean low water, 43.40 feet above mean sea level.

SERIAL No. 179. *Banford*.—B. M. 2 (U. S. E.) is a cross cut on the side near the top of a large rock on the southwest side of Branford Point south of clubhouse. Elevation: 7.0 feet above mean low water, 4.07 feet above mean tide level.

SERIAL No. 180. *Branford*.—B. M. 125 (U. S. E.) is the second stone from the top at the extreme southeast corner of the small stone pier at the south end of Jourdan's new stone retaining wall, about 1.4 feet from the top of the pier. Elevation: 7.4 feet above mean low water, 4.40 feet above mean tide level.

SERIAL No. 181. *Branford*.—B. M. 126 (U. S. E.) is a brass plug on a projecting rock about 80 feet southeast of trolley line, about 150 feet south of Brockett's Cottage boathouse, and in line with the west end of Greens Rock and Pawson Point Park. Elevation: 9.4 feet above mean low water, 6.42 feet above mean tide level.

SERIAL No. 182. *Branford*.—B. M. Z 3 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about five-eighths mile west of the railroad depot at Branford. The bench mark is about one-fourth mile east of railroad bridge No. 8.35, at the beginning of the second rock cut east of the bridge, about 8 feet north of the north rail, and about 2 feet above the track. Elevation: 32.6 feet above mean low water, 29.63 feet above mean sea level.

SERIAL No. 183. *Branford*.—B. M. Y 3 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 225 feet east of railroad bridge No. 8.35 over an important highway. The bench mark is about seven-eighths mile west of the railroad depot at Branford, in the first rock cut east of the bridge, about 5 feet south of the south rail, and about 2.5 feet above the track. Elevation: 38.2 feet above mean low water, 35.26 feet above mean sea level.

SERIAL No. 184. *Short Beach*.—B. M. 127 (U. S. E.) is the southwest corner of the concrete platform of Hill's waiting room and store opposite Pentecost Street. Elevation: 30.6 feet above mean low water, 27.56 feet above mean tide level.

SERIAL No. 185. *Short Beach*.—B. M. 128 (U. S. E.) is a knob cut on top of wall and 3 feet from the southwest corner of the east abutment of drawbridge over East River at Nellie Green's. Elevation: 9.7 feet above mean low water, 6.67 feet above mean tide level.

SERIAL No. 186. *Short Beach*.—B. M. 129 (U. S. E.) is a knot cut on extreme outer southwest corner of middle step of southeast wing wall of old abutment of trolley bridge over East Haven River. Elevation: 10.5 feet above mean low water, 7.50 feet above mean tide level.

SERIAL No. 187. *East Haven*.—B. M. X 3 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about one-fourth mile east of the railroad depot at East Haven. The bench mark is about 15 feet west of highway bridge No. 6.45 over the track, about 10 feet north of the north rail, and about 1.5 feet above the track. Elevation: 35.5 feet above mean low water, 32.45 feet above mean sea level.

SERIAL No. 188. *East Haven*.—B. M. 130 (U. S. E.) is on top of the granite pedestal for a cannon at East Haven Green and is at south end just inside of east girder. Elevation: 34.1 feet above mean low water, 30.98 feet above mean tide level.

SERIAL No. 189. *East Haven*.—B. M. 131 (U. S. E.) is the southwest corner of the lower stone step at the Forbes Avenue entrance to St. Andrew Methodist Episcopal Church. Elevation: 67.7 feet above mean low water, 64.63 feet above mean tide level.

SERIAL No. 190. *Southwest Ledge Light*.—B. M. 1 (C. & G. S.) is the upper edge of one of the rims or seams of junction of iron plates on the southwest side of the lighthouse. Elevation: 8.9 feet above mean low water, 5.80 feet above mean tide level.

SERIAL No. 191. *Five Mile Point*.—B. M. 1 (U. S. E.) is a copper bolt leaded into the second stone from the north edge of the southwest face of the water table of the old New Haven Lighthouse. The bolt is about 4 inches from the upper edge of the stone, the head being flush with its face and notched with a cross. The horizontal notch is the bench mark. Elevation: 20.1 feet above mean low water, 17.06 feet above mean tide level.

SERIAL No. 192. *Five Mile Point*.—B. M. 2 (C. & G. S.) is a copper bolt set vertically in a rock about 12 feet west of the old New Haven Lighthouse. It is

marked "U. S. 1874." Elevation: 17.5 feet above mean low water, 14.43 feet above mean tide level.

SERIAL No. 193. *Five Mile Point.*—B. M. 3 (C. & G. S.) is the top of a three-eighths-inch copper bolt leaded in the rock about 10 meters to the east of the shore end of the wharf. The head of the bolt was filed smooth and the letters "B. M." cut beside it. Elevation: 24.1 feet above mean low water, 21.08 feet above mean tide level.

SERIAL No. 194. *Five Mile Point.*—B. M. 2 (U. S. E.) is the point where the batter of the corner of main structure of the lighthouse tower meets the foundation at the north end of the west side of the octagonal-shaped foundation. Elevation: 20.7 feet above mean low water, 17.64 feet above mean tide level.

SERIAL No. 195. *Fort Hale.*—B. M. 1 (U. S. E.) is a 1½-inch copper bolt leaded in the upper face, at the southwest corner of the west stone, of the north side of the sluiceway at the southwest corner of Fort Hale, and on a line running northeast from corner of said stone. It is close to steps leading to grate in sluiceway. Elevation: 11.7 feet above mean low water, 8.65 feet above mean tide level.

SERIAL No. 196. *Fort Hale.*—B. M. 2 (C. & G. S.) is the east corner of granite post at the northeast corner of Fort Hale property and on the north side of the north road leading to the fort. Elevation: 17.6 feet above mean low water, 14.54 feet above mean tide level.

SERIAL No. 197. *New Haven.*—B. M. W 3 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge, about 625 feet north of the north entrance to the small tunnel at the end of the long horseshoe curve just east of Cedar Hill. The bench mark is about 50 feet south of the semaphore signal nearest the entrance to the tunnel, about 6 feet west of the west rail, and about level with the track. Elevation: 42.5 feet above mean low water, 39.33 feet above mean sea level.

SERIAL No. 198. *New Haven.*—B. M. V 3 is a Coast and Geodetic Survey standard disk embedded in a 45-inch concrete post projecting 5 inches above the ground about 200 feet northeast of the railroad depot at Cedar Hill, about 100 feet west of the center line of James Street, and about 60 feet north of the north rail of railroad track. The bench mark is about 500 feet west of the junction of the Hartford Division, the Air Line Division, and the Shore Line Division of the New York, New Haven & Hartford Railroad. Elevation: 31.1 feet above mean low water, 27.95 feet above mean sea level.

SERIAL No. 199. *New Haven.*—B. M. U 3 is a Coast and Geodetic Survey standard disk embedded in the granite foundation of the City Hall in New Haven. The bench mark is about 80 feet south of the north side of the building, about 18 inches north of the most southerly of the two entrances on Church Street, and about 2 inches above the ground. Elevation: 31.4 feet above mean low water, 28.20 feet above mean sea level.

SERIAL No. 200. *New Haven.*—B. M. T 3 is a Coast and Geodetic Survey standard disk embedded in the foundation of the post-office building on Church and Court Streets. The bench mark is at the northwest corner of the building and about 10 feet west of the entrance on the Court Street side and about 1 foot above the ground. Elevation: 28.2 feet above mean low water, 25.05 feet above mean sea level.

SERIAL No. 201. *New Haven.*—B. M. 1 (1917) is a Coast and Geodetic Survey standard disk, stamped "1/1917," set in a concrete doorsill at the rear entrance of the blacksmith shop of the street and sewer department building on Water Street just west of Waterside Park. The entrance is on the west rear side of the building. The bench mark is on a level with the basement floor. Elevation: 15.5 feet above mean low water, 12.39 feet above mean sea level.

SERIAL No. 202. *New Haven.*—B. M. 2 (1917) is a Coast and Geodetic Survey standard disk, stamped "2/1917," set in a brownstone slab in the sea wall 35 yards east of the west side of the sea wall of the city dock at Waterside Park. It is directly opposite a telegraph pole and about 8 feet from it. This sea wall has a pile foundation and is believed by the city engineers not to settle in a vertical plane, although parts of it have been known to move radially with the top of the piles as a center due to mud pressure. Elevation: 10.1 feet above mean low water, 6.93 feet above mean sea level.

SERIAL No. 203. *New Haven.*—B. M. 3 (1917) is a Coast and Geodetic Survey standard disk, stamped "3/1917," set in the concrete floor of fire engine house No. 7. It is just inside the door of the west driveway and is 1 foot 10 inches

from the front wall of the building. The fire house is on the south side of Water Street, is next door to the street and sewer department building about 300 feet west of Waterside Park, and is between Chestnut and Brown Streets. The foundation of the engine house is on piles, and there is considered to be no settling. Elevation: 16.5 feet above mean low water, 13.31 feet above mean sea level.

SERIAL No. 204. *New Haven*.—B. M. S 3 (C. & G. S.) is the northeast corner of the granite capstone to the sewer basin at the southeast corner of the intersection of South Orange Street and Columbus Avenue. The bench mark is about 50 feet west of Hotel Garde and about 500 feet north of the railroad station at New Haven. This is also a city bench mark. Elevation: 13.2 feet above mean low water, 10.09 feet above mean sea level.

SERIAL No. 205. *New Haven*.—B. M. R 3 (C. & G. S.) is the northeast corner of the granite capstone over the sewer basin at the southwest corner of the intersection of Union Avenue and Portsea Street. It is on the northwest side of Union Avenue, opposite the New Haven depot. The bench mark is 20 feet west of the west rail of the trolley line on Union Avenue and 4 feet south of a steel power transmission pole No. N 60. This is also a city bench mark. Elevation: 15.7 feet above mean low water, 12.51 feet above mean sea level.

SERIAL No. 206. *New Haven*.—B. M. Q 3 is a Coast and Geodetic Survey standard disk embedded in the southwest corner of the New Haven depot at Union Avenue and South Orange Street. The bench mark is on the west side of the building, 3 feet north of the south end and 2 feet above the sidewalk. Elevation: 19.5 feet above mean low water, 16.35 feet above mean sea level.

SERIAL No. 207. *New Haven*.—B. M. 8 (U. S. E.) is on southwest corner of retaining wall at freight depot of New York, New Haven & Hartford Railroad on Water Street near the foot of Olive Street. The bench mark is inclosed by a quadrant of a circle $2\frac{1}{2}$ inches in radius cut in the corner of the stone and is nearly in line with the north front of the freight depot, 7 yards westerly of the west side, and 7 yards southerly from the sidewalk of Water Street. Elevation: 15.6 feet above mean low water, 12.42 feet above mean tide level.

SERIAL No. 208. *New Haven*.—B. M. 20 (U. S. E.) is the outer west edge of the top of the sloping stone, on the north pier of the draw on the west side of the Ferry Street Bridge. Elevation: 9.6 feet above mean low water, 6.48 feet above mean tide level.

SERIAL No. 209. *New Haven*.—B. M. 30 (U. S. E.) is the center of monument near Mill River, Belle Dock Branch, at the northwest corner of old ice house near section house, Belle Dock Junction. Elevation: 22.7 feet above mean low water, 19.56 feet above mean tide level.

SERIAL No. 210. *New Haven*.—B. M. 32 (U. S. E.) is the southeast corner of the bottom step at the Grand Avenue police station. Elevation: 20.0 feet above mean low water, 16.84 feet above mean tide level.

SERIAL No. 211. *New Haven*.—B. M. 34 (U. S. E.) is the northeast corner of west abutment, on corner of brownstone 2 feet below bottom of iron girders at Grand Avenue Bridge over east branch of Mill River. Elevation: 12.5 feet above mean low water, 9.38 feet above mean tide level.

SERIAL No. 212. *New Haven*.—B. M. 36 (U. S. E.) is on the northeast water table of building at the southwest corner of Chapel and East Streets. Elevation: 20.9 feet above mean low water, 17.71 feet above mean tide level.

SERIAL No. 213. *New Haven*.—B. M. 132 (U. S. E.) is a brass plug marking a "U. S. H. L." point on the sidewalk east of Tomlinson Bridge and near Yale bathhouse. (In 1917 it was reported that traffic had worn off all the letters except the "S.") Elevation: 11.4 feet above mean low water, 8.23 feet above mean tide level.

SERIAL No. 214. *New Haven*.—B. M. 133 (U. S. E.) is the top of brownstone of west draw pier, at the south edge of the southeast corner of top stone parapet of Tomlinson Bridge. Elevation: 13.6 feet above mean low water, 10.44 feet above mean tide level.

SERIAL No. 215. *New Haven*.—B. M. 55 (U. S. E.) is on the outer edge of the steel girder on the east side of Kimberly Avenue lift bridge over West River, 59 feet south of stone retaining wall. Elevation: 17.2 feet above mean low water, 14.09 feet above mean tide level.

SERIAL No. 216. *New Haven*.—B. M. 56 (U. S. E.) is knob cut on south edge of concrete pier west of left of Kimberly Avenue lift bridge. The letters "U. S. B. M." are cut in top of pier 2.7 feet from hold-down bolt. (Go down iron ladder.) Elevation: 9.5 feet above mean low water, 6.33 feet above mean tide level.

SERIAL No. 217. *New Haven.*—B. M. 134 (U. S. E.) is a crowfoot and three copper tacks on the top step of the north wing wall of the east abutment of the timber railroad bridge over West River, just west of the Howard Co. Elevation: 13.9 feet above mean low water, 10.75 feet above mean tide level.

SERIAL No. 218. *West Haven.*—B. M. 58 (U. S. E.) is on the southeast corner of the west bridge seat of the concrete bridge over West River at Kimberly Avenue east of the drawbridge. Elevation: 10.4 feet above mean low water, 7.26 feet above mean tide level.

SERIAL No. 219. *West Haven.*—B. M. 135 (U. S. E.) is a knob cut on the northwest corner of the east parapet of railroad bridge No. 58.43 over Washington Avenue. The bench mark is about 500 feet east of the West Haven depot, about 9 feet north of the north rail, and about 75 feet west of power-transmission tower No. 1034. Elevation: 35.3 feet above mean low water, 32.14 feet above mean sea level.

SERIAL No. 220. *West Haven.*—B. M. O 3 is a Coast and Geodetic Survey standard disk embedded in the southeast corner of the east parapet of railroad bridge No. 58.34 over Campbell Avenue. The bench mark is about 200 feet west of the New Haven depot at West Haven, about 50 feet west of power-transmission tower No. 1031, and about 8 feet south of the south rail. Elevation: 39.8 feet above mean low water, 36.60 feet above mean sea level.

SERIAL No. 221. *West Haven.*—B. M. N 3 is a Coast and Geodetic Survey standard disk embedded in a natural-rock ledge about three-eighths mile west of the West Haven Depot. The bench mark is about 100 feet west of the power-transmission tower No. 1025, about 10 feet north of the north rail and about level with the track, and is in the center of the first rock cut west of the depot. Elevation: 49.9 feet above mean low water, 46.73 feet above mean sea level.

SERIAL No. 222. *West Haven.*—B. M. 136 (U. S. E.) is a knob cut on the northeast corner of the east parapet of the railroad bridge No. 57.72 over a highway. It is three-fourths mile west of the West Haven Depot, about 125 feet west of power-transmission tower No. 1022, and about 5 feet north of the north rail. Elevation: 55.9 feet above mean low water, 52.75 feet above mean sea level.

SERIAL No. 223. *Woodmont.*—B. M. 137 (U. S. E.) is a knob cut on the northwest corner of the north parapet of railroad bridge No. 56.16 over a highway about $1\frac{1}{2}$ miles northeast of Woodmont. The bench mark is about 8 inches below the track. Elevation: 79.4 feet above mean low water, 76.11 feet above mean sea level.

SERIAL No. 224. *Woodmont.*—B. M. K 3 is a Coast and Geodetic Survey standard disk embedded in a natural-rock ledge about one-half mile northeast of Woodmont. It is about 125 feet northeast of power-transmission tower No. 980, 10 feet west of the west rail, and about 2 feet above the track. The track at this point runs northeast and southwest. Elevation: 62.6 feet above mean low water, 59.33 feet above mean sea level.

SERIAL No. 225. *Woodmont.*—B. M. 138 (U. S. E.) is a knob cut on the northeast corner of the bottom step of the south abutment of highway bridge No. 54.08 at Bud's Crossing over the railroad tracks about three-fourths mile west of Woodmont. It is about 110 feet from power-transmission tower No. 958, about 5 feet south of the south rail, and about 3 feet above the track. Elevation: 53.6 feet above mean low water, 50.36 feet above mean sea level.

SERIAL No. 226. *Woodmont.*—B. M. H 3 is a Coast and Geodetic Survey standard disk embedded in a natural-rock ledge about 120 feet east of power-transmission tower No. 949, about 6 feet north of the north rail of the New Haven Railroad track, and about 1 foot above the track. It is about 1 mile west of Woodmont. Elevation: 44.7 feet above mean low water, 41.45 feet above mean sea level.

SERIAL No. 227. *Milford.*—B. M. 139 (U. S. E.) is a knob cut on the northeast corner of the east parapet of railroad bridge No. 52.65 over Indian River. It is about 50 feet east of power-transmission tower No. 933 and about 6 feet north of the north rail. Elevation: 22.5 feet above mean low water, 19.21 feet above mean sea level.

SERIAL No. 228. *Milford.*—B. M. 1 is a Coast and Geodetic Survey standard disk, stamped "1/1917," set in a bowlder forming the sea wall east of Milford Yacht Club. The bowlder is 55 feet east of the flagpole. Elevation: 6.8 feet above mean low water, 3.45 feet above mean sea level.

SERIAL No. 229. *Milford.*—B. M. 2 is a Coast and Geodetic Survey standard disk, stamped "2/1917," set in a slab just west of the red light on the end of the breakwater. The slab forms part of the foundation for the light. Elevation: 9.6 feet above mean low water, 6.30 feet above mean sea level.

SERIAL No. 230. Milford.—B. M. 3 is a Coast and Geodetic Survey standard disk, set on top near the south end of the west retaining wall forming the approach to the bridge over the Indian River from the south. It is set in a brownstone slab 5 feet 4 inches from the end of the approach. Elevation: 11.8 feet above mean low water, 8.48 feet above mean sea level.

SERIAL No. 231. Milford.—B. M. 140 (U. S. E.) is a brass plug marked "U. S. B. M." embedded in the southeast corner of the west parapet of railroad bridge No. 51.61 over the Wepawaug River. It is about 800 feet east of the railroad depot at Milford, about 150 feet from power-transmission tower No. 914, and about 5 feet south of the south rail. Elevation: 39.7 feet above mean low water, 36.40 feet above mean sea level.

SERIAL No. 232. Milford.—B. M. E 3 is a Coast and Geodetic Survey standard disk embedded in the corner stone of the municipal building of Milford, at the southeast corner of the building, 10 inches from the south face and 10 inches above the elevated walk around the building. The municipal building is on River Street, east of the Milford high school. Elevation: 32.0 feet above mean low water, 28.71 feet above mean sea level.

SERIAL No. 233. Milford.—B. M. D 3 is a Coast and Geodetic Survey standard disk embedded in the south parapet of the west abutment of railroad bridge No. 51.51 over River Street (Boston Post Road), about 400 feet east of the railroad depot at Milford, 10 feet east of power-transmission tower No. 913, and about 4 feet south of the south rail. Elevation: 40.7 feet above mean low water, 37.38 feet above mean sea level.

SERIAL No. 234. Milford.—B. M. 142 (U. S. E.) is a knob cut on the northeast corner of the bottom step of the southeast wing wall abutment of Highway Bridge No. 50.48 (Baldwin's Crossing) over the New Haven Railroad tracks, 0.6 miles west of Milford, about 110 feet west of the power-transmission tower No. 895, about 5 feet south of south rail, and about 2 feet above the track. Elevation: 64.3 feet above mean low water, 61.02 feet above mean sea level.

SERIAL No. 235. Devon.—B. M. B 3 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 125 feet east of power-transmission tower No. 875, about 9 feet north of the north rail, 1 foot above the track, and in the first rock cut about 0.75 mile east of Devon. Elevation: 55.7 feet above mean low water, 52.38 feet above mean sea level.

SERIAL No. 236. Devon.—B. M. A 3 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about 300 feet west of the New Haven Depot at Devon, about 100 feet west of the junction of the Waterbury Division and main line of the New York, New Haven & Hartford Railroad, about 100 feet east of the New Haven Railroad Bridge over the Housatonic, 40 feet north of the north rail, and about 2 feet above the track. Elevation: 36.2 feet above mean low water, 32.95 feet above mean sea level.

Section D.—ELEVATIONS OF BENCH MARKS, SERIAL NOS. 237 TO 256: HOUSATONIC RIVER, STRATFORD TO SHELTON

Serial No.	Locality	Elevation of bench marks above mean low water	Serial No.	Locality	Elevation of bench marks above mean low water
		<i>Feet</i>			<i>Feet</i>
237	Stratford.....	6.64	247	Oronock Bar.....	7.69
238	do.....	13.74	248	Camp Meeting Bar.....	8.10
239	do.....	10.03	249	Drews Bar.....	39.66
240	do.....	16.28	250	do.....	8.08
241	do.....	8.25	251	do.....	6.18
242	do.....	15.41	252	Moulthrop's Bar.....	3.94
243	do.....	9.77	253	Two Mile Island.....	16.21
244	Mill Bar.....	9.73	254	Derby.....	9.32
245	Pecks Mill.....	8.04	255	do.....	9.58
246	do.....	9.04	256	Shelton.....	8.24

These bench marks in section D were established by the United States Army Engineers in connection with river-improvement projects. The elevations are referred to mean low-water datum as determined from simultaneous observations taken at various points along

the river during July and August, 1905. This datum agrees closely with the usual mean low water from the middle of May to the middle of January, when the river is most navigated. Since the other tidal data along the river have not yet been well determined, the elevations of the bench marks as referred to highest tide, mean high water, mean tide level, and lowest tide are not given.

The following is an excerpt from letter from the district engineer, dated September 30, 1913, House Documents, volume 23, Sixty-fourth Congress, first session, 1915-16, page 5, Preliminary Examination of Housatonic River, Conn., act of 1913:

The mean rise and fall of tide is about 6.5 feet at the mouth of the river and about 4.9 feet at the head of navigation. While the exact determination of the tidal phenomena requires further observation and study, the indications are that the difference of elevation of mean low water is very small from Shelton to Stratford, but that mean low water at the latter point is nearly or quite 1 foot above mean low water in the Sound. The greater part of the fall is concentrated at the gorge just above the mouth of the river, known as Mary Anns Bar, where the bed is of very compact material. Under low-water conditions in the river the current sets upstream at flood tide as far as Drews Bar, 4 miles below the head of navigation.

The river is subject to annual freshets of some height but usually of short duration. The highest freshets are usually caused by ice gorges above the dam at Shelton, although occasionally ice gorges form as far downstream as the Washington Bridge, about 3½ miles above the mouth. The best data available indicate that the highest freshets rise about 18 feet above mean low water at Shelton and the ordinary freshets about 12 feet at that place. The river is ordinarily closed to navigation by ice for between two and three months in the winter.

DESCRIPTIONS OF BENCH MARKS, SERIAL NOS. 237 TO 256: HOUSATONIC RIVER, STRATFORD TO SHELTON

SERIAL No. 237. Stratford.—B. M. 1 (U. S. E.) is a square cut on top of the seventh course of stone from the top of the south side of Stratford Beacon at the mouth of the Housatonic River. Elevation: 6.64 feet above mean low water.

SERIAL No. 238. Stratford.—B. M. 2 (U. S. E.) is a ¾-inch iron bolt leaded into the top of a large rock, which is furthest south from a group of rocks on the shore and is under the only large tree on the shore at the point southwest of the beacon near the mouth of the Housatonic River. Elevation 13.74 feet above mean low water.

SERIAL No. 239. Stratford.—B. M. 3 (U. S. E.) is a drill hole in a square on the highest point of a large boulder at the inshore end of Stratford Dyke. Elevation: 10.03 feet above mean low water.

SERIAL No. 240. Stratford.—B. M. 4 (U. S. E.) is the center of the cup holder of the watering trough near John Bond's on Bond's Dock. Elevation: 16.28 feet above mean low water.

SERIAL No. 241. Stratford.—B. M. 5 (U. S. E.) is a brass screw in the top of the south cap log of Bond's Dock, 77.2 feet from the inshore end of the log. Elevation: 8.25 feet above mean low water.

SERIAL No. 242. Stratford.—B. M. 6 (U. S. E.) is the southeast corner of the west bridge seat of Washington Bridge. Elevation: 15.41 feet above mean low water.

SERIAL No. 243. Stratford.—B. M. 8 (U. S. E.) is a drill hole in a square in the ninth course from the top counting the bridge seat in the west abutment under the north truss for eastbound tracks on the railroad bridge over the Housatonic River. Elevation: 9.77 feet above mean low water.

SERIAL No. 244. Mill Bar.—B. M. 9 (U. S. E.) is a brass plug in a white boulder which is the only boulder on the beach on the south end of Mill Bar. Elevation: 9.73 feet above mean low water.

SERIAL No. 245. Pecks Mill.—B. M. 10 (U. S. E.) is a copper bolt in a ledge of rock on the south shore of a cove about 360 feet south-southwest of quarry wharf. Elevation: 8.04 feet above mean low water.

SERIAL No. 246. *Pecks Mill*.—B. M. 11 (U. S. E.) is a babbitt bolt set in the top of a rock at the water's edge, at the most northeasterly point of the island between the Housatonic River and the two outlets of the streams at Pecks Mill. Elevation: 9.04 feet above mean low water.

SERIAL No. 247. *Oronock Bar*.—B. M. 12 (U. S. E.) is a brass plug in the southeast corner of a ledge near Johnsons Corner, in a cove just below Oronock Bar about 100 feet north of the trolley bridge. Elevation: 7.69 feet above mean low water.

SERIAL No. 248. *Camp Meeting Bar*.—B. M. 13 (U. S. E.) is a brass plug in a ledge at a point where the toe of the railroad embankment meets the river bank, about 100 feet downstream from a small gully. Elevation: 8.10 feet above mean low water.

SERIAL No. 249. *Drews Bar*.—B. M. 14 (U. S. E.) is a $\frac{3}{8}$ -inch bolt leaded into ledge rock on the north side of Murphey's Lane running from house to river, about 177 feet from high-water line. Rock is under small apple tree. Elevation: 39.66 feet above mean low water.

SERIAL No. 250. *Drews Bar*.—B. M. 15 (U. S. E.) is a brass screw leaded into the top of a large flat rock, 34 feet north of the fence line of the lane, $17\frac{1}{2}$ feet south of a small willow tree, and 12 feet from high-water line. Elevation: 8.08 feet above mean low water.

SERIAL No. 251. *Drews Bar*.—B. M. 16 (U. S. E.) is a brass plug on a 6-ton stone at the water's edge, 290 feet north of Murphey's Lane. Elevation: 6.18 feet above mean low water.

SERIAL No. 252. *Mouthrops Bar*.—B. M. 17 (U. S. E.) is a brass plug in ledge rock in west bank of the river, 150 feet south of Mouthrop's house, 70 feet northeast of boat yard, and 150 feet east of trolley track. It is about 3 miles below Derby. Elevation: 3.94 feet above mean low water.

SERIAL No. 253. *Two Mile Island*.—B. M. 18 (U. S. E.) is a brass plug set in brownstone cover stone of arch culvert, opposite north end of Two Mile Island. It is about 8 inches north of center of west head wall. Culvert is 200 feet south of southbound semaphore signal and 1 mile below Derby. Elevation: 16.21 feet above mean low water.

SERIAL No. 254. *Derby*.—B. M. 19 (U. S. E.) is a $\frac{1}{2}$ -inch drill hole in ledge rock on east bank of river about 400 feet below Hallock's Dock, 300 feet south of south end of railroad trestle, $46\frac{1}{2}$ feet from outer rail of west track, and 5 or 6 feet from water's edge. It is on the first round rock projecting into river below Hallock's Dock. Elevation: 9.32 feet above mean low water.

SERIAL No. 255. *Derby*.—B. M. (U. S. E.) is on a drift bolt surrounded by three copper tacks and inscribed "U. S. B. M.," located 20.7 feet south of the northwest corner of Hallock's coal dock. Elevation: 9.58 feet above mean low water.

SERIAL No. 256. *Shelton*.—B. M. 21 (U. S. E.) is a brass plug in a drill hole in a ledge which juts into the river on the west bank of the river opposite Hallock's coal dock in Derby. Elevation: 8.24 feet above mean low water.

Section E.—ELEVATIONS OF BENCH MARKS, SERIAL NOS. 257 TO 367: LONG ISLAND SOUND, STRATFORD TO GREENWICH

Serial No.	Locality	Elevation of bench marks above—					
		Highest tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
257	Stratford	Feet 24.2	Feet 27.0	Feet -----	Feet 30.40	Feet 33.7	Feet 36.7
258	do	18.5	21.3	-----	24.63	28.0	31.0
259	do	22.2	25.0	-----	28.32	31.7	34.7
260	Bridgeport	15.8	19.0	-----	22.37	25.8	28.8
261	do	13.9	17.1	-----	20.49	23.9	26.9
262	do	6.2	9.4	-----	12.84	16.2	19.2
263	do	10.2	13.4	-----	16.84	20.2	23.2
264	do	11.8	15.0	-----	18.40	21.8	24.8
265	do	8.8	12.0	-----	15.39	18.8	21.8
266	do	10.5	13.7	-----	17.11	20.6	23.6

SECTION E.—Elevations of bench marks, Serial Nos. 257 to 367: Long Island Sound, Stratford to Greenwich—Continued

Serial No.	Locality	Elevation of bench marks above—					
		Highest tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Lowest tide
267	Bridgeport	11.8	15.0		18.37	21.8	24.8
268	do	18.6	21.8		25.25	28.6	31.6
269	do	35.9	39.1		42.54	45.9	48.9
270	do	3.2	6.4		9.81	13.2	16.2
271	do	129.0	132.2		135.56	139.0	142.0
272	do	21.7	24.9		28.33	31.7	34.7
273	do	4.5	7.7		11.11	14.5	17.5
274	do	10.1	13.3		16.71	20.1	23.1
275	do	2.4	5.6	8.99		12.4	15.4
276	do	4.8	8.0	11.45		14.8	17.8
277	do	3.4	6.6	9.06		13.4	16.4
278	do	12.9	16.1	19.52		22.9	25.9
279	do	8.6	11.8	15.22		18.6	21.6
280	do	.3	3.5	6.90		10.3	13.3
281	do	5.9	9.1	12.51		15.9	18.9
282	do	1.5	4.7	8.07		11.5	14.9
283	do	2.8	6.0	9.41		12.8	15.8
284	do	.4	3.6	7.01		10.4	13.4
285	Black Rock Harbor	-.3	2.8	6.25		9.7	12.7
286	do	2.0	5.1	8.58		12.0	15.0
287	do	4.2	7.3	10.70		14.2	17.2
288	do	.6	3.7	7.14		10.6	13.6
289	do	-.3	2.8	6.26		9.7	12.7
290	do	4.8	7.9	11.35		14.8	17.8
291	Ash Creek	7.9	11.0	14.44		17.9	20.8
292	Fairfield	13.3	16.4		19.89	23.3	26.3
293	do	15.3	18.4		21.89	25.3	28.3
294	Southport	13.1	16.1		19.57	23.1	26.1
295	do	17.0	20.0		23.46	27.0	30.0
296	do	11.5	14.5		18.04	21.5	24.5
297	do	-.3	2.7	6.16		9.7	12.7
298	do	1.8	4.8	8.34		11.8	14.8
299	do	2.7	5.7	9.23		12.7	15.7
300	do	13.9	16.9		20.42	23.9	26.9
301	do	13.1	16.1		19.60	23.1	26.1
302	do	11.4	14.4		17.91	21.4	24.4
303	Greens Farms Station	21.9	24.9		28.39	31.9	34.9
304	do	16.4	19.4		22.95	26.4	29.4
305	Westport	25.1	28.1		31.63	35.1	38.1
306	do	24.5	27.5		30.98	34.5	37.5
307	do	-.7	2.3	5.83		9.3	12.3
308	Saugatuck	21.4	24.4	27.86		31.4	34.4
309	do	12.6	15.6	19.11		22.6	25.6
310	do	20.5	23.5		27.02	30.5	33.5
311	do	-1.1	1.9	5.42		8.9	11.9
312	do	13.1	16.1	19.56		23.1	26.1
313	do	27.9	30.9	34.40		37.9	40.9
314	East Norwalk	48.0	51.0		54.53	58.0	61.0
315	South Norwalk	9.5	12.5		15.96	19.5	22.5
316	do	10.6	13.6		17.06	20.6	23.6
317	do	3.1	6.1	9.64		13.1	16.1
318	do	9.3	12.3	15.78		19.3	22.3
319	do	23.5	26.5	29.96		33.5	36.5
320	do	1.0	4.0	7.54		11.0	14.0
321	do	28.3	31.3	34.81		38.3	41.3
322	do	15.6	18.6		22.10	25.6	28.6
323	do	29.1	31.1		35.50	39.1	42.1
324	do	31.8	34.8		38.28	41.8	44.8
325	do	59.6	62.6		66.07	69.6	72.6
326	Five Mile River	-1.4	1.3	4.98		8.6	11.6
327	do	1.3	4.0	7.65		11.3	14.3
328	Rowayton	45.0	47.7		51.31	55.0	58.0
329	Darien	53.7	56.4		60.01	63.7	66.7
330	do	53.5	56.2		59.86	63.5	66.5
331	do	65.0	67.7		71.33	75.0	78.0

SECTION E.—Elevations of bench marks, Serial Nos. 257 to 367: Long Island Sound, Stratford to Greenwich—Continued

Serial No.	Locality	Elevation of bench marks above—					
		High-est tide	Mean high water	Mean tide level	Mean sea level	Mean low water	Low-est tide
		Feet	Feet	Feet	Feet	Feet	Feet
332	Noroton.....	76.8	79.5	-----	83.12	86.8	89.8
333	Cove Harbor.....	1.7	4.4	8.07	-----	11.7	14.7
334	do.....	4.6	7.3	10.90	-----	14.6	17.6
335	do.....	1.5	4.2	7.85	-----	11.5	14.5
336	do.....	3.4	6.1	9.77	-----	13.4	16.4
337	do.....	4.2	6.9	10.53	-----	14.2	17.2
338	Glenbrook.....	64.9	67.6	-----	71.25	74.9	77.9
339	do.....	35.7	38.4	-----	42.06	45.7	48.7
340	Stamford.....	27.3	30.0	-----	33.62	37.3	40.3
341	do.....	12.8	15.5	-----	19.15	22.8	25.8
342	do.....	14.3	17.0	-----	20.61	24.3	27.3
343	do.....	18.0	20.7	-----	24.30	28.0	31.0
344	do.....	17.7	20.4	-----	24.01	27.7	30.7
345	do.....	33.0	35.7	-----	39.33	43.0	46.0
346	do.....	.6	3.3	6.93	-----	10.6	13.6
347	do.....	-.1	2.6	6.25	-----	9.9	12.9
348	do.....	9.0	11.7	15.36	-----	19.0	22.0
349	do.....	5.3	8.0	11.63	-----	15.3	18.3
350	do.....	4.0	6.7	10.39	-----	14.0	17.0
351	do.....	.8	3.5	7.18	-----	10.8	13.8
352	do.....	16.6	19.3	22.96	-----	26.6	29.6
353	do.....	1.6	4.3	7.91	-----	11.6	14.6
354	South Beach Station.....	27.7	30.4	34.08	-----	37.7	40.7
355	Riverside.....	36.2	38.8	-----	42.46	46.2	49.2
356	Mianus River.....	25.9	28.5	32.17	-----	35.9	38.9
357	do.....	22.9	25.5	29.16	-----	32.9	35.9
358	Cos Cob.....	23.9	26.5	-----	30.23	33.9	36.9
359	Greenwich.....	27.9	30.5	-----	34.19	37.9	40.9
360	do.....	64.7	67.3	-----	70.99	74.7	77.7
361	do.....	7.6	10.2	-----	13.91	17.6	20.6
362	do.....	29.6	32.2	-----	35.94	39.6	42.6
363	do.....	1.1	3.7	7.42	-----	11.1	14.1
364	do.....	.9	3.5	7.22	-----	10.9	13.9
365	do.....	1.5	4.1	7.77	-----	11.5	14.5
366	do.....	1.5	4.1	7.79	-----	11.5	14.5
367	do.....	3.4	6.0	9.69	-----	13.4	16.4

DESCRIPTIONS OF BENCH MARKS, SERIAL NOS. 257 TO 367: LONG ISLAND SOUND, STRATFORD TO GREENWICH

SERIAL No. 257. *Stratford*.—B. M. Z 2 (C. & G. S.) is a brass plug set (probably by the United States Army Engineers) in the south end of the south parapet of the west wing wall abutment of the railroad bridge over the Housatonic River. It is about one-fourth mile west of the New Haven depot at Devon, about 100 feet east of power-transmission tower No. 862, and about 10 feet south of the south rail. Elevation: 33.7 feet above mean low water, 30.40 feet above mean sea level.

SERIAL No. 258. *Stratford*.—B. M. Y 2 is a Coast and Geodetic Survey standard disk embedded in the southwest corner of the west parapet of railroad bridge No. 47.10 over Main Street, about 350 feet west of the New Haven depot at Stratford, about 150 feet west of the power-transmission tower No. 840, and about 6 feet south of the south rail. Elevation: 28.0 feet above mean low water, 24.63 feet above mean sea level.

SERIAL No. 259. *Stratford*.—B. M. 145 (U. S. E.) is a knob cut on the north-west corner of the east parapet of railroad bridge No. 46.81. It is 0.2 mile west of the New Haven depot at Stratford and 10 feet north of the north rail. Elevation: 31.7 feet above mean low water, 28.32 feet above mean sea level.

SERIAL No. 260. *Bridgeport*.—B. M. W 2 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-eighths mile east

of the freight yards at Bridgeport. It is about 20 feet north of power-transmission tower No. 824, about 6 feet west of the west rail and about level with the track. Elevation: 25.8 feet above mean low water, 22.37 feet above mean sea level.

SERIAL No. 261. *Bridgeport*.—B. M. V 2 is a United States Geological Survey standard disk embedded in the south end of the bottom step of the most southerly entrance on Hollister Avenue to the McKinley School. It is 12 meters north of the south end of the building and 3 inches above the ground. Elevation: 23.9 feet above mean low water, 20.49 feet above mean sea level.

SERIAL No. 262. *Bridgeport*.—B. M. 40 (U. S. E.) is a knob cut in the northwest corner of the parapet of the east abutment of the Yellow Mill Bridge. It is about 50 meters east of the draw span and about 6 meters north of the north curb of the street. Elevation: 16.2 feet above mean low water, 12.84 feet above mean sea level.

SERIAL No. 263. *Bridgeport*.—B. M. T 2 is a Coast and Geodetic Survey standard disk embedded in the granite foundation of the First National Bank Building in the city of Bridgeport. It is at the northeast corner of the building, 2 meters east of the Main Street side, and about one-half meter above the sidewalk. The building is at the southeast corner of the intersection of State and Main Streets. Elevation: 20.2 feet above mean low water, 16.84 feet above mean sea level.

SERIAL No. 264. *Bridgeport*.—B. M. S 2 is a Coast and Geodetic Survey standard disk embedded in the third step at the main entrance to the City Hall on State Street, opposite Court Street. It is at the east end of the step and about 6 inches from the face of the building. Elevation: 21.8 feet above mean low water, 18.40 feet above mean sea level.

SERIAL No. 265. *Bridgeport*.—B. M. 12 is a Coast and Geodetic Survey standard disk embedded in the concrete foundation of Ford's Garage at No. 447 Stratford Avenue, about 40 meters east of Pembroke Avenue. It is on the south side of the building, 1 foot from the west side and 6 inches above the sidewalk. Elevation: 18.8 feet above mean low water, 15.39 feet above mean sea level.

SERIAL No. 266. *Bridgeport*.—B. M. 14 (U. S. E.) is on the southeast corner of the bottom stone step at the State Street entrance to the City Hall. This is the city of Bridgeport initial bench mark. Elevation: 20.5 feet above mean low water, 17.11 feet above mean sea level.

SERIAL No. 267. *Bridgeport*.—B. M. 13 is a Coast and Geodetic Survey standard disk in the smooth-faced sandstone wall of the post-office building, north of the more southerly corner of the two entrances on Broad Street. It is 15 meters from the northwest corner of the building and about 6 inches above the sidewalk. Elevation: 21.8 feet above mean low water, 18.37 feet above mean sea level.

SERIAL No. 268. *Bridgeport*.—B. M. Q 2 is a Coast and Geodetic Survey standard disk set in the granite water table of the Welfare Building of the department of health and charities in the city of Bridgeport. The building is at the southwest corner of the intersection of Madison and Washington Avenues. The bench mark is at the northeast corner of the building, about 2 meters north of the main entrance and about 4 inches above the sidewalk. Elevation: 28.6 feet above mean low water, 25.25 feet above mean sea level.

SERIAL No. 269. *Bridgeport*.—B. M. P 2 (C. & G. S.) is a city of Bridgeport bench mark and is the top of the northwest corner of the iron shoe plate at the base of the iron column which supports the northwest corner of the brick building at No. 1179 North Avenue at the southeast corner of the intersection of North and Madison Avenues. Elevation: 45.9 feet above mean low water, 42.54 feet above mean sea level.

SERIAL No. 270. *Bridgeport*.—B. M. 150 (U. S. E.) is a knob cut on the northeast corner of the west low pier of the railroad bridge over Fairfield Avenue, just west of the junction of Fairfield Avenue and State Street. The bench mark is about 3 meters west of the west rail of the trolley line on Fairfield Avenue and about 0.8 meter above the pavement. Elevation: 13.2 feet above mean low water, 9.81 feet above mean sea level.

SERIAL No. 271. *Bridgeport*.—B. M. W 1922 (U. S. G. S.) is a Geological Survey standard disk set in the south side of the third step of the Wayne Street entrance to the Madison School on Wayne Street and Fairview Avenue. Elevation: 139.0 feet above mean low water, 135.56 feet above mean sea level.

SERIAL No. 272. *Bridgeport*.—B. M. M 2 is a Coast and Geodetic Survey standard disk set in the bluestone water table of the Junior High School Build-

ing on Linwood Avenue, between Wood and Laurel Avenues, on the north side of the street. The bench mark is 1 meter west of the west entrance to the building, 8 meters east of the west side of the building, and 2½ inches above the sidewalk. Elevation: 31.7 feet above mean low water, 28.33 feet above mean sea level.

SERIAL No. 273. Bridgeport.—B. M. "Pumping Station" is a Geological Survey standard disk set in the concrete foundation of the pumping station of the sewage disposal plant No. 1 in Bridgeport. The bench mark is on the south side of the building, 6 meters west of the east face of the building, 1 meter west of the south entrance, and 0.4 meter south of the south face. Elevation: 14.5 feet above mean low water, 11.11 feet above mean sea level.

SERIAL No. 274. Bridgeport.—B. M. K 2 is a Coast and Geodetic Survey standard disk set in a 45-inch concrete post projecting 3 inches above the ground, on the north side of the New Haven tracks, about 30 meters west of the center line of Fairfield Avenue (Boston Post Road), about 20 meters northeast of power-transmission tower No. 737, and about 15 meters north of the north rail. Elevation: 20.1 feet above mean low water, 16.71 feet above mean sea level.

SERIAL No. 275. Bridgeport.—B. M. 3 (U. S. E.) is the top of coping stone at the southwest corner of the sea wall on the property of Otto Lehman, near the southerly end of Seaview Avenue, west of the bridge to Steeplechase Island. Elevation: 12.4 feet above mean low water, 8.99 feet above mean tide level.

SERIAL No. 276. Bridgeport.—B. M. 8 (U. S. E.) is the south end of granite doorsill of the eastern sliding door in the addition to the blacksmith shop of the Locomobile Co., 1.25 feet from the face of the building. Elevation: 14.8 feet above mean low water, 11.45 feet above mean tide level.

SERIAL No. 277. Bridgeport.—B. M. 10 (U. S. E.) is the top of the south side of the iron cylinder base of the inner beacon (known as Bug Light), on the edge of the joint in the metal just east of the concrete. Elevation: 13.4 feet above mean low water, 9.96 feet above mean tide level.

SERIAL No. 278. Bridgeport.—B. M. 146 (U. S. E.) is a stone monument at the southeast corner of Hollister Street and Stratford Avenue. Elevation: 22.9 feet above mean low water, 19.52 feet above mean tide level.

SERIAL No. 279. Bridgeport.—B. M. 147 (U. S. E.) is a stone monument at the southeast corner of Stratford Avenue and Pembroke Street. Elevation: 18.6 feet above mean low water, 15.22 feet above mean tide level.

SERIAL No. 280. Bridgeport.—B. M. 5 (U. S. E.) is the top of northwest corner of coping stone of west draw pier of Stratford Avenue Bridge over Pequonnock River. Elevation: 10.3 feet above mean low water, 6.90 feet above mean tide level.

SERIAL No. 281. Bridgeport.—B. M. 7 (U. S. E.) is a knob cut on the southwest corner of lone railroad bridge pier just south of the trolley tracks, Stratford Avenue railroad bridge. Elevation: 15.9 feet above mean low water, 12.51 feet above mean tide level.

SERIAL No. 282. Bridgeport.—B. M. 21 (U. S. E.) is a knob cut on face of top of retaining wall, on the north corner of second stone from concrete wall of bridge approach, on south side of Congress Street Bridge, east end of bridge. Elevation: 11.5 feet above mean low water, 8.07 feet above mean tide level.

SERIAL No. 283. Bridgeport.—B. M. 22 (U. S. E.) is on southwest corner of east bridge seat of east Washington Avenue Bridge. Elevation: 12.8 feet above mean low water, 9.41 feet above mean tide level.

SERIAL No. 284. Bridgeport.—B. M. 25 (U. S. E.) is a cut on the southwest corner of concrete dock of J. A. Black Coal Co. Elevation: 10.4 feet above mean low water, 7.01 feet above mean tide level.

SERIAL No. 285. Black Rock Harbor.—B. M. 2 (C. & G. S.) is the top of an eyebolt in a ledge near the southwest corner of an old barn, and about 90 feet west-southwest from southeast corner of Fancher's dock. This is the same as United States Engineers bench mark 54. Elevation: 9.7 feet above mean low water, 6.25 feet above mean tide level.

SERIAL No. 286. Black Rock Harbor.—B. M. 5 is a Coast and Geodetic Survey standard disk set in the highest part of the most easterly end of a rocky ledge on the southeast end of the point which is nearest Fayerweather Island at the foot of Brewster Street. Bench mark is about 2 feet from the south edge of the ledge and is slightly countersunk in the rock. Elevation: 12.0 feet above mean low water, 8.58 feet above mean tide level.

SERIAL No. 287. Black Rock Harbor.—B. M. 6 is a Coast and Geodetic Survey standard disk set in the top of a large flat rock in the angle of the retaining

wall which marks the property line of Mrs. H. C. Woodruff at the foot of Brewster Street. Bench mark is 14.8 feet from the west tangent of a tree 3 feet in diameter, in the direction of Penfield Lighthouse, and also is in range with the east tangent to this tree and the east end of the Woodruff house. Elevation: 14.2 feet above mean low water, 10.70 feet above mean tide level.

SERIAL No. 288. *Black Rock Harbor.*—B. M. 51 (U. S. E.) is four iron nails driven in the southwest corner of the Stanard Oil Co. dock on the north side of the southern branch of Cedar Creek. The nails form a triangle with one nail in the center. Elevation: 10.6 feet above mean low water, 7.14 feet above mean tide level.

SERIAL No. 289. *Black Rock Harbor.*—B. M. 52 (U. S. E.) is a lump cut on a stone in the face of the stone wall running northeast from the coal hoist on the dock of the Hill Coal Co., on the western shore of Burr Creek. Bench mark is 19.6 feet from the inner end of wall on a stone partly plastered with concrete, and the letters "U. S. B. M." are cut just west of the mark. Elevation: 9.7 feet above mean low water, 6.26 feet above mean tide level.

SERIAL No. 290. *Black Rock Harbor.*—B. M. 56 (U. S. E.) is an unmarked point on top of the rim at the base of Black Rock Light at the southeast corner, the first corner south of the door. Elevation: 14.8 feet above mean low water, 11.35 feet above mean tide level.

SERIAL No. 291. *Ash Creek.*—B. M. 151 (U. S. E.) is a knob cut on the northeast corner of the east parapet of railway bridge No. 41.19 over creek. Elevation: 17.9 feet above mean low water, 14.44 feet above mean tide level.

SERIAL No. 292. *Fairfield.*—B. M. 152 (U. S. E.) is a knob cut on the southeast corner of the east parapet of railroad bridge No. 39.17 over a highway. It is about 45 meters east of power-transmission tower No. 697, and about 2.5 meters south of the south rail. Elevation: 23.3 feet above mean low water, 19.89 feet above mean sea level.

SERIAL No. 293. *Fairfield.*—B. M. H. 2 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge, about 80 meters west of the New Haven depot at Fairfield, about 40 meters northeast of power-transmission tower No. 686, 30 meters north of the north rail, and about 3 feet above the track. Elevation: 25.3 feet above mean low water, 21.89 feet above mean sea level.

SERIAL No. 294. *Southport.*—B. M. 153 (U. S. E.) is a knob cut on the southwest corner of the west parapet of railroad bridge No. 37.71 over Mill River. The bench mark is about 38 meters east of power-transmission tower No. 671 and about 2 meters south of the south rail. Elevation: 23.1 feet above mean low water, 19.57 feet above mean sea level.

SERIAL No. 295. *Southport.*—B. M. F. 2 is a Coast and Geodetic Survey standard disk embedded in the south parapet of the east abutment of railroad bridge No. 37.14 over the Boston Post Road. The bench mark is about 200 meters east of the New Haven depot at Southport, about 35 meters west of power-transmission tower No. 662, and about 1.5 meters south of the south rail. Elevation: 27.0 feet above mean low water, 23.46 feet above mean sea level.

SERIAL No. 296. *Southport.*—B. M. 155 (U. S. E.) is a knob cut on the southwest corner of the fifth step from the bottom of the southeast wing wall abutment of railroad bridge No. 36.89 over a highway in the town of Southport. The bench mark is about 80 meters west of the New Haven depot at Southport, 25 meters west of power-transmission tower No. 657, and 5 meters south of the south rail. Elevation: 21.5 feet above mean low water, 18.04 feet above mean sea level.

SERIAL No. 297. *Southport.*—B. M. 1 (U. S. E.) is on the northwest corner of fifth course from top of North Beacon. Elevation: 9.7 feet above mean low water, 6.16 feet above mean tide level.

SERIAL No. 298. *Southport.*—B. M. 2 (U. S. E.) is a ringbolt near north end of White Rock Ledge. Elevation: 11.8 feet above mean low water, 8.34 feet above mean tide level.

SERIAL No. 299. *Southport.*—B. M. 3 (U. S. E.) is northeast corner of wall on north property line of Winthrop Perry. Elevation: 12.7 feet above mean low water, 9.23 feet above mean tide level.

SERIAL No. 300. *Southport.*—B. M. 4 is a Coast and Geodetic Survey standard disk set in the rock foundation of a building formerly occupied by the Southport Trust Co. but now a private dwelling and in 1923 was directly across the street from the Southport Savings Co. The bench mark is on the east side of the building, 1.1 feet above the ground, and 24.2 feet from the southeast corner of the building. Elevation: 23.9 feet above mean low water, 20.42 feet above mean sea level.

SERIAL No. 301. Southport.—B. M. 5 is a Coast and Geodetic Survey standard disk set in the foundation of the Southport Savings Co. Building. It is 3 feet directly under the center window sill on the west side of the building, 15 feet above the ground, and 19.5 feet from the northwest corner of the building. Elevation: 23.1 feet above mean low water, 19.60 feet above mean sea level.

SERIAL No. 302. Southport.—B. M. 6 is a Coast and Geodetic Survey standard disk set in the south wall of the Wakeman Memorial Hall. It is just west of the entrance to the building about 1½ feet above the ground and 14.1 feet from the southwest corner of the building. Elevation: 21.4 feet above mean low water, 17.91 feet above mean sea level.

SERIAL No. 303. Greens Farms Station.—B. M. 156 (U. S. E.) is a square cut on the southwest corner of the top step of the southwest wing wall abutment of railroad bridge No. 35.22 over a concrete highway. The bench mark is about 30 meters west of the New Haven depot and Greens Farms and about 8 meters south of the south rail. Elevation: 31.9 feet above mean low water, 28.39 feet above mean sea level.

SERIAL No. 304. Greens Farms Station.—B. M. C 2 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-fourths mile west of depot at Greens Farms. The bench mark is on the south side of the track, 8 meters west of the west end of the south abutment of the highway bridge over the New Haven tracks, 20 meters east of power-transmission tower No. 616, 3 meters south of the south rail, and about 1 foot above the track. Elevation: 26.4 feet above mean low water, 22.95 feet above mean sea level.

SERIAL No. 305. Westport.—B. M. 157 (U. S. E.) is a knob cut on the southwest corner of the bottom step of the northwest wing wall abutment of highway bridge No. 33.15 over the New Haven tracks. The bench mark is on the north side of the track, about three-fourths mile east of the New Haven depot at Westport-Saugatuck, 28 meters east of power-transmission tower No. 592, and about 2 meters north of the north rail. Elevation: 35.1 feet above mean low water, 31.63 feet above mean sea level.

SERIAL No. 306. Westport.—B. M. A 2 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge, on the south side of the track, about three-fourths mile east of the New Haven depot at Westport-Saugatuck. The bench mark is 10 meters southwest of power-transmission tower No. 591, about 140 meters west of highway bridge No. 33.15 over the New Haven tracks, 11 meters south of the south rail, and about level with the track. Elevation: 34.5 feet above mean low water, 30.98 feet above mean sea level.

SERIAL No. 307. Westport.—B. M. 1 (U. S. E.) is a galvanized iron bolt leaded into the horizontal surface of the northeast foundation stone of the stone storehouse of Captain Sherwood on the west side of the river about 75 feet below Westport Bridge. Elevation: 9.3 feet above mean low water, 5.83 feet above mean tide level.

SERIAL No. 308. Saugatuck.—B. M. 2 (C. & G. S.) is a small rectangle 1 inch by 2 inches cut in the northwest angle of a rectangular cross with arms from 4½ to 5 feet long lying approximately from north to south and east to west. The bench mark is on a ledge of gray rock on the top and near the south end of the wooded knoll about due west of the residence of Mr. Lewis. The ledge is flush with the surface of the ground. A large gray boulder about 6 feet high, 7 feet wide, and 15 feet long lies 1.35 meters northward of the bench mark. The leveling rod should be held in the northwest angle of the cross, with its sides over the arms of the cross. Elevation: 31.4 feet above mean low water, 27.86 feet above mean tide level.

SERIAL No. 309. Saugatuck.—B. M. 3 (C. & G. S.) is a square cut on top of grayish rock, 1 foot above the ground at south end of rocky ground, about 250 feet from northwest corner of house of Mr. Lewis, and about 200 feet from knoll on which bench mark 2 is located. Pecks Ledge Lighthouse is on line about halfway between the house and knoll from the bench mark. Elevation: 22.6 feet above mean low water, 19.11 feet above mean tide level.

SERIAL No. 310. Saugatuck.—B. M. 158 (U. S. E.) is a knob cut on the northeast corner of the retaining wall on the south side of the track at the west abutment of railroad bridge No. 32.36 over the Saugatuck River. The bench mark is 100 meters east of the New Haven depot at Saugatuck, 2.5 meters east of the power-transmission tower nearest the west end of the bridge, and 2.5 meters south of south rail. Elevation: 30.5 feet above mean low water, 27.02 feet above mean sea level.

SERIAL No. 311. Saugatuck.—B. M. 2, Judys Point (U. S. E.) is a galvanized iron bolt leaded into ledge about 20 feet north of highest part of

point of rock known as Judys Point on the westerly side of the Saugatuck River about 3,600 feet below the railroad bridge at Saugatuck. Elevation: 8.9 feet above mean low water, 5.42 feet above mean tide level.

SERIAL No. 312. *Saugatuck*.—B. M. 6 (C. & G. S.) is the top of northwest corner of cement block 1.8 by 2.8 feet embedded 9 feet in the ground and projecting 1 foot above the ground. The block is 7 feet from the northwest corner of house of F. E. Lewis, 2d, and at the foot of the steps. This block is used as the initial bench mark for surveys made on the property of Mr. Lewis. Elevation: 23.1 feet above mean low water, 19.56 feet above mean tide level.

SERIAL No. 313. *Saugatuck*.—B. M. 7 is a Coast and Geodetic Survey standard disk set in the highest part of boulder on south end of wooded knoll, west of house of Mr. Lewis. Boulder is about 6 feet high and is very prominent. Elevation: 37.9 feet above mean low water, 34.40 feet above mean tide level.

SERIAL No. 314. *East Norwalk*.—B. M. Y 1 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge, about one-half mile east of the New Haven depot at East Norwalk. The bench mark is on the south side of the track, 43 meters west of power-transmission tower No. 553, and is 300 meters east of a highway bridge over the track and 2 meters south of the south rail. It is about level with the track. Elevation: 58.0 feet above mean low water, 54.53 feet above mean sea level.

SERIAL No. 315. *South Norwalk*.—B. M. X 1 (C. & G. S.), established by the United States Army Engineers and city of South Norwalk, is the top of a three-fourths inch brass plug, marked "U. S. H. L.," sunk flush with the concrete sidewalk on the east end of the concrete highway and trolley drawbridge across the Norwalk River. The bench mark is about 66 meters east of the east end of the draw and 18 inches south of the outer edge of the curb on the south side of the draw. Elevation: 19.5 feet above mean low water, 15.96 feet above mean sea level.

SERIAL No. 316. *South Norwalk*.—B. M. 3 is a Coast and Geodetic Survey standard disk set in the cement sidewalk on the south side of the concrete highway and trolley drawbridge across the Norwalk River. The bench mark is set flush with the sidewalk, in an angle of the parapet, and is 15.9 feet west of the west end of the draw and 9.2 feet from the outer edge of the curb. Elevation: 20.6 feet above mean low water, 17.06 feet above mean sea level.

SERIAL No. 317. *South Norwalk*.—B. M. 5 is a Coast and Geodetic Survey standard disk set vertically in the side of foundation of Country Club. The mark is at the west end of the clubhouse, 41.8 feet from the sea wall, 1.5 feet above the ground, and 0.35 foot below the sill. Elevation: 13.1 feet above mean low water, 9.64 feet above mean tide level.

SERIAL No. 318. *South Norwalk*.—B. M. 6 (C. & G. S.) is a brass plug five-eighths inch in diameter, slightly countersunk in concrete walk on south side of concrete highway and trolley drawbridge, 1.6 feet from outer edge of curb, 34.7 feet from fourth lamp-post west of draw, and 15.5 feet from fifth lamp-post west of draw. Plug has "U. S. 6 H. L." stamped on it. Elevation: 19.3 feet above mean low water, 15.78 feet above mean tide level.

SERIAL No. 319. *South Norwalk*.—B. M. 7 (U. S. E.) is the southeast corner of southwest wing wall of the west abutment of railroad bridge over Norwalk River. Elevation: 33.5 feet above mean low water, 29.96 feet above mean tide level.

SERIAL No. 320. *South Norwalk*.—B. M. 8 (U. S. E.) is an iron bolt set horizontally in the outer face of outer wharf stringer, 2 feet south of passenger gangway at the Country Club Landing, Dorlans Point, mouth of Norwalk River. The reading point is the top horizontal tangent to bolt. Elevation: 11.0 feet above mean low water, 7.54 feet above mean tide level.

SERIAL No. 321. *South Norwalk*.—B. M. 160 (U. S. E.) is a brass bolt set in stone on the eastern abutment of the New York, New Haven & Hartford Railroad Bridge on the south side of the tracks. In 1916 the bolt had been removed, and the rod was held on the drill hole. It is also known as "U. S. E. B. M. 6." Elevation: 38.3 feet above mean low water, 34.81 feet above mean tide level.

SERIAL No. 322. *South Norwalk*.—B. M. W. 1 is a Coast and Geodetic Survey standard disk cemented in the bluestone water table of the city hall of South Norwalk. It is at the southwest corner of the building, 8 inches from the east side and 5 inches above the sidewalk. Elevation: 25.6 feet above mean low water, 22.10 feet above mean sea level.

SERIAL No. 323. South Norwalk.—B. M. 162 (U. S. E.) is a knob cut on the northeast corner of the southwest parapet of railroad bridge No. 28.99. The bench mark is about 200 meters west of the New Haven depot at South Norwalk, about 8 meters east of power-transmission tower No. 517, and 2 meters south of south rail. Elevation: 39.1 feet above mean low water, 35.56 feet above mean sea level.

SERIAL No. 324. South Norwalk.—B. M. U 1 is a Coast and Geodetic Survey standard disk set in a natural rock ledge about one-fourth mile west of the New Haven depot at South Norwalk. It is about 30 meters east of railroad bridge No. 28.84 over the tracks at Lowe Street, 15 meters west of power-transmission tower No. 516, and 2 meters south of the south rail. Elevation: 41.8 feet above mean low water, 38.28 feet above mean sea level.

SERIAL No. 325. South Norwalk.—B. M. T. 1 (C. & G. S.) is the top of a 6 by 6 inch granite post projecting about 12 inches above the ground, about 40 meters west of bridge No. 27.78, where the Roton Hill Road crosses the New Haven tracks, at a point about 1.2 miles west of the railroad depot at South Norwalk. It is about 15 meters northeast of power-transmission tower No. 497. The granite post, which has a large cross cut in the top, appears to be a railroad bench mark. Elevation: 69.6 feet above mean low water, 66.07 feet above mean sea level.

SERIAL No. 326. Five Mile River.—B. M. 1 (U. S. E.) is the highest part of ledge, 123 feet S. 5° E. (mag.) from southwest corner of Monsell's dock, 6 inches south of small vertical face of ledge and 2 feet north of low wall. Elevation: 8.6 feet above mean low water, 4.98 feet above mean tide level.

SERIAL No. 327. Five Mile River.—B. M. 3 (U. S. E.) is a drill hole and a cross 52.7 feet southeasterly from the south face of Captain Bell's dock, measured along the face of the retaining wall. Elevation: 11.3 feet above mean low water, 7.65 feet above mean tide level.

SERIAL No. 328. Rowayton.—B. M. 163 (U. S. E.) is a knob cut on the southeast corner of the west parapet of railroad bridge No. 27.17. The bench mark is about 100 meters west of the New Haven depot, 35 meters west of power-transmission tower No. 486, and about 5 meters south of the south rail. Elevation: 55.0 feet above mean low water, 51.31 feet above mean sea level.

SERIAL No. 329. Darien.—B. M. R 1 is a Coast and Geodetic Survey standard disk embedded in the northwest corner of the east parapet of railroad bridge No. 26.86 over the Boston Post Road. The bench mark is 75 meters east of the New Haven depot at Darien, 25 meters west of power-transmission tower No. 464, and 3.5 meters north of the north rail. Elevation: 63.7 feet above mean low water, 60.01 feet above mean sea level.

SERIAL No. 330. Darien.—B. M. 165 (U. S. E.) is a knob cut on the southeast corner of the east parapet of railroad bridge No. 25.86 over the Boston Post Road. The bench mark is 75 meters east of the New Haven depot, 40 meters west of power-transmission tower No. 464, and 4 meters south of the south rail. Elevation: 63.5 feet above mean low water, 59.86 feet above mean sea level.

SERIAL No. 331. Darien.—B. M. P 1 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-eighths mile west of the New Haven depot at Darien. It is on the north side of the track, about 40 meters east of power-transmission tower No. 455, about 2.5 meters north of the north rail, and about a foot above the track. Elevation: 75.0 feet above mean low water, 71.33 feet above mean sea level.

SERIAL No. 332. Noroton.—B. M. 166 (U. S. E.) is a knob cut on the northwest corner of the second step from the bottom of the wing wall abutment of highway bridge No. 24.62 over the New Haven tracks. The bench mark is about 75 meters east of the Noroton Station, 37 meters east of power-transmission tower No. 447, and 2 meters south of south rail. Elevation: 86.8 feet above mean low water, 83.12 feet above mean sea level.

SERIAL No. 333. Cove Harbor.—B. M. 1 (C. & G. S.) is the niche or step chiseled into the west side of the corner stone under the southwest corner of storehouse H. The storehouse is a wooden building and the southernmost of the Stamford Manufacturing Co. storehouses. A triangle was stamped into the board directly above the niche stone. Elevation: 11.7 feet above mean low water, 8.07 feet above mean tide level.

SERIAL No. 334. Cove Harbor.—B. M. 2 (C. & G. S.) is on the northern end of the stone windowsill of the first window south from northeast corner of the Stamford Manufacturing Co. laboratory building. A triangle chiseled into the sill marks the spot where the rod was held. Elevation: 14.6 feet above mean low water, 10.90 feet above mean tide level.

SERIAL No. 335. *Cove Harbor*.—B. M. 3 (C. & G. S.) is a triangle chiseled into the stone on the top of the stone foundation at the southeast corner of the Stamford Manufacturing Co. office building. Elevation: 11.5 feet above mean low water, 7.85 feet above mean tide level.

SERIAL No. 336. *Cove Harbor*.—B. M. 4 (C. & G. S.) is a triangle chiseled into the east end of stone windowsill of the first window west from the northeast corner of the Stamford Manufacturing Co. office building. Elevation: 13.4 feet above mean low water, 9.77 feet above mean tide level.

SERIAL No. 337. *Cove Harbor*.—B. M. 5 (C. & G. S.) is a triangle chiseled into the top of brass nut on top of the hydrant at the south side of the bridge crossing the pond north of the Stamford Manufacturing Co. office building. Elevation: 14.2 feet above mean low water, 10.53 feet above mean tide level.

SERIAL No. 338. *Glenbrook*.—B. M. N 1 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about three-fourths mile east of the New Haven depot at Glenbrook. The bench mark is about 38 meters east of power-transmission tower No. 429, about 140 meters west of railroad bridge No. 24.03, 13 meters north of the north rail, and about 3 feet above the track. Elevation: 74.9 feet above mean low water, 71.25 feet above mean sea level.

SERIAL No. 339. *Glenbrook*.—B. M. 167 (U. S. E.) is a knob cut in the southeast corner of the west parapet of railroad bridge No. 22.77 at Seeley's Crossing, 0.5 mile west of Glenbrook. The bench mark is 33 meters east of power-transmission tower No. 397 and 2.5 meters south of the south rail. Elevation: 45.7 feet above mean low water, 42.06 feet above mean sea level.

SERIAL No. 340. *Stamford*.—B. M. L 1 is a Coast and Geodetic Survey standard disk embedded in the top course of stone of the east abutment of railroad bridge No. 22.22, at which point the New Haven track crosses the Boston Post Road. The bench mark is about seven-eighths mile east of the New Haven depot at Stamford, 15 meters west of power-transmission tower No. 388, and 1.5 meters south of the south rail. Elevation: 37.3 feet above mean low water, 33.62 feet above mean sea level.

SERIAL No. 341. *Stamford*.—B. M. K. 1 is a Coast and Geodetic Survey standard disk embedded in the second course of stone above the sidewalk at the northeast corner of the First Stamford National Bank on Main Street. The bench mark is 10 inches from the north face of the building and 24 inches above the ground. Elevation: 22.8 feet above mean low water, 19.15 feet above mean sea level.

SERIAL No. 342. *Stamford*.—B. M. J 1 (C. & G. S.) is a cross cut in the 4-foot granite wall along the south end of the main entrance to the Town Hall at Main and Atlantic Streets in Stamford. The bench mark is 3 inches from the south end of the wall and 9 inches from the east face of the building. Elevation: 24.3 feet above mean low water, 20.61 feet above mean sea level.

SERIAL No. 343. *Stamford*.—B. M. H 1 (C. & G. S.) is a square cut on the southeast corner of the bottom step at the south entrance to the post office at the corner of Atlantic and Federal Streets. (This is also a city of Stamford bench mark.) Elevation: 28.0 feet above mean low water, 24.30 feet above mean sea level.

SERIAL No. 344. *Stamford*.—B. M. G 1 is a Coast and Geodetic Survey standard disk cemented in the granite foundation of the post office at the corner of Atlantic and Federal Streets. The bench mark is at the southwest corner of the small areaway at the south entrance. It is 5 inches from the east face of the building and 5 inches from the north side of the 4-foot granite wall which incloses the areaway. Elevation: 27.7 feet above mean low water, 24.01 feet above mean sea level.

SERIAL No. 345. *Stamford*.—B. M. F 1 is a Coast and Geodetic Survey standard disk embedded in a natural rock ledge about one-fourth mile west of the New Haven depot at Stamford and about 40 meters northeast of power-transmission tower No. 362. It is about 40 meters north of the north rail and about 2½ feet above the ground. Elevation: 43.0 feet above mean low water, 39.33 feet above mean sea level.

SERIAL No. 346. *Stamford*.—B. M. 2 is a Coast and Geodetic Survey standard disk cemented in the solid rock near the southern end of Jacks Island in the outer harbor. Elevation: 10.6 feet above mean low water, 6.93 feet above mean tide level.

SERIAL No. 347. *Stamford*.—B. M. A. 2 (U. S. E.) is Station A, on Lower White Rock, used in the establishment of harbor lines, and consists of a depressed square with a drill hole in center on the southerly side of the rock. Elevation: 9.9 feet above mean low water, 6.25 feet above mean tide level.

SERIAL No. 348. *Stamford*.—B. M. 3 is a Coast and Geodetic Survey standard disk set in the north concrete wall of the Stamford Yacht Club building, 1.65 feet from the northwest corner of the building and 4.2 feet higher than the foundation coping. Elevation: 19.0 feet above mean low water, 15.36 feet above mean tide level.

SERIAL No. 349. *Stamford*.—B. M. 4 is a Coast and Geodetic Survey standard disk set with cement in the top of an immense rock across the Rippowam River from the Stamford Motor Co. It is in the back yard of No. 40 Davenport Street and is the smaller and most southerly of two rocks. Part of the rock is in the water at high tide, and the bench mark is on the high-water line. Elevation: 15.3 feet above mean low water, 11.63 feet above mean tide level.

SERIAL No. 350. *Stamford*.—B. M. 5 (U. S. E.) is a brass screw on snubbing pile at southeast corner of *Flemming's Dock*. Elevation: 14.0 feet above mean low water, 10.39 feet above mean tide level.

SERIAL No. 351. *Stamford*.—B. M. 6 (U. S. E.) is a brass screw in top of third fender pile from northwest corner of dock of Stamford Motor Co. Elevation: 10.8 feet above mean low water, 7.18 feet above mean tide level.

SERIAL No. 352.—*Stamford*.—B. M. 168 (U. S. E.) is the northeast corner of bridge seat of west abutment of railroad bridge over Canal Street. Elevation: 26.6 feet above mean low water, 22.96 feet above mean tide level.

SERIAL No. 353. *Stamford*.—B. M. 169 (U. S. E.) is the southeast corner, marked "B. M.", of sandstone capstone of wall over sewer outlet at northwest corner of head of canal, East Branch. Elevation: 11.6 feet above mean low water, 7.91 feet above mean tide level.

SERIAL No. 354. *South Beach Station*.—B. M. 171 (U. S. E.) is a knob cut on northeast corner of southeast wing wall of railroad bridge over highway. Elevation: 37.7 feet above mean low water, 34.08 feet above mean tide level.

SERIAL No. 355. *Riverside*.—B. M. E 1 is a Coast and Geodetic Survey standard disk cemented in natural rock ledge on the south side of the New Haven tracks, about 75 meters west of the New Haven depot at Riverside, about 20 feet west of bridge No. 18.32 at Riverside Avenue and about 4 meters east of power-transmission tower No. 318. The bench mark is 4 meters south of the south rail and about 3 feet above the track. Elevation: 46.2 feet above mean low water, 42.46 feet above mean sea level.

SERIAL No. 356. *Mianus River*.—B. M. 2 (U. S. E.) is on northeast corner of west parapet of Mianus River railroad bridge. Elevation: 35.9 feet above mean low water, 32.17 feet above mean tide level.

SERIAL No. 357. *Mianus River*.—B. M. 172 (U. S. E.) is on southeast corner of south angle iron of east aerial tower of railroad bridge over Mianus River, 3 feet below walk. Elevation: 32.9 feet above mean low water, 29.16 feet above mean tide level.

SERIAL No. 358. *Cos Cob*.—B. M. D 1 is a Coast and Geodetic Survey standard disk in the top of a concrete post 45 inches long and projecting 6 inches above the ground, about three-eighths mile south of the New Haven depot at Cos Cob, about 25 meters north of railroad bridge 17.36 at Meads Lane, 25 meters southeast of the east rail, and about 30 meters south of power-transmission tower No. 302. Elevation: 33.9 feet above mean low water, 30.23 feet above mean sea level.

SERIAL No. 359. *Greenwich*.—B. M. C 1 is a Coast and Geodetic Survey standard disk set in a natural rock ledge about 200 meters east of New Haven depot at Greenwich, 100 meters east of railroad bridge No. 16.28 where the track crosses Greenwich Avenue, about 35 meters east of power-transmission tower No. 283, about 3.5 meters south of the south rail and 0.3 meter below the track in the first rock cut east of the railroad station. Elevation: 37.9 feet above mean low water, 34.19 feet above mean sea level.

SERIAL No. 360. *Greenwich*.—B. M. B 1 is a Coast and Geodetic Survey standard disk embedded in the south face of the Town Hall, at the southeast corner, 14 inches from the east side and 15 inches from the ground. The Town Hall is at the intersection of Greenwich Avenue and Havermeyer Place. Elevation: 74.7 feet above mean low water, 70.99 feet above mean sea level.

SERIAL No. 361. *Greenwich*.—B. M. 6 is a Coast and Geodetic Survey standard disk cemented in a ledge of rocks across the road east of the Indian Harbor Yacht Club, 1.5 meters east of the highest point on ledge, and 8.5 meters from the southeast end of ledge. Elevation: 17.6 feet above mean low water, 13.91 feet above mean sea level.

SERIAL No. 362. *Greenwich*.—B. M. 173 (U. S. E.) is the top of a knob at the southwest corner of the top of a retaining wall on the south side of railroad track about 50 meters east of railroad bridge No. 1628, 150 meters east of the railroad station, 2.5 meters south of the south rail, and 3.5 meters east of power-transmission tower No. 232. The letters "U. S. B. M.," with an arrow pointing to the bench mark, were chiseled in the same stone in which the bench mark was placed, about 50 meters northeast of entrance to Bruce Memorial Park. Elevation: 39.6 feet above mean low water, 35.94 feet above mean sea level.

SERIAL No. 363. *Greenwich*.—B. M. 1 (C. & G. S.) is the top of an iron plug set flush with the surface and cemented into the middle of the flat capstone of the sea wall, 28 feet southwest from the northwest corner of the veranda of the Indian Harbor Yacht Club nearest its southern boat landing. It is on the stone nearest the cement walk. Elevation: 11.1 feet above mean low water, 7.42 feet above mean tide level.

SERIAL No. 364. *Greenwich*.—B. M. A. 1 (U. S. E.) is an iron plug in the top of granolithic walk at southwest corner of Indian Harbor Yacht Club wall which runs along the southerly front of the yacht club immediately inside the low parapet wall. Elevation: 10.9 feet above mean low water, 7.22 feet above mean tide level.

SERIAL No. 365. *Greenwich*.—B. M. 2a (C. & G. S.) is the top of an iron bar where it has been broken off flush with the surface of the capstone of sea wall on south side of northern boat landing of Indian Harbor Yacht Club. This was originally one end of a long iron bar with both ends cemented into capstone of sea wall and used to hold wharf to sea wall. It is south of newer and heavier rod that is now used to hold wharf to sea wall. Elevation: 11.5 feet above mean low water, 7.77 feet above mean tide level.

SERIAL No. 366. *Greenwich*.—B. M. 3 (C. & G. S.) is the top of bend in the same iron bar as described for B. M. 2a, but on the northern side of the wharf. Elevation: 11.5 feet above mean low water, 7.79 feet above mean tide level.

SERIAL No. 367. *Greenwich*.—B. M. 5 is a Coast and Geodetic Survey standard disk set with cement in stone foundation of Indian Head Yacht Club. It is on the north side of the building, about 0.7 meter from northwest corner, 0.45 meter above the ground, and 7 meters from outer edge of sea wall. Elevation: 13.4 feet above mean low water, 9.69 feet above mean tide level.

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