## HISTORY OF PREVIOUS IMPROVEMENT.

The river and harbor act of March 3, 1875, directed a survey of this bay, which was made during the summer of 1875, and reported on November 30, 1875. (See Annual Report for 1876, Part I, pp. 217 *et seq.*) The improvement recommended in this report was for a channel 200 feet wide and 7½ feet deep at mean low-water, extending across the north shore of the bay from Pawcatuck Point to the deep water near the mouth of the bay opposite Sandy Point, and the removal of dangerous rocks in the channel near Rhodes' Folly and Watch Hill. The estimated cost of this improvement was $51,000.

Congress by act of August 14, 1876, appropriated $5,000 for the work. This money was expended in removing the rocks near Rhodes' Folly and in dredging and removing rocks from the east end of the proposed channel at Pawcatuck Point.

## WORK EXECUTED DURING FISCAL YEAR ENDING JUNE 30, 1879.

By act of Congress approved June 18, 1878, an appropriation of $10,000 was made for the continuation of the improvement. Advertisements for proposals for excavation were issued August 5, 1878. The following tenders were received in answer to the advertisement:

*Abstract of proposals received at the Engineer Office, U. S. A., Newport, R. I., on Tuesday, August 20, 1878, for excavation in Little Narragansett Bay, Rhode Island and Connecticut.*

| Name and address. | Price for material, including bowlders of one cubic yard. | Price for bowlders over one cubic yard. | Commence. | Complete. | Quantities called for will cost— |
|---|---|---|---|---|---|
| | | | 1878. | 1879. | |
| E. R. Seward, Albany, N. Y. | $0 30 | $6 75 | Sept. 2 | June 30 | $8,422 50 |
| Morris & Cuming's Dredging Company, New York City | 40 | 6 00 | ..... | June 30 | 9,880 00 |
| S. A. Hammond, Bridgeport, Conn | 35 | 9 00 | Sept. 2 | June 30 | 10,332 50 |
| James Caler, Stamford, Conn | 35 | 9 00 | Nov. 1 | June 30 | 10,332 50 |
| George C. Fobes & Co., Baltimore, Md | 58 | 2 80 | ..... | June 30 | 11,671 00 |
| Morris F. Brainard, Albany, N. Y. | 1 25 | For all. | Sept. 10 | June 30 | 23,000 00 |

*Abstract of contract for excavation in Little Narragansett Bay, Rhode Island and Connecticut.*

| Name and address of contractor. | Date of contract. | Commence. | Complete. |
|---|---|---|---|
| E. R. Seward, Albany, N. Y | Aug. 22, 1878 | Sept. 2, 1878 | June 30, 1879 |

Mr. Seward arranged with Mr. S. A. Hammond, of Bridgeport, to do this work for him. Operations were begun August 30, with a dredge and dump-scows, a tug, and a stone-scow with steam hoisting apparatus. The work was continued until December 23, when it had to be suspended because of the cold weather. It was resumed again April 3, 1879, and continued until June 30, when the contract was completed.

There were removed under this contract 19,776.85 cubic yards of material, including bowlders of 1 cubic yard, and 348.60 cubic yards of bowlders of a larger size than one cubic yard. The channel completed around Pawcatuck Point is 7½ feet deep at mean low-water, about 900 feet long, and 185 feet wide. It is thought that the work done embraces all the difficult excavation that will be encountered, with the exception of 15 feet additional width necessary to make the required width of channel of 200 feet. This work has been under the superintendence of Mr. H. A. Bentley, assistant engineer.



## PROBABLE OPERATIONS DURING THE NEXT FISCAL YEAR.

The act of Congress approved March 3, 1879, appropriated $5,000 for the continuation of this improvement, but the money has not yet been made available. It is proposed with this money to excavate a channel of a depth of 7½ feet at mean low-water, and of as great a width as the money will pay for, from the channel already made at Pawcatuck Point to the deep water opposite Sandy Point. This will be done during the year if the money is made available in time. Mr. Hammond will also be employed for a short time in cleaning up the cuts already made.

The amount of money necessary to complete the projected improvement is $31,000. It is desirable that $20,000 should be appropriated for the fiscal year ending June 30, 1881, as this amount would probably secure a channel that could be navigated, although not of the required width.

## IMPORTANCE OF THE IMPROVEMENT.

The places that will be benefited by this improvement are Westerly and Watch Hill. Westerly is a manufacturing village on the Pawcatuck River. It has fine stone-quarries, and is generally a thriving town. The full value of the improvement of the Pawcatuck River made by the general government cannot be realized until the projected improvement in the bay is completed. This improvement will also be of the greatest value to Watch Hill, which has its only landing in the bay. Watch Hill is a popular summer resort where 45,000 passengers were landed from the steamboats during the past year.

The number of vessels taken through Little Narragansett Bay during the year 1878 was 205. There were 31 vessels drawing too much water to cross the bay that were lightered at Stonington and their cargoes taken to Westerly.

The accompanying map, in 3 sheets, of Pawcatuck River and Little Narragansett Bay shows the present condition of the water communication between Westerly and Watch Hill with the sound, and the proposed improvement.

Little Narragansett Bay is in the collection-districts of Providence and Stonington; the latter is the nearest port of entry. The revenue collected during the fiscal year ending June 30, 1879, was: Providence, $145,187.79; Stonington, $1,811.49.

*Money statement.*

| | | |
|---|---|---|
| July 1, 1878, amount available | $10,679 38 | |
| Amount appropriated by act approved March 3, 1879 | 5,000 00 | |
| | | $15,679 38 |
| July 1, 1879, amount expended during fiscal year | 8,156 81 | |
| July 1, 1879, outstanding liabilities | 828 60 | |
| | | 8,985 41 |
| July 1, 1879, amount available | | 6,693 97 |
| Amount (estimated) required for completion of existing project | | 31,000 00 |
| Amount that can be profitably expended in fiscal year ending June 30, 1881 | | 20,000 00 |

## B 10.

### IMPROVEMENT OF CONNECTICUT RIVER BELOW HARTFORD, CONNECTICUT.

This portion of the river is, by its course, about 50 miles. Hartford is practically at the head of tide-water. The bar at the mouth, called Saybrook Bar, is a sand shoal, not having in its natural condition more than 6 feet at mean low-water. The mean rise of the tide is here about 3½ feet. This limits the draught of vessels, and after passing it no trouble is found, till Middletown, 16 miles from Hartford, is passed. In this last reach the river loses its estuary character, and resembles ordinary rivers with alluvial banks. The shoals that form here at every flood stage require dredging, and the practice has been to make the artificial channel about 60 feet wide and 9 feet deep at low-water, so that the regular steam-packets that run from Hartford to New York can pass it at that stage going out, and reach the Saybrook Bar at high tide. There are two draw-bridges with clear openings of 160 feet, one near Saybrook and the other at Middletown.

#### HISTORY OF THE IMPROVEMENT.

An examination and estimate for improving the river mainly between Hartford and Middletown was made in 1867. (See Annual Report, 1868, pp. 752–784.) The work to be done was dredging at shoals, and removing wing-dams placed by an improvement company years ago, which, by neglect, had become obstructions, and putting in piling. An appropriation, of which $20,000 was allotted to this part of the river, was made in 1870, and in that and the following year the river was cleared of obstructions so as to give a low-water depth in the channel of 8 feet. The method of improvement adopted requires every year that dredging should be repeated at certain places, notably at Glastonbury Pier. A thorough survey of Saybrook Bar was made in 1872, and a plan of improvement by stone jetties adopted the following season. This latter work has been nearly completed, and with good effect; the depth on the bar being increased and temporary shoaling less frequent than before. At different times wrecks, forming dangers, have been removed from this bar. Some additional method of lighting the entrance is now called for.

A good survey has been made from Hartford down to Rocky Hill, a distance of about 10 miles, and the preparation of maps and plan of permanent improvement is in progress.

#### WORK DURING THE LAST FISCAL YEAR.

Besides the survey above referred to, 22,629 cubic yards of material was removed (making a channel 60 feet wide, 9 feet deep at low-water) at Hartford Bar, Glastonbury Bar, and Pratt's Ferry Bar. Two stumps, 1 tree, and 14 logs were removed from Press Bend, about 1 mile below Pratt's Ferry Bar. The work was done by a dredge employed at the rate of $75 per day.

#### AT SALMON RIVER.

The appropriation of $30,000 for the improvement of Connecticut River below Hartford, by act approved June 18, 1878, provided for the



expenditure of 2,000 for the improvement of the mouth of Salmon River in the town of East Haddam. By an examination of the locality, and a conference with those interested in the improvement, it was learned that the improvement sought was a channel through a bar near the mouth of the river. There was a depth there of only about 3 feet at low-water for a distance of about 1,700 feet, with deep water at either end. Proposals to do the necessary excavation were invited, and the following were received:

*Abstract of proposals received at the Engineer Office, U. S. A., Tuesday, August 20, 1878, for excavation in the Salmon River, Connecticut.*

| Name and address of bidder. | Price per cubic yard. | Commence— | Complete— | $1,800 will pay for yards— |
|---|---|---|---|---|
| H. N. and A. J. Beardsley, Bridgeport, Conn | $0 14⅞ | Oct. 1, 1878 | Nov. 30, 1878 | 12, 101 |
| Morris F. Brainard, Albany, N. Y | 24 | Oct. 10, 1878 | Nov. 30, 1878 | 7, 500 |
| E. R. Seward, Albany, N. Y | 25 | Oct. 1, 1878 | Nov. 30, 1878 | 7, 200 |
| James Caler, Stamford, Conn | 35 | Oct. 1, 1878 | Nov. 30, 1878 | 5, 143 |
| George C. Fobes & Co., Baltimore, Md | 38 | ..... | June 30, 1879 | 4, 739 |

*Abstract of contract for excavation in Salmon River, Connecticut.*

| Name and address of contractors. | Date of contract. | Commence— | Complete— |
|---|---|---|---|
| H. N. and A. J. Beardsley, Bridgeport, Conn | Aug. 22, 1878 | Oct. 1, 1878 | Nov. 30, 1878 |

The contractors commenced work September 27, 1878, and completed it October 9, 1878; they removed 12,101 cubic yards of material, consisting mostly of mud with decayed vegetable matter and sawdust. The channel made is 1,700 feet long, 35 feet wide, and 7 feet deep at low-water. The completed improvement enables vessels to go to within a mile and a half of the village of Moodus, effecting a saving of 3½ miles in the cartage of coal, &c., which formerly had to be taken over a hilly road from Goodspeed's Landing on the Connecticut River, a distance of 5 miles. The channel made is deemed sufficiently large for the wants of the place.

#### SAYBROOK JETTY AT MOUTH OF RIVER.

Under the appropriation of $30,000 by act of Congress approved June 18, 1878, for the improvement of Connecticut River below Hartford, tenders for about 10,000 tons of granite for this jetty were invited. The following proposals were received:

*Abstract of proposals received at the Engineer Office, U. S. A., Newport, R. I., Tuesday, August 20, 1878, for furnishing riprap granite for the jetty at the mouth of Connecticut River, Connecticut.*

| Name and address of bidder. | Price per ton of 2,240 pounds. | Commence— | Complete— | 10,000 tons will cost— |
|---|---|---|---|---|
| Francis A. Smith, New York, N. Y. | $0 77 | At once | June 30, 1879 | $7,700 |
| James Scully, Groton, Conn | 83 | Sept. 1, 1878 | May 1, 1879 | 8,300 |
| W. A. Birnie, Springfield, Mass | 85 | Sept. 1, 1878 | June 1, 1879 | 8,500 |
| Ingerson & Molthrop, New London, Conn | 87 | Sept. 2, 1878 | June 30, 1879 | 8,700 |
| John A. Bonker, New York, N. Y. | 90 | Oct. 1, 1878 | July 1, 1879 | 9,000 |
| Francis Locke, Gloucester, Mass | 94 | Sept. 10, 1878 | June 30, 1879 | 9,400 |
| Derry & Edwards, Sharon and Quincy, Mass | 96½ | Sept. 1, 1878 | July 1, 1879 | 9,650 |
| Michael O'Neil, Hartford, Conn | 2 67 | | | 26,700 |
| Walter Doty, Port Edward, N. Y. | 2 95 | Sept. 20, 1878 | Mar. 1, 1879 | 29,500 |

*Abstract of contract for furnishing riprap granite for jetty at mouth of Connecticut River, Connecticut.*

| Name and address of contractor. | Date of contract. | Commence— | Complete— |
|---|---|---|---|
| Francis H. Smith, New York City | Aug. 22, 1878 | Sept. 2, 1878 | June 30, 1879 |

Under this contract two vessel-loads of stone were placed in the work in September, 1878; from this time until May, 1879, nothing further was done. The contractor each month made promises of prosecuting the work, which he never fulfilled. In May, 1879, 837 tons were placed in the jetty, and in June, 876.3, making the total number of tons up to June 30, 1879, 1,853.3. The contractor, under date of June 27, 1879, asked for an extension of the time of completion of his contract for 60 days; on account of the lateness of the working season and unforeseen misfortunes he was unable to complete his contract. The low price at which the work was being done made it desirable that the extension be granted, and it was accordingly done.

The stone has been deposited in the east jetty in extending it seaward about 220 feet. This jetty is now 1,372 feet long. The work has been done at a less price than was estimated, and consequently the available money has accomplished more. It is thought that when the stone called for in Mr. Smith's contract has been delivered, the jetty will be extended as far as required. There will be some building up and repairs needed to both the east and the west jetty, which will require probably an expenditure of $5,000. It may also be advisable to do some dredging between the jetties. A survey of the bar was made this spring; a map of it prepared for publication accompanies this report.

### PROBABLE OPERATIONS DURING THE NEXT FISCAL YEAR.

By act of Congress approved March 3, 1879, an appropriation of $10,000 was made for the improvement of Connecticut River below Hartford.

It is deemed best to expend $5,000 of the money in dredging the bars between Hartford and Middletown during the present season and to reserve the rest of the money for the same purpose next year, as it is often necessary to do this work before the time the general appropriations are



made. An appropriation of $10,000 is required to complete the work on the Saybrook jetties, and there should be on hand available at all times about $1,000 to promptly remove any wreck that may lodge in the improved channel at this place.

This part of the river is in the Middletown collection-district, which place is a port of entry. The revenue collected during the fiscal year ending June 30, 1879, was $10,365.23.

*Money statement.*

| | | |
|---|---|---|
| July 1, 1878, amount available | $32,144 68 | |
| Amount appropriated by act approved March 3, 1879 | 10,000 00 | |
| | | $42,144 68 |
| July 1, 1879, amount expended during fiscal year | 16,756 52 | |
| July 1, 1879, outstanding liabilities | 142 76 | |
| | | 16,899 28 |
| July 1, 1879, amount available | | 25,245 40 |
| Amount that can be profitably expended in fiscal year ending June 30, 1881. | | 16,000 00 |

## B 11.

### IMPROVEMENT OF CONNECTICUT RIVER ABOVE HARTFORD, CONNECTICUT, AND BELOW HOLYOKE, MASSACHUSETTS.

From Hartford to Windsor Locks at the foot of Enfield Falls, a distance of 10¾ miles, the river has a sedimentary bed and banks, and is naturally shoal at low-water, giving sometimes, where not improved, a depth of only 18 inches. Then Enfield Falls—a rock rapid—extending 5¼ miles, prevents all navigation at the present time, but vessels drawing 3 feet can pass around them by means of the canal having locks 80 feet by 18 feet. This canal is owned by a corporation charging toll, and is mainly used to furnish water-power. From the head of the "Falls" to Holyoke the navigation is good, having a low-water depth of not less than 5 feet. There is seldom any useful tide from the ocean above Hartford.

### HISTORY OF THE IMPROVEMENT.

This is given in full in the last Annual Report, Part I, pp. 247–393, up to that date. Surveys and estimates were begun in 1870, and work at several shoals by building wing-dams begun between Hartford and Enfield Falls, in 1871. Some dredging at Barber's Landing Bar was done in 1873. Plans for the thorough improvement of the river have been made and are all reported in the last Annual Report, but no adequate appropriations for doing the work have been made.

### WORK DURING THE PAST FISCAL YEAR.

This consisted in building 2 wing-dams of stone at *Barber's Landing Bar*, situated about 4 miles above Hartford, under a contract made with Sidney Edsall, of New York, as reported last year. These dams extend out from the shore; the upper one 550 feet, the lower one 500 feet. They are about 1,700 feet apart. About 2,100 cubic yards of stone was used, costing $2.11 per yard. The effect of the work will be shown during the next low-water.

About 334 cubic yards of stone was also used in repairing the wing-

dam built in 1871 at Farmington Bar, about 5 miles above Hartford. These wing-dams are only partial improvement, designed to allow such vessels as can pass through the canal locks to navigate this reach of river.

IMPORTANCE OF THE IMPROVEMENT.

If the river is thoroughly improved according to the plans submitted, which will require probably $2,000,000, all the transportation for Springfield and Holyoke can be by water, which now mainly is by rail, but it must be a thorough work to accomplish this result. It would ultimately be of much value to the whole valley of the Connecticut River.

The estimates of last year are repeated.

The Connecticut River above Hartford and below Holyoke is in the Middletown collection-district, and that place is the nearest port of entry. The amount of revenue collected there during the fiscal year ending June 30, 1879, was $10,365.23.

*Money statement.*

*Above Hartford and below Enfield Falls, Connecticut.*

| | |
|---|---|
| July 1, 1878, amount available | $14,932 76 |
| July 1, 1879, amount expended during fiscal year | 986 87 |
| July 1, 1879, amount available | 13,945 89 |
| Amount that can be profitably expended in fiscal year ending June 30, 1881. | 100,000 00 |

*On or above Enfield Falls, Connecticut, and below Holyoke, Massachusetts.*

| | |
|---|---|
| July 1, 1878, amount available | $10,702 92 |
| July 1, 1879, amount available | 10,702 92 |
| Amount (estimated) required for completion of existing project | 835,801 00 |
| Amount that can be profitably expended in fiscal year ending June 30, 1881. | 200,000 00 |

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## B 12.

## SURVEY OF WESTPORT HARBOR, MASSACHUSETTS.

[Printed as part of Senate Ex. Doc. No. 22, Forty-fifth Congress, third session.]

ENGINEER OFFICE, UNITED STATES ARMY,
*Newport, R. I., December* 12, 1878.

GENERAL: I have the honor to submit the following report and accompanying map of the survey of Westport Harbor, Massachusetts, made by my assistant, Capt. J. P. Cotton, assistant engineer.

This survey was directed in section 2 of the appropriation act for rivers and harbors, &c., approved June 18, 1878.

REPORT.

In accordance with instructions, Captain Cotton, with assistants and the necessary boatmen, proceeded to Westport, Bristol County, Massachusetts, and made a survey of the harbor. The field-work was commenced on the 7th of September and finished September 12.



GENERAL DESCRIPTION OF THE HARBOR.

This harbor is an estuary of a bay (not named) lying between Narragansett Bay, Rhode Island, and Buzzard's Bay, Massachusetts. Much of the northerly shore of this bay is composed of sand beaches and dunes, and the estuary here furnishes its only harbor. The outer bar is exposed to the direct roll of the waves from the ocean. It cannot be crossed with safety when there are breakers, which come with every southerly storm and with waves of even ordinary magnitude. The best navigable depth on this bar is about 8 feet at mean low-water.

The entrance to the land-locked estuary is on a course east and west, having Round Hill, a rocky, granitic point, about 50 feet high, on the south side of it, and on the north side the sand beach called Horse Neck Beach. This sand beach is a shore deposit, and it terminates in Horse Neck Point just within the entrance. The position of this point is determined by the action of the waves in carrying the sand inward and dropping it, and the counter action of the tidal currents in carrying it off.

The sand swept seaward makes the broad sand shoal or outer bar opposite the entrance. Besides the sand shoals there are, near the entrance, just outside, many rocks. The width between the sand beach and Round Hill is about 600 feet, with a maximum depth of 29 feet at mean low-water. Within 2,000 feet above this point it shoals to less than 8 feet at the same time of tide.

The harbor after passing Horse Neck Point is about one-half a mile long and 1,000 feet wide. At the upper end it divides into two arms. The western one is called the West Branch of Acoaksett River. This extends to Adamsville, R. I., and is navigable for sail-boats and scows at high-water. The eastern arm is called the East Branch of Acoaksett River. This extends to Westport Village, at the head of tide-water, about 8 miles above. From this point it is called Westport River, and is some 10 or 12 miles long, with several branches of 4 to 8 miles long. The village of Westport Point is situated on the East Branch of Acoaksett River, about 2 miles above Round Hill. There is a good depth of water in the East Branch up to this place, so that vessels that can come over the bar can come up to the wharves at this place without any delay. There is a middle-ground shoal inside, opposite Horse Neck Point, called the "Lion's Tongue," having but 5 feet at mean low-water on it, with channels each side, giving 7½ feet available draught at the same time of tide.

It is thought by those interested in the harbor that for a number of years past Horse Neck Point has been wearing away and the middle-ground shoal (Lion's Tongue) increasing in size, and the depth on the outer bar growing less.

SURVEYS MADE.

A base line was measured on Horse Neck Beach, and from it points were established by triangulation on both sides of the harbor, from the entrance up to the junction of the east and west branches of the Accoaksett River. Soundings were taken over this distance and observations made for the rise and fall of tide and for the direction and velocity of the current in vicinity of the entrance.

During the week that the survey was in progress the wind was from the south, and for the greater part of the time the waves broke on the outer bar, preventing the taking of as many sounding on this bar as would have been made had the weather been favorable. A map of the

survey on a scale of 200 feet to an inch has been made. The soundings are reduced to the plane of mean low-water, established by taking the readings of high and low water for three successive days, and assuming that half way between high and low water is the mean level of the sea; from this mean sea-level we subtracted half of 3 feet, the mean rise and fall as given by the Coast Survey, for the plane of mean low-water. The low-water thus established is 4,965 feet below the bolt-head in the capping at the northeast corner of Captain Sowle's wharf, and 11,155 feet below the top of the northeast corner of the foundation stone in the wall on the east side of the gateway on the road from the wharf to Captain Sowle's dwelling-house. The soundings were all located by triangulation. The current observations were made on the ebb tide of September 11, when the water was 2 feet above mean low-water. The maximum velocity observed was between Horse Neck Point and Round Hill; it was about 3 miles per hour.

The ruling depth over the outer bar is about 8 feet at mean low-water, and about 7½ feet over the shoalest part of the channels opposite Horse Neck Point.

### CHANGED CONDITION.

There are no evidences of any considerable forces, either natural or artificial, being at work to change the conditions at this estuary. Whatever changes there may be must be the result of influences extending over many years.

For the sake of comparison, we have obtained a tracing of the United States Coast Survey chart from the United States Coast Survey Office at Washington, on a scale of $\frac{1}{10000}$. This survey was made in 1844. The soundings are reduced to low-water of "ordinary spring tides," which here differ but little from the mean tides. A copy of the United States Coast Survey chart is forwarded herewith. Part of the soundings on this chart have been transferred to our map; they are in blue, those made by us in black. By comparing the Coast Survey chart with the map made from our survey we find that the width of the harbor at Horse Neck Point has increased but little in the last 34 years; that the lower part of the shoal called the "Lion's Tongue," bounded by the 6-foot curve, which in 1844 was about 1,050 feet long and 450 feet in its widest part, with a minimum depth of 2 feet at low-water of ordinary spring-tides, is now about 1,000 feet long, 240 feet wide in its widest part, with a minimum depth of 5 feet at mean low-water. The lower end of this shoal is now 400 feet nearer the entrance to the harbor, and where there was in 1844 a depth of 15 feet. The channels on either side of this "Lion's Tongue" had in 1844 a least depth of 9 feet at low-water. The channel on the west of the shoal now has 9 feet depth; the one to the east has a least depth of 7½ feet. The best water in this in 1844 was next to the middle-ground shoal with well-defined margins; it is now near Horse Neck Point, and shoals gradually on both sides.

On the outer bar the soundings are too few on the Coast Survey chart to determine what the least depth was at that time.

There appears to have been 8 feet depth between Half-Mile Rock and the present location of the Red Buoy, about 1,800 feet to the eastward. On our map there is 8 feet for 800 feet of this distance, commencing at the Red Buoy; for the remainder of the distance there is from 6 to 4½ feet near the rock. From the rock to the shore of Round Hill there was in 1844 12 feet depth, and this was the channel used by the vessels entering the harbor. There is now 8 feet depth in this part, except for the 250 feet next to the shore, where there is 12 feet. In this part there



are many rocks, so that the channel is only used by small boats manned by those familiar with their location. There has been in some places an increase of about 3 feet in the depth between the outer bar and Horse Neck Beach.

From this comparison we find that the harbor inside of Round Hill has about 1½ feet less depth in the channels, and the middle-ground bar is not so well defined and has about 3 feet more water on it; that there has been a little increase in the width at Horse Neck Point by a little wearing away of the point; that the outer bar has shoaled from Half-Mile Rock westward nearly to the shore, and has there a less depth than in 1844 of about 4 feet.

### BUSINESS AND IMPORTANCE OF THE HARBOR.

Some twenty years ago a large number of whaling-vessels were owned and ran from Westport Harbor, but the business became less remunerative, and when the vessels employed became unseaworthy or were lost none were put in their places, so that to-day not one is owned here. There are a few vessels loaded with coal that now enter the harbor to supply a local demand not connected in any way, it is believed, with manufacturing. The harbor seems, therefore, to be of capacity suited to the present wants.

### IMPROVEMENTS.

Any engineering works to increase the depth or facility of crossing the outer bar would be of an extent and expense not justified by the importance of the place, nor is there any instance on our coast of such a bar having been improved by any simple means or limited expenditure.

The wearing at Horse Neck Point could be prevented by small sand-catcher jetties, and these could be gradually prolonged so as to narrow the space opposite and increase the average depth. Perhaps $1,000 might be reasonably expended in this way.

Navigation for strangers would be much benefited by having the channel inside buoyed out, which is not now done. The United States at some time in the past purchased Round Hill as a site for a light-house, but none has been erected.

Westport Harbor is in the New Bedford collection-district. The amount of revenue collected during the fiscal year ending June 30, 1878, was $23,762.33. New Bedford is the nearest port of entry.

Very respectfully,

G. K. WARREN,
*Major of Engineers, Brevet Major-General, U. S. A.*

Brig. Gen. A. A. HUMPHREYS,
*Chief of Engineers, U. S. A.*