

OFFICERS OF THE STATE SCHOOL SYSTEM.

GENERAL.

A *State board of education*, an incorporated body consisting of the governor, the superintendent of public instruction, and the attorney general, has charge of the operations of the free school system, of the investment of the State school fund, and of the appointment and removal of county superintendents, with other minor duties. It is to report annually to the legislature.

A *State superintendent of public instruction*, elected by joint vote of the general assembly every 4 years, beginning with 1874, enters upon duty March 15 following his election, and is the chief executive officer of the public school system.

LOCAL.

County superintendents of schools, since 1877 appointed by the State board of education for terms of 4 years, have the usual duties of such officers.

County boards, known as *school trustee electoral boards*, composed of the county judge, the Commonwealth's county attorney, and the county superintendent of schools, appoint the local school officers for districts within their respective counties, under a law of January 11, 1877. Other county boards, composed of the county superintendent and the district school trustees in each county, have charge of all public school property within their respective counties and of the arrangement of the boundaries of districts and subdistricts.

District school trustees (3 members in each district), appointed by the school trustee electoral boards for terms of 3 years, with provision for yearly change of one member, have the care of schools for their several districts.—(School laws of 1873 and 1877.)

ELEMENTARY INSTRUCTION.

PROGRESS FOR THE YEAR.

In presenting his seventh annual report for the year ending July 31, 1877, Superintendent Ruffner states that "during the past year the work of public education has continued to progress favorably. The enrolment of pupils, the average attendance, and, I may add, the quality of the teaching, have all gained. The official management has also improved in economy, system, and efficiency. Efforts for the improvement of teachers have multiplied. The spirit of education has been promoted among the people and a growing attachment to the public school system has been manifested very generally."

"The gains over last year were, in enrolment, nearly 5,000 pupils, and in average daily attendance about 3,000, with a corresponding gain in the percentage of school population in attendance upon the schools. And at the same time the cost of tuition was reduced over \$4,000, and the total current expenses for the year were reduced about \$36,000, while the increased work might have been expected to increase the cost. About \$15,000 more than last year was expended by the districts in permanent improvements. The expenses of the central office were reduced from \$6,519 to \$5,819. * * * The difficulties under which the work was prosecuted were unusually great, and the progress made is surprising, and is conclusive as to the stability and success of the system."—(Report of State Superintendent W. H. Ruffner for 1876-77.)

ONE SERIOUS HINDRANCE.

As affecting the rate of the progress above recorded, and as threatening an abatement of it in the future, Dr. Ruffner calls attention to the fact that the embarrassments of the State finances have led to an "annual and increasing diversion of school funds." The interest on the literary fund, heretofore unaffected by this difficulty since 1873, has during the past school year been reduced in payment from \$64,904.00 to \$16,476.22; while "the diversion of a large share of the proceeds of the capitation and property tax began with the first year of the school system, and has been continued ever since." The fact of this diversion was not discovered till 1876, when an investigation authorized by the legislature revealed an arrearage due to the school fund of "something over \$400,000 for the fiscal years 1870, 1871, 1872, 1873, and 1874." The amount was subsequently reduced to \$382,732, but the financial difficulties of the State treasury have caused a continuance of the same system of diminished payments of interest school funds, till, on July 31, 1877, Dr. Ruffner estimated that "the total deficit due the school fund must have been about \$550,000." And as the auditor takes the ground that the constitution does not control him in his action, while the law does, a legislative appropriation for any civic purpose may at any time in the future sweep away the constitutionally prescribed school moneys unless the State takes decided action to the contrary, either through its legislature or the courts.

MEANS OF LENGTHENING A SHORT SCHOOL TERM.

The paucity of means for schools has hitherto kept the school term down to an average of about 5½ months. This, Dr. Ruffner thinks, meets sufficiently the current needs

standing that those projecting wharves should first be removed in order to make the contemplated improvement effective and lasting; for so long as those wharves are permitted to project outside the harbor commissioners' line, so long will the eddies and shoals continue to exist above and below those wharves.

The above described works are situated in the collection-district of Portland and Falmouth, Me.

The following information in regard to the commerce and revenue of the port of Portland and Falmouth, for the year ending December 31, 1878, has been furnished by the United States collector of customs at that port:

Amount of revenue collected.....	\$202,914 87
Value of imports.....	7,449,932 00
Value of exports.....	9,915,838 00
	Number. Tonnage.
Arrivals of vessels.....	855 731,422
Clearances of vessels.....	1,132 804,211
Number of vessels built in the district.....	7
Aggregate tonnage of same.....	4279

Money statement.

July 1, 1878, amount available.....	\$41,908 38
July 1, 1879, amount expended during fiscal year.....	773 38
July 1, 1879, amount available.....	41,135 00

A 7.

IMPROVEMENT AT RICHMOND'S ISLAND, MAINE.

This work consists in making a harbor by means of a stone breakwater connecting the island with the main land, the length of the breakwater to be about 2,000 feet, with an average thickness of 30 feet, and a height of 13 feet above mean low-water.

In my report to the department dated May 10, 1867, the following estimate of the cost of this breakwater was submitted:

68,000 tons of rubble-stone, at \$1.25 per ton.....	\$85,000
Adding 10 per cent. for contingencies.....	8,500
	93,500

A capping for this work was not estimated for on account of the great increase of cost; but, as then stated, should it hereafter be found necessary, in order to resist the action of the sea, which is not probable, it could be added.

The following appropriations have been made by Congress for this work, viz:

By act approved June 10, 1872.....	\$20,000
By act approved March 3, 1873.....	60,000
By act approved March 3, 1875.....	15,000
By act approved June 18, 1878.....	6,000
By act approved March 3, 1879.....	3,000
Total.....	104,000

Under the appropriations made in 1872-75, five separate contracts were made from time to time (as specified in the annual report for the fiscal year ending June 30, 1876) for furnishing stone for this breakwater, by which 58,000 tons were furnished and placed upon the work.

Under the appropriation of \$6,000 made by act of June 18, 1878, two separate contracts were made August 7, 1878, with, 1st, Mr. John F. Hamilton, of Portland, Me.; 2d, with Messrs. Solomon F. Hamilton and

Joseph F. Currit, both of Cumberland, Me.; each contract for 3,000 tons, more or less, of granite grout placed upon the work, at 87 cents per ton of 2,240 pounds, those parties being the lowest of five bidders for the same. These contractors commenced the delivery of the grout respectively on the 19th and 20th of August, 1878, and completed the same respectively on the 11th and 19th of October, 1878, 3,100^{0.00}/_{2.240} tons having been furnished by the former, and 2,882^{3.20}/_{2.240} tons by the latter, making a total of 5,983^{3.20}/_{2.240} tons of granite grout furnished and placed upon the breakwater under said contracts, or an aggregate of about 64,000 tons placed on the work to date.

Under the appropriation of \$3,000 made by the act of March 3, 1879, it has been decided to contract for more granite grout for this work, as soon as the money shall become available therefor, and it is probable that about 3,000 tons can be procured for that amount.

Owing to the settling of the stone into the sand there will be required about 6,000 tons more of stone for the completion of the breakwater, the estimated cost of which, placed upon the work, including incidental expenses, is \$6,000, making the total cost of the work \$110,000. This is \$16,500 in excess of the original estimate, which is chiefly owing to the greater cost of the stone than was originally estimated.

The harbor formed by this breakwater will afford safe anchorage and good holding-ground for vessels of the largest class, with the wind from any point except from the southwest. As the winds from the northward and eastward bring the most violent and destructive gales which occur on this coast, there can be no question as to the great benefit to be derived from this work in affording a refuge for vessels which are prevented by those storms from entering Portland Harbor (12 miles to the eastward) or other places on this part of the coast.

The following-named papers are hereto appended, viz:

1. Abstract of proposals received.
2. Abstract of contracts made.

Money statement.

July 1, 1878, amount available	\$6,000 00
Amount appropriated by act approved March 3, 1879.....	3,000 00
	\$9,000 00
July 1, 1879, amount expended during fiscal year.....	5,961 26
July 1, 1879, amount available.....	3,038 74
	6,000 00
Amount (estimated) required for completion of existing project.....	6,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881.	6,000 00

Abstract of proposals received August 5, 1878, for furnishing rubble-stone for the breakwater at Richmond's Island, Maine.

No. for reference.	Bidders.	Residence.	Granite grout, 4,000 tons, more or less.*
1	John F. Hamilton	Portland, Me	\$0 87
2	Solomon F. Hamilton and Joseph F. Currit.....	Cumberland, Me	87
3	Isaac A. Sylvester	Quincy, Mass	92 ¹ / ₄
4	Albion S. Hamilton	Cape Elizabeth, Me.	1 09
5	Charles H. Bragdon	Biddeford, Me	1 10

* Per ton of 2,240 pounds.

Abstract of contracts made during the fiscal year ending June 30, 1879, for furnishing rubble-stone for the breakwater at Richmond's Island, Maine.

Date of contracts.	Contractors.	Nature of work.	Price per ton of 2,240 lbs.
Aug. 7, 1878	John F. Hamilton, of Portland, Me	3,000 tons, more or less, of granite grout, furnished and placed on breakwater.	\$0 87
Aug. 7, 1878	Solomon F. Hamilton and Joseph F. Currit, both of Cumberland, Me.	do	87

A 8.

IMPROVEMENT OF KENNEBUNK RIVER, MAINE.

By an act of Congress of 1798 provision was made for keeping in repair a pier built at the mouth of this river for the improvement of its navigation, and by several subsequent acts, from 1829 to 1852, appropriations amounting to \$44,175 were made for the further improvement of this river at and near its mouth.

These works consisted of—

1. A stone pier, about 600 feet in length, on the eastern side of the channel at the mouth of the river, with a light-house (since destroyed by storms) on its outer extremity, and a wooden catch-sand, about 160 feet in length, leading from the inner end of the pier to the eastern bank of the river. This pier and catch-sand served as a protection to the entrance from easterly storms, as well as to prevent the sand from being driven into the channel above.

2. A stone pier, about 290 feet in length, on the western side of the channel at the mouth of the river, with a wooden catch-sand, about 160 feet in length, leading from the inner end of the pier to the western bank of the river. This pier and catch-sand served a similar purpose to that on the eastern side of the river.

3. A crib-work wharf ballasted with stone, about 300 feet in length, built on the eastern side of the river, about one-eighth of a mile above its mouth, for the security of vessels while detained by tides and storms.

Since the completion of the above works, the following additional appropriations have been made by acts of Congress for the improvement of this river, viz:

By act of July 11, 1870.....	\$5,000
By act of March 3, 1871.....	5,000
By act of August 14, 1876.....	5,000
By act of March 3, 1879.....	2,000
Total	17,000

Under the appropriation of 1870, the catch-sand or wing connecting the inner end of the pier with the eastern bank of the river, which had been destroyed by storms, was replaced by a permanent stone work, and some repairs were made where most necessary on the stone piers and on the wharf above.

Under the appropriation of 1871, the catch-sand or wing connecting the inner end of the western pier with the river bank having also been destroyed by storms, it was replaced by a permanent stone work, and additional repairs were made on the piers and wharf.

Under the appropriation of 1876, the main channel of the river was

deepened and widened by dredging at the Wading Place and Mitchell's Point, so as to have a depth of not less than 4 feet at mean low-water, or 13 feet at mean high-water, and repairs were made where most necessary on the stone piers at the mouth of the river, as well as on the government wharf above.

The work that now remains to be done for completing all the projected improvements in this river consists of the following, to wit:

1. The breaking up and removal to a depth of 4 feet at mean low-water of the sunken ledges near the mouth of Gooch Creek, as well as the sunken ledge below Ward's Wharf, aggregating 20 cubic yards, the estimated cost of which, at \$35 per cubic yard, is	\$700
2. Straightening, widening, and deepening the channel of the river, by dredging, aggregating about 7,600 cubic yards, the estimated cost of which, at 50 cents per cubic yard, is	3,800
3. Rebuilding of portions of the government wharf and of the stone pier on the western side of the river at its mouth, say	800
Adding for contingencies, say	700
Total	6,000
Amount appropriated by act of March 3, 1879	2,000
Additional amount required for completing the work	4,000

In April last, a project was submitted to the department for the work to be done for the further improvement of this river, under the appropriation of \$2,000 made by the act of March 3, 1879, which has been approved by the department, but with the understanding that no steps are to be taken for carrying out the same, and no obligations incurred, until the appropriation is made available therefor; of which due notice is to be given by the department. This project consists in the completion of the work specified in items 1 and 3 in the above estimate.

This river lies in the collection-district of Kennebunk, of which Kennebunk is the port of entry.

The following information as to the revenue and commerce of the port of Kennebunk, Me., for the year ending December 31, 1878, has been furnished by the United States deputy collector of customs at that place, viz:

Amount of revenue collected, \$93.04; number of domestic arrivals and departure, estimated at 200. Number of vessels built, 10, with an aggregate tonnage of 4,854.80 tons, the largest of which measured 1,981.26 tons.

Money statement.

Amount appropriated by act approved March 3, 1879	\$2,000 00
July 1, 1879, amount available	2,000 00
Amount (estimated) required for completion of existing project	4,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881	4,000 00

A 9.

IMPROVEMENT OF COCHECO RIVER, NEW HAMPSHIRE.

Cocheco River runs through the city of Dover, N. H., and three miles below the lowest bridge it unites with the Salmon Falls River and forms the Piscataqua River; from which point down to its outlet into Portsmouth Harbor, N. H., a distance of about 9 miles, the Piscataqua River separates the States of Maine and New Hampshire.

The Piscataqua and Cocheco rivers are navigable, in their lowest summer stages, with not less than 6 feet of water at mean low-water, or about 13 feet at mean high-water, from Portsmouth Harbor up to the foot of the Lower Narrows in Cocheco River, distant about 1½ miles below the lowest bridge at Dover. At the Lower Narrows, and above, navigation has been much impeded by ledges, bowlders, and shoals, having from 6 inches to 2 feet only of water on them at mean low-water; the mean rise and fall of the tides being 6½ feet at the packet landing, the head of navigation.

The original project for the improvement of this river, based on an examination made in 1870, consisted of making a channel not less than 40 feet in width, and 4 feet in depth at mean low-water, from the foot of the Lower Narrows up to Collins' wharf (at the head of the Upper Narrows); the estimated cost of which was \$45,000, as shown in the annual report of 1871. More accurate and extended surveys, since made, have shown the practicability and importance of extending this improvement up to the packet landing; the total estimate of which, as amended, was \$85,000.

The following appropriations have been made by Congress for the improvement of this river, as projected, viz:

By act approved March 3, 1871	\$10,000
By act approved June 10, 1872	10,000
By act approved March 3, 1873	10,000
By act approved June 23, 1874	10,000
By act approved March 3, 1875	25,000
By act approved August 14, 1876	14,000
By act approved June 18, 1878	6,000
Total	85,000

Under the several appropriations from 1871 to 1876, inclusive, contracts have been made from time to time, as stated in the annual reports of 1877 and 1878, whereby the following work has been done, viz:

1. A channel has been opened through the ledge at the Upper Narrows for a length of 430 feet and to a width of 40 feet and a depth of 4 feet at mean low-water, or about 10½ feet at ordinary high-water, requiring about 1,255 cubic yards of rock excavation.

2. A channel has been opened through the ledge next above the Upper Narrows for a length of 260 feet and to a width of 40 feet and a depth of 4 feet at mean low-water, requiring 1,108 cubic yards of excavation of ledge, bowlders, clay, &c.

3. The channel at and near the Lower Narrows has been completed by the removal of about 600 cubic yards of sunken ledge and bowlders; and numerous scattered bowlders which were dangerous obstructions to navigation at Trickey's Shoal, Clements' Point Shoal, and elsewhere, have been broken up and removed.

4. The channel has been opened and straightened by about 20,000 cubic yards of dredging at Trickey's Shoal, Clements' Point Shoal, and Gulf Shoal (in part) below the Upper Narrows, as well as all the shoals above the Upper Narrows, including the basin near Packet Landing—at the head of navigation—which basin has a length of about 800 feet and an average width of 140 feet, with a depth of 4 to 5 feet at mean low-water (or about 11 feet at mean high-water), in the lowest stages of the river.

Under the appropriation of \$6,000 made by the river and harbor act of June 18, 1878, the channel of the river has been opened through the compact mass of sunken bowlders and hard-pan at Gulf Shoal and

Clements' wharf, so as to have a depth of not less than 4 feet at mean low-water for a width of not less than 100 feet, greatly improving the difficult navigation at this place. This work was very satisfactorily done with a dredging machine (hired by the day) especially adapted to the hard material that had to be excavated, altogether about 3,000 cubic yards. It was commenced on the 17th of August and completed on the 27th of November, 1878.

By the foregoing operations all the improvements hitherto projected for this river have been completed, as shown on the accompanying map of same, and no further appropriation is necessary therefor.

Money statement.

July 1, 1878, amount available	\$6,895 83
July 1, 1879, amount expended during fiscal year	6,895 83

A 10.

IMPROVEMENT OF PORTSMOUTH HARBOR, NEW HAMPSHIRE.

In compliance with the river and harbor act of June 18, 1878, a survey was made of this harbor in September and October, 1878, and on the 12th of December a report with drawings, project, and estimates for the improvement of the same, were forwarded to the department, a copy of which is herewith sent. This project consists in:

1. The closing of the channel between Great Island and Goat Island, near the "third bridge," so as to stop the very strong current that passes through that channel on the flood-tide, by which vessels passing up the harbor are thrown upon Goat Island Ledge, which projects far into the channel, here very narrow, creating thereby the greatest difficulty encountered in the navigation of this harbor. The most permanent and effectual way, in my opinion, to accomplish this object would be to build a breakwater of rubble-stone across the side channel between Great Island and Goat Island, its length to be 820 feet and its height $2\frac{1}{2}$ feet above mean high-water, or 1 foot above mean spring-tides, and to have a width of 10 feet on top, with slopes of 45° ; a work of larger dimensions not deemed necessary in this comparatively sheltered position.

2. The removal from the channel of Gangway Rock lying between South Beacon Shoal and the navy-yard. The special survey of this rock shows that its shoalest point has but 12 feet of water over it at mean low-water, or $20\frac{1}{2}$ feet at mean high-water, the mean rise and fall of the tides being $8\frac{1}{2}$ feet, whilst at extreme low-water of spring tides it has but $9\frac{7}{10}$ feet of water over it. This rock has always proved to be a very dangerous obstacle, especially for United States vessels which have visited this port and the navy-yard, as well as for other vessels of large draught, in their having been forced upon it by the strong tidal currents which exist in this harbor. To prevent a recurrence of these dangers, it is recommended that this rock be removed to a depth of 20 feet at mean low-water, or $28\frac{1}{2}$ feet at mean high-water, especially in the interests of the United States vessels; it not being, in my opinion, advisable to remove it to a greater depth on account of the greatly increased cost that would attend it. This improvement would increase the width of the channel for that depth about 370 feet up to within 250 feet of the South Beacon, which beacon would thereby answer more effectually the purpose for which it was intended.

3. The removal in part of the ledge at the southwest point of Badger's Island. This ledge projects into the channel about 150 feet, where it has only about 4 feet of water at mean low-water, as ascertained by the recent survey of the same. It thus presents serious difficulties to vessels coming down the harbor on the ebb-tide, which, after passing Noble's Island, and in their endeavors to avoid being thrown by the powerful current upon the projecting point of Portsmouth, opposite Badger's Island, are very liable to be, and often are, thrown upon the point of ledge projecting from Badger's Island. To prevent this difficulty it is recommended that this ledge be broken up and removed for a length of 135 feet and to a depth of 10 feet at mean low-water, or $7\frac{7}{10}$ feet at extreme low-water of spring-tides.

For the improvements projected, as above, the following estimates of cost are submitted, viz:

1. For the breakwater between Goat Island and Great Island, 18,000 tons of rubble-stone delivered and placed on the work, at 70 cents per ton	\$12,600
2. Breaking up and removing Gangway Rock to a depth of 20 feet below the plane of mean low-water, 2,840 cubic yards, at \$30 per cubic yard	85,200
3. Breaking up and removing ledge projecting from the southwest point of Badger's Island, 1,190 cubic yards, at \$30 per cubic yard	35,700
Adding for engineering expenses, superintendence, and other contingencies	16,500
Total	150,000

By the river and harbor act of March 3, 1879, the sum of \$10,000 was appropriated for the improvement of this harbor. On the 5th of April a project was submitted by me to the department, in which it was recommended that the amount appropriated be applied to the partial construction of the proposed breakwater for closing the channel between Goat Island and Great Island, this being the most important work projected for the improvement of this harbor, also that the work be built by contract after advertising for proposals therefor.

The project has since been approved by the department, but with the understanding that no steps are to be taken under the act of March 3, 1879, for carrying out the same, and no obligation incurred, until the appropriation is made available therefor, of which due notice is to be given by the department.

The several works above projected are located in the collection district of Portsmouth, of which Portsmouth is the port of entry.

The nearest light-houses are Portsmouth Harbor light and Whale Back light, at the outer entrance to the harbor; and the nearest forts Fort McClary and Fort Constitution. The United States navy-yard at Kittery, Me., is also situated in this harbor.

The following information in regard to the commerce and revenue of the port of Portsmouth for the year ending December 31, 1878, has been furnished by the United States collector of customs at that port:

Amount of revenue collected	\$18,181 35
Value of exports	3,494 00
Value of imports	34,374 00
	Vessels. Tons.
Foreign arrivals and clearances	28 3,307
Coastwise arrivals and clearances	667 104,163
Vessels built	3 535.77

Money statement.

Amount appropriated by act approved March 3, 1879	\$10,000 00
July 1, 1879, amount available	10,000 00
Amount (estimated) required for completion of existing project	140,000 00
Amount that can be profitably expended in fiscal year ending June 30, 1881	140,000 00

A II.

IMPROVEMENT OF MERRIMAC RIVER, INCLUDING THE HARBOR OF NEWBURYPORT, MASSACHUSETTS.

The project for the improvement of this river consists in deepening its shoals by dredging and by the removal of sunken ledges and bowlders from its channel, so as to have a depth of 12 feet at ordinary high-water from its mouth in Newburyport Harbor, Mass., up to Haverhill, Mass. (a distance of 15 miles), and thence for a distance of about 4 miles up through "the Falls," a depth of 4 feet in the ordinary stages of the river; and for the improvement of Newburyport Harbor, in the removal of the Gangway, North Gangway, and South Gangway rocks, to a depth of 9 feet at mean low-water; the removal of "the Boilers" (sunken rocks near the city wharves) to a depth of 5 feet at mean low-water; the removal of four dilapidated sunken piers, abreast of Black Rocks Creek, near the mouth of the harbor, and of other impediments to navigation.

The following appropriations have been made for these works, viz:

By act of July 11, 1870, for the improvement of Merrimac River, Massachusetts	\$25,000
By act of March 3, 1871, for improvement of Merrimac River above Haverhill, Mass	25,000
By act of June 10, 1872, for improvement of Merrimac River above Haverhill, Mass	25,000
By act of March 3, 1873, for improvement of Merrimac River, Massachusetts	25,000
By act of June 23, 1874, for continuing the improvement of Merrimac River, Massachusetts	10,000
By act of March 3, 1875, for improvement of Merrimac River, Massachusetts	12,000
By act of June 18, 1878, for improving Merrimac River, Massachusetts, below Mitchell's Falls	10,000
By act of March 3, 1879, for improving Merrimac River, Massachusetts	5,000
Total	137,000

The work done during the past fiscal year under the appropriation of \$10,000 made by the act of June 18, 1878, consisted in the breaking up and removal of the outer portion of the North (Gangway) Rock next to the main ship-channel, to a depth of 9 feet at mean low-water. On the 10th of August, 1878, a contract was made for this work with Mr. Isaac A. Sylvester, of Quincy, Mass., the lowest of five bidders, at \$28 per cubic yard, measured in its bed. He commenced work under his contract on the 24th of August, and continued up to the 20th of December, when he suspended for the winter; in which time he removed to grade about 170 cubic yards of the sunken ledge. Operations were resumed by him on the 16th of April and continued up to the 28th of June, 1879, resulting in the satisfactory completion of his contract by the removal to grade of a total of 305.4 cubic yards of ledge.

I.—NEWBURYPORT HARBOR, MASSACHUSETTS.

The work thus far done for the improvement of Newburyport Harbor, in addition to the above, is as follows, to-wit:

Gangway Rock, for the most part reduced to grade in 1870, there remaining about 25 cubic yards still to be removed, and the sunken wreck of the schooner Globe, broken up and removed from the harbor, in the same year.

The following work still remains to be done for completing all the improvements hitherto projected for this harbor, viz:

1. Completing the breaking up and removal of North (Gangway) Rock to a depth of 9 feet at mean low-water, 150 cubic yards, the estimated cost of which, at \$30 per cubic yard, is	\$4,500
2. Completing the breaking up and removal of Gangway Rock, 25 cubic yards, the estimated cost of which, at \$40 per cubic yard, is	1,000
3. Breaking up and removing South Gangway Rock, 120 cubic yards, at \$30 per cubic yard	3,600
4. Breaking up and removing "the Boilers" to a depth of 5 feet below mean low-water, 350 cubic yards, at \$25 per cubic yard	8,750
5. Breaking up and removing 4 sunken piers from the channel abreast of Black Rocks Creek, at, say	2,000
6. Breaking up and removing a large sunken bowlder lying in the main channel between the North and South piers, say	400
Adding for contingencies, say	2,750
	23,000

II.—MERRIMAC RIVER, ABOVE NEWBURYPORT.

For the improvement of the river above Newburyport the following work has been done to this date, viz:

The channel nearly completed at Hazeltine Rapids, Lower Falls, and Upper Falls (above Haverhill, Mass.), so as to be navigable through "the Falls" for a depth of 4 feet in all stages of the river, except in an unusually low stage, resulting from shutting off the water at the Lawrence Mills on Sundays and at night; shoals dredged and sunken bowlders removed from the channel at and near Rocks bridge, 6½ miles below Haverhill, including Little Currier Rock above and Petty Rock below the bridge, greatly improving this, the most dangerous, part of the river below Haverhill; the channel opened by dredging, for a width of 100 feet, to the projected depth, viz, 12 feet at ordinary high-water at Currier's Shoal (distant about 5 miles below Haverhill); also, to the same depth, and for a width of 75 feet, at the shoals near the head and foot of Silsby's Island, from 1 to 2 miles below Haverhill. The shoal between the two bridges at Haverhill has also been improved by dredging so as to have a channel 10 feet in depth at ordinary high-water, and about 80 tons of bowlders have been removed from the channel near the head of Silsby's Island.

The work that now remains to be done for completing the improvement of this river above Newburyport is as follows, viz:

1. The removal of sunken bowlders from its channel near Rock's bridge (6½ miles below Haverhill), at an estimated cost of	\$1,000
2. Removing 150 cubic yards of sunken bowlders from the river near the Lower Falls (above Haverhill), the estimated cost of which, at \$5 per cubic yard, is	750
3. Breaking up and removing 100 cubic yards of sunken ledge in the Lower Falls, the estimated cost of which, at \$35 per cubic yard, is	3,500
Adding for contingencies, say	750
Total for improving river above Newburyport	6,000
Total for improving Newburyport Harbor (as above)	23,000
Total	29,000
Amount appropriated by act of March 3, 1879	5,000
Amount (estimated) required for completion of existing project	24,000

The following information in regard to the revenue and commerce of the port of Newburyport, Mass., for the year ending December 31, 1878,