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REPORTS

OF THE

SECRETARY OF THE NAVY

AND THE

POSTMASTER GENERAL,

BEING PART OF

THE MESSAGE AND DOCUMENTS

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REPORT
OF
THE SECRETARY OF THE NAVY.

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NAVY DEPARTMENT, *December 1, 1870.*

SIR: I respectfully submit the following report of the Navy Department and the naval service for the last year :

At the date of my last report the Navy of the United States consisted of 188 ships, of all classes, calculated to carry, when in commission, 1,322 guns, exclusive of howitzers. Since that time four small gunboats, the Seminole and the Clinton (tug) at home, and the Maumee and the Unadilla, in the east, have been condemned as unseaworthy and sold; the tug Rescue was also sold, under an act of Congress, to the government of Liberia, through the agency of the President of that republic, who visited this country with authority to carry out the requirements of the law.

On the 3d of January last the tug Maria was run into and sunk on Long Island Sound, with a loss of four men; and on the night of the 24th of the same month the steam sloop Oneida, cut down by the English passenger steamer Bombay, sunk in the Bay of Yedo, with the loss of most of her officers and crew.

Thus reduced, the Navy consists at this time of 181 vessels, calculated to carry 1,309 guns. Of these 52 are of the iron-clad or monitor class; of the remainder 30 are sailing vessels without any steam-power, and the balance steamers or sailing vessels with auxiliary steam-power. Of these 45 vessels, including store and hospital ships, mounting 465 guns, are attached to the several fleets, and four others, mounting 7 guns, are in commission for special service. These, with six receiving ships at the various stations, and the tugs and small vessels on duty at the navy yards and stations, make the naval force now in commission. Ten others, mounting 143 guns, are ready for sea, and will join the several fleets as soon as they receive their complement of men. These, however, cannot be enlisted till the ships which are returning to this country shall have discharged their crews. Of the remainder, whose names are borne on the register, 13 are on the stocks in various stages of forwardness, 15 are under repair at the various yards, and the balance are laid up in ordinary, or as unfit for service or repair.

During the period which has passed since my last report the United States of America have been at peace with all nations, and the duties

of her Navy have been nowhere those of active hostility. But the attitude of this branch of the public service must always be in some degree warlike, since it represents abroad the military power of the Government, and, displaying everywhere the flag of the country, is expected to protect the rights which that represents from the attacks of barbaric ignorance and the encroachments of civilized power.

Our people, peaceful, prosperous, and secure at home, and representing peculiarly the civilization of humanity and peace, are slow to realize the trials to which their governmental, commercial, and religious representatives, scattered throughout the world, are so often subjected, and the sudden and sometimes appalling dangers which threaten so frequently their personal safety and our national honor. But those who are charged with the duty of anticipating, as far as may be, such dangers, and of guarding against them, are ever oppressed by their presence and by the want of adequate power at command for protection or redress.

Almost every foreign mail during the past year has brought, through the appropriate channels, to the Navy Department, from our citizens and representatives in every quarter of the globe, requests, which are sometimes appeals, for that assurance of safety and protection abroad which is only afforded by the presence of an armed vessel of the Government.

Wherever civilization is backward, commerce and Christianity are only safe under the guardianship of power; wherever governments are unsettled or arbitrary, the property and the persons of strangers of every class are in continual danger; and, all over the world, wherever war inflames the passions of civilized man, the authority of law is loosened, the securities of government unsettled, and the influence of civilized society weakened, and there, the rights of neutrals demand of their governments constant and careful protection.

On our own continent, war in the West Indies and complications on the fishing-banks, have called simultaneously for the presence of our cruisers at both extremities of the North Atlantic Station. From the isolated groups of the Pacific and from every struggling government of the south, we are called upon to protect the persons and property of our citizens. Everywhere on the shores of civilized Europe, from the Baltic to the Bosphorus, the security of American interests and the rights of American citizenship demand at this juncture the presence of our flag; and in the half-civilized East our commerce is constantly startled by outbreaks which defy the power of even friendly governments.

At our last advices Christian missionaries, frightened from their chapels and school-houses, were being returned on board a man-of-war; and on any day we may hear that some representative of our Government, more than ten thousand miles from our capital, has found his only safety under cover of our naval guns.

In addition to the duties which these circumstances entail, the Navy

is at this time prosecuting, under the authority of Congress, two surveys across the isthmus which connects the northern and southern portions of our continent, and making, under like authority, soundings and surveys for lines of telegraph, and for dredging and improvement of harbors of refuge and resort, on our coasts and in midocean; we are also about to contribute, under special legislative direction, a vessel and its appliances to a scientific expedition toward the North Pole.

To answer as far as possible the requirements imposed by these conditions is the appropriate duty of our Navy, but the fulfillment of this duty must, of course, depend upon the proportion which the means at its command bear to the character and frequency of the circumstances calling for attention, and the vast distances which must be traversed to apply them. The navigable waters of the globe, embracing an area of over 140,000,000 square miles, are divided, for the purpose of our naval operations, into five distinct cruising stations, to each of which is assigned such of our naval force as the circumstances of each may require and the means at the command of the Department permit. The limits of these stations have not been changed since the date of my last report, nor has the Department been able to increase, to any great extent, the force assigned to each of them.

THE NORTH ATLANTIC STATION, extending northward from the mouth of the Amazon and westward from the 43° of longitude west of Greenwich, embraces more than 3,000 miles of our own coast line on the Atlantic and the Gulf, and includes within its limits all the West India Islands and the coasts of Mexico, the Isthmus, and the northern countries of South America. The force on this station is under command of Rear-Admiral S. P. Lee, who relieved Rear-Admiral C. H. Poor on the 16th of August last. It consists of the *Severn*, the *Congress*, the *Tuscarora*, the *Swatara*, the *Nantasket*, the *Yantic*, the *Kansas*, and the *Nipsic*, with the tug *Pilgrim*, and the iron-clads *Dictator*, *Terror*, *Ajax*, and *Saugus*, and the *Pawnee* as a hospital ship, making in all 14 ships, including the tug, and mounting 79 guns. Of this fleet all but four vessels, the *Tuscarora*, the *Nantasket*, the *Dictator*, and the *Saugus*, have been refitted or repaired during the past year. The principal headquarters of this fleet is at Key West, selected as the most convenient station, within six hours' sail of Havana, and in direct communication by telegraph with Washington. Of this fleet the four monitors, with the hospital ship and tug, cannot be considered as cruisers, the latter is stationed permanently at headquarters, and the former, whose movements are slow and expensive, are kept ready for emergencies, and move only to points where a display of force is called for. The steamers *Nipsic* and *Kansas* of this squadron are at present engaged on special service connected with the surveys of the Darien and Tehuantepec routes. During the past year the vessels of this fleet have been largely engaged in cruising among the West India Islands, especially in the neighborhood of San Domingo, to the government of which

republic we extended our protection under the terms of the pending treaties; and in the waters of Cuba, where a condition of civil strife demanded the constant presence of our ships for the protection of American interests. These waters embrace an area of 600,000 square miles. The Island of San Domingo itself has a coast line of over 1,100 miles, while that of Cuba exceeds 1,600 miles in extent. In these waters the force of other and distant nations far exceeded our own. The French and English fleets on that station are far larger than our own; while that of Spain is made up of 25 ships, including several powerful sea-going iron-clads, mounting in all 356 guns, besides 30 gunboats, mounted, each with one heavy rifle gun.

THE SOUTH ATLANTIC STATION, stretching from the Amazon across to Saint Paul de Loando, and southward between the shores and beyond the capes of either continent, covers an area of vast extent and importance. The fleet assigned to this station consists at present of but four vessels, three of which are on the station, and the fourth about to join it. These, under the command of Rear-Admiral Lanman, are the Lancaster, (flagship,) the Portsmouth, the Wasp, and the Narraganset numbering in all 41 guns. Of this fleet the Narraganset has been completely refitted during the past year.

THE PACIFIC STATION extends from Behring Straits southward to Cape Horn, and westward to the 170° west longitude, and south of the Equator to the 115° east, including the South Pacific groups, New Zealand, New Guinea, and Australia. The fleet on the station is divided into two squadrons, called respectively the North and South Pacific Squadrons.

The North Pacific Squadron, under the immediate command of Commodore William R. Taylor, consists at this time of seven ships, mounting in all 88 guns, six of which are on the station, and the seventh under orders to join the squadron, viz.: The Pensacola, the Saranac, the St. Mary's, the Cyane, the Nyack, and the Saginaw, with the California about to sail.

The South Pacific Squadron, now under the immediate command of Commodore David McDougal, consists of five ships, mounting in all 40 guns, viz.: The Jamestown, the Ossipee, the Resaca, the Onward, and the Mohican. The whole fleet thus consists of 12 ships, mounting in all 128 guns, and is under the general command of Rear-Admiral John A. Winslow, who relieved Rear-Admiral Turner on the 9th day of September last. Of this fleet all but three vessels have been refitted or repaired since the date of my last report.

Our coast line on this station, including that of Alaska, is over 4,000 miles in extent, and the duties and responsibilities of this fleet are of great variety and importance. Besides a general protectorate of the persons and property of our missionaries, representatives, citizens, and traders scattered on the coasts and in the seaports of South America and the Isthmus, and among the islands of the Pacific, they include a

supervision of the interests of the Government and our people in the whaling and seal fisheries of the north, and of our commercial relations with the islands, and with the east. In these interests long stretches of coast must be surveyed, ports of resort and harbors of refuge on the the mainland and in mid ocean must be sounded and dredged, points of difficulty and of danger tested and marked out, and at vast distances, with thousands of miles between, the flag of the republic must be displayed wherever barbarism is ignorant or cupidity unmindful of our rights and power.

The reports of the operations of the ships on this station, which, together with those of the other fleets, will be found detailed in brief in the statement annexed, entitled "Operations of fleets," and more at large in the reports in the Appendix, will be found both interesting and instructive, especially those relating to the cruises of the Jamestown and Kearsarge among the islands of the Pacific.

THE EUROPEAN STATION, embracing all the waters of the Atlantic, and its communicating seas north of the Equator, and including the whole European coast and that of North Africa, is always a station of great consequence, in view of the intimacy of our relations with the peoples and governments of Western Europe, and the number and importance of our personal and commercial relations in that quarter of the world.

In the present condition of Europe the feelings and pride of our people, as well as their interests and safety, demand that we shall be represented there by all the force available for that purpose; and the Department has endeavored to increase the fleet in that quarter as far as was possible, in view of the requirements of other stations.

Our European fleet is now under the command of Rear-Admiral Glisson, who relieved Rear-Admiral Radford on the 10th of August last. It consists of the Franklin, (flag-ship,) the Brooklyn, the Richmond, the Plymouth, the Shenandoah, the Juniata, the Saco, and the Guerriere, eight ships, mounting in all 120 guns. Of these, seven are now on the station, and the eighth, the Guerriere, is under sailing orders to join the fleet. Of this fleet, all but the Franklin, the Richmond, and the Juniata have been refitted and repaired during the past year.

THE ASIATIC STATION embraces all the waters of Asia and of Eastern and Northeastern Africa, and the islands of the Eastern Ocean, stretching eastward till it meets the limits of the Pacific station extending from the west. The fleet on this station is now under command of Rear-Admiral John Rodgers, who relieved Rear-Admiral Rowan on the 20th day of August last. It consists of the Colorado, (flag-ship,) the Benicia, the Alaska, the Ashuelot, the Monocacy, the Palos, and the Idaho, (store-ship,) seven vessels in all, mounting 88 guns. Of this fleet all but three have been prepared for sea, and have sailed from the United States since the date of my last report.

The Palos, a small steamer of 306 tons, fitted and armed for cruising

in the rivers of China, was sent to join this fleet by the route of the Suez Canal. She made the passage from Boston to Singapore in seventy-three sailing days. The history of her voyage and her passage of the canal, detailed in the Appendix, will be found of much interest.

The importance of our interests on this station can hardly be overestimated, and the constant necessity for an increase of our force there oppresses the Department. The uncertain tenure by which all the interests of commerce, civilization, and religion are held in the East; the ignorance which clogs, and the superstitions which thwart, all plain-dealing with barbaric and semi-barbaric power; and the vast distances which separate the points of interest or danger—all these combine to demand an increase of force which the Department is unable to afford.

The feeling of uncertainty and alarm which at this time pervades all the European settlements in China extends to our own commercial and religious representatives, and the bulk of our Asiatic fleet is now cruising in that portion of the station for the protection of any interests which may be threatened, and the display, as far as may be, of that armed force which makes the strongest appeal to Asiatic respect.

MIDWAY ISLANDS.

The act making appropriations for the naval service, approved March 1, 1869, appropriated \$50,000 for deepening the entrance to the harbor of Midway Islands, in the Pacific Ocean, to afford a safe rendezvous and port of refuge and resort for the naval and merchant vessels of the United States. In pursuance of the provisions of this act a contract was entered into with Mr. George W. Townsend, of Boston, September 30, 1869, to execute the work, and one of the vessels of the Pacific fleet, the Saginaw, under Lieutenant Commander Sicard, was detailed to aid the contractor by making the necessary surveys, and to afford such other facilities as were reasonable and best calculated to forward the enterprise. The commanding officer of this ship was charged with the immediate supervision of the work, and with the inspection of it as contemplated by the act.

The Saginaw reached the Midway Islands March 24, and as soon as possible thereafter the deepening of the channel was commenced, and has been continued with fidelity. More difficulty has been experienced and greater obstacles encountered than were anticipated, but at the date of the latest report from the officer in charge, he was able to form a tolerably fair estimate of the time and cost of completing the work. His estimate of time is fifty-two months from April 23, the date of its commencement, and of the cost, about \$214,000—which sum he considers to be the least that can be allowed. It is agreed in the contract that the United States shall have the option of terminating the work whenever the appropriation specially made for it by Congress shall be insufficient for its further continuance, and as the Department has given positive instructions that the appropriation be not exceeded, there will

be no means for prosecuting the work longer than till October, at which time the party proposes returning to San Francisco.

Lieutenant Commander Sicard gives in his report full and interesting details of the manner in which the work has been executed, its progress from time to time, and the prospects of its successful termination.

INTEROCEANIC CANAL.

In execution of the plan stated in my last annual report for surveying the Isthmus of Darien, with a view to ascertain by what route, if any, a ship canal might be constructed between the two oceans, three small vessels, the *Nipsic*, *Guard*, and *Nyaek*, were, in January 1870, placed under the command of Commander Thomas O. Selfridge, with instructions to explore and survey such portions of the province of Darien as might be supposed suitable for the location and construction of such a canal. Besides the officers and crews of these vessels, the exploring party consisted of a guard of marines, under the command of Captain Houston, and twelve civilians, employed as engineers, draughtsmen, telegraphers, mineralogists, and photographers. Two of the vessels (the *Guard* and *Nipsic*) were ordered to rendezvous in Caledonia Bay. The *Guard* arrived there on the 19th of February, and the *Nipsic* two days later, by the way of Aspinwall, where she touched to procure laborers and guides. The President of Panama exhibited a friendly interest, and sent an official representative to join the exploring party. The *Nyaek*, which was attached to the Pacific fleet, was ordered to San Inigues Bay, but, not reaching her destination until the 14th of April, her officers and crew took no part in the explorations on shore, but were advantageously employed in harbor and coast survey. Three routes were explored and surveyed, viz.:

1. The Darien route, which, starting from Caledonia Bay, proceeds to the headwaters of the Sucubiti River, following that river to its junction with the Chucunaqui, thence goes westwardly, across the "divide," to the confluence of the Lara and Savanna Rivers, and down the Savanna to the Pacific Ocean.

2. The Sassardi route, which, leading from Sassardi Harbor, at the northerly extremity of Caledonia Bay, up the Sassardi River to the dividing ridge, moves thence to the river Morti, a tributary of the Chucunaqui, and thence, by the Morti, Chucunaqui, and Savanna, to the Pacific.

3. The route of San Blas, which, starting from the gulf of that name, passes through the valleys of the Mandinga and Marmoni Rivers, to the junction of the latter with the river Bayamo, or Chopo, and thence twelve miles by that river to the Pacific.

Each of these three routes was ascertained to be impracticable for a ship canal. In the first, an elevation of 553 feet; in the second, of 284 feet; and in the third, of 1,142 feet, must be overcome by tunnels, varying in length from six to ten miles, and involving an expense too mon-

strous for any hope of profit or advantage. The advent of the rainy season rendered the further survey of other routes impossible, and the expedition returned to report results and await further orders.

The report of Commander Selfridge seems to furnish abundant proof that the expedition was conducted with great industry, zeal, and skill; and although no feasible route has yet been discovered, the field of future exploration has been materially diminished. The importance of this work cannot be overestimated, and it is the purpose of the Department to prosecute the plan of exploration and complete the survey during the present season in such a manner as to settle definitely the question of a ship canal by any of the Darien routes.

The expedition, organized under the provisions of the act of Congress, for the survey of the Tehuantepec route for a ship canal, consisting of the *Kansas* and *Mayflower*, (tug,) sailed from Hampton Roads, under command of Captain R. W. Shufeldt, on the 14th of October, arriving at Key West on the 24th of that month. When last heard from they had left Key West, in good condition, for the place of their rendezvous. It is expected that the survey will be completed during the present season, and a favorable result is hoped for.

Such are some of the duties required of our naval force in time of peace, and such is the force which we are now able to put upon the seas for the performance of these duties.

It is true that, with all the Department has been able to do during the last year, it has not been possible to increase materially our cruising force on foreign stations. But this force is, I think, in a state of much greater efficiency than formerly, and there are, in addition, several ships ready for sea, which can sail to strengthen our squadrons as soon as crews can be enlisted to man them.

I am happy, moreover, to be able to report that the past year shows a marked improvement in the character and the conduct of the men enlisting in the service, and the general discipline and efficiency of the crews of our men-of-war. Many regulations have been made and orders issued during the last year looking to their comfort and health, and a system of rewards and promotions for good conduct established. This has already produced a noticeable effect for good, and it needs only to be pursued and enlarged to make the Navy attractive to the best sailors in the country. The officers in charge of this subject unite in recommending, as an improvement now most urgent, the allowance of an outfit of clothing to each sailor, on enlistment, after the manner of the allowances of a similar character made in the Army; and the Department concurs in this recommendation, as an act of justice, and a means of relieving the men from the necessity of entering the service in debt to the Government, and removing this inducement to discontent and desertion. I beg also, in this connection, to refer to, and repeat, the recommendations, made at length in my last report, upon the subject of improving the character of our seamen, and of their training, registry, and organization as a part of the available force of the country.

NAVY YARDS.

The condition of our navy yards in various parts of the country demands attention. Very little has been done toward their improvement at any time since the commencement of the war, and last year nothing was appropriated for that purpose, except a small amount for the Mare Island yard.

The late Secretary, Mr. Welles, frequently called the attention of Congress to the condition to which our building and repairing yards were coming under this policy; and in my last report I felt called upon to speak at some length on the subject. Each year that they are postponed, the necessity for improvements grows more imperative, and the cost of making them larger, while the want of them is each year more and more severely felt in the increased cost to the Government of the work which we are obliged to do, entailed by the want of the ordinary appliances for rapid and economical labor. This want is most severely felt at Mare Island, where is situated our only naval establishment on the Pacific coast. - Our vessels for the Pacific fleet should be built, as far as may be, and all of them, as well as those of the Asiatic fleet, should be repaired, at this yard. The passage round Cape Horn is too difficult and dangerous, and consumes too much time to be thought of when other means of refitting and repair are possible to the Government; yet, for the want of appropriations for the proper buildings, tools, and machinery for this yard on the Pacific, our ships are obliged to make long and dangerous passages to the Atlantic coast with great detriment to the service and loss to the Government; and expensive and cumbersome machinery built at the East must be transported across the continent at an expense often equal to its original cost.

I would, also, again press the suggestions made last year in regard to the importance of removing our large working yards from their present situation in the midst of populous and growing cities; and call attention again to the necessities of the service and the obligations of the Government in regard to the League Island portion of the Philadelphia station, and to that at New London.

THE SUBMARINE TORPEDO.

The importance of the submarine torpedo as a weapon of naval warfare is every day more apparent. As our experiments and improvements progress, the terrible power of this engine and the certainty and ease with which it may be applied are more clearly demonstrated, and it promises to be the most efficient, as well as the least expensive, means of defense and attack known to the service. Recent events in Europe have shown its value as an important part of the system of coast defense. We are progressing in this direction as fast as the appropriation will permit, and if the suggestions of the officers in charge of this branch are carried out, we shall, I think, be as well armed in this respect as any other power in the world.

The reports of the several Bureaus of the Department, and that of the Admiral upon the condition of the service, will be found in the Appendix to this report. They contain much that is instructive and valuable. I shall not pause to repeat them in detail, but, recommending them for the study of all who, from duty or inclination, are interested in the service, shall refer specially to a few things which impress me as of the most urgent importance.

HYDROGRAPHIC OFFICE.

The necessity of an American hydrographic establishment, furnishing its own charts, books, and sailing directions, at least to our own commerce, if not to the outside world, and performing its portion of the work of surveys and discovery, must be apparent to any one even slightly acquainted with the wants of commerce and the duties of a commercial nation. Under all European governments of any note such establishments have long been in operation, furnishing their quota for the general advance of science and the greater security of navigation. In this the hydrographic office of England takes the lead; and, furnishing its charts and publications to a great part of the commercial world, exacts a tribute which pays almost the whole expense, not only of the office and its publications, but of the surveys constantly carried on in every quarter of the globe. Our country, with perhaps greater advantages, has done, and is doing, but little in comparison. Although a hydrographic office has been established by Congress, under the Bureau of Navigation, no steps have been taken toward its advancement and gradual increase, and it is at present scarcely more than a depot of charts, the greater part of which, with the sailing directions, &c., used by our naval and commercial marine, are purchased from abroad; and, in the event of a rupture of our relations with Great Britain, our supply would be, in a great measure, cut off. There is not in this country a private firm of hydrography. The Government, by establishing its own office, has destroyed private enterprise in this direction, and taken upon itself the supplying of all the needed information; and most properly so, for private firms can neither find this branch sufficiently remunerative to insure accuracy, nor can they readily obtain the necessary information, which comes largely from the offices of foreign governments and from original surveys entirely beyond their province.

To place our office on a proper basis, and make a gradual advancement from year to year, a fair appropriation is required to procure and arrange a proper building for the prosecution and extension of the work; and a yearly allowance to enable the office to increase gradually its engraved chart-plates, &c., until such a time as, by the sale of their work, with an increase of commerce, the office would pay for itself. A small yearly appropriation should also be made for prosecuting surveys abroad in such unsurveyed fields as most require it, and which may most immediately benefit our own commerce.

MAGAZINE AT NORFOLK.

I beg leave, also, to call your attention to the unsafe condition of the magazine at Norfolk, Virginia, and to ask that a sufficient appropriation be made for the purchase of a new site in a safer position, and for the erection of the necessary buildings. A smelting furnace has been erected, and is in full operation within 200 feet of the present site of the magazine buildings, some of which are of wood, and the town is fast extending to direct contact with their walls.

NITER DEPOT.

The subject of a niter depot, for the storage of niter at some inland point, near railroad or canal communication with the seacoast, also presses for action. This subject was fully presented by the Chief of the Bureau of Ordnance, in a note to the estimates for the Bureau for 1869-70. This is believed to be very important, and it is hoped that Congress will see the propriety of acting in the matter.

ORDNANCE.

In ordnance there is no reason to believe we are yet behind other nations, but large sums are now being expended by them in experiments with cannon and guns of all calibers; and as the inventive genius of our country is much engaged in the improvement of arms, and new suggestions, some of much apparent merit, are constantly offered, it is hoped that a suitable sum may be allowed for testing them, particularly as most of the inventors are without the means for doing this themselves.

IRON SHIP-BUILDING.

Among the many enterprises on foot for restoring our commerce and affording greater facilities to the Navy in time of war, which ask for governmental assistance, those which present themselves most favorably to the Department are such as propose to erect building yards for iron ships, and docks of large capacity, sufficient for the building of the largest class of steamers for mercantile and war purposes, and offer to the Government preference for their work in time of peace, and absolute control in time of war. We have not at this time the requisite docks, tools, and machinery for the construction of these great iron vessels, and the establishment and control of such works as these would of course be of great advantage to the Government.

THE NAVAL ACADEMY

at Annapolis continues to be a subject of great interest and satisfaction to all who are interested in the service. The mental and physical development produced under the system there pursued is of great value, and its benefits are felt in every department of the service. The

Board of Visitors, whose report is annexed, (in the Appendix,) have made recommendations, in which the Department concurs, in regard to the increase of age at the time of admission; the purchase of a strip of land lying contiguous to the Academy, and between two portions of the Government property, and the establishment of a swimming school. It should not be forgotten by those interested in this institution that it is intended as a school of *discipline* for an exact and difficult service, as well as of mental instruction and improvement. In this view, the enforcement of regulations, which to the uninformed may seem strict, becomes necessary to maintain the standard of the school, and accomplish the ends for which it was established.

THE DEATH OF ADMIRAL FARRAGUT.

Since the adjournment of Congress the nation has been called to mourn the death of the great naval hero, Admiral David G. Farragut, who was alike distinguished for his service to his country, for his moral worth, and for the simplicity of his personal character. He has passed to his rest while his deeds are yet fresh in the memory of his countrymen. Entering the naval service at an early age, he gave evidence, as a boy, on board the historic *Essex*, of that bravery and self-reliance which distinguished him in after-life. During the years of peace which succeeded, his professional conduct and his personal bearing, as he advanced from grade to grade in the service, placed him among the foremost of his profession in the estimation of the Department and of the country.

On the breaking out of the rebellion Admiral (then Captain) Farragut, though a citizen of a seceding State, knew no other allegiance than that pledged to the Government and flag of his country. He was early selected by the Navy Department as the commander-in-chief of the blockading squadron operating on the southern coast, where, by the brilliant exploits of the fleet under his command at New Orleans, in the Mississippi, and at Mobile, he conquered the admiration of the world, and won the gratitude of his country. Honored both at home and abroad, and beloved by all who knew him, he has descended to the grave, and his country mourns the hero and the man. Since his death the very distinguished officer who had occupied the position of Vice-Admiral has succeeded to his place as Admiral, and Rear-Admiral Rowan, who has received the thanks of Congress for gallant services to the country, has been appointed Vice-Admiral.

THE LOSS OF THE ONEIDA.

On the afternoon of the 24th of January last the steam sloop of war *Oneida*, carrying 6 guns and a crew of 176 officers and men, steamed out of the harbor of Yokohama on her return to this country, after a cruise of three years on the Asiatic station. At 7 o'clock on the same

evening, in the Bay of Yedo, about fifteen miles from Yokohama, she was run into by the English steamer Bombay, carrying the mails and passengers for the last-named port. After cutting down the Oneida, and carrying away entirely a large portion of her stern, the Bombay proceeded on her way, leaving behind her, in the darkness, the unfortunate ship and her gallant crew. In less than fifteen minutes from the time she was first struck the Oneida had sunk beneath the waves, and, of 24 officers and 152 men, but 2 of the former and 57 of the latter escaped a watery grave.

I have already had the honor, in response to resolutions of Congress, to communicate all the information on this subject which was in the possession of the Department, and to express my opinion of the causes of the disaster and of the conduct of the actors. I have not since that time seen reason to change these views, and, still believing that our loss was caused by the recklessness and bad navigation of the persons in charge of the Bombay, I recommend that the Department be authorized to take such means as may be available to obtain redress from her owners for our pecuniary loss. The lives of those who perished cannot be restored, nor their loss repaid to their families or their country.

• NAVAL PENSION FUND.

The pension roll on the 1st of November, 1870, was as follows:

1,368 invalids, annually receiving	\$123,014 50
1,642 widows and children, annually receiving	266,032 00
3,010 persons, receiving a total of	389,046 50

EXPENSES AND ESTIMATES.

The whole actual expenditure of the Department and the service, chargeable to the Navy appropriations since the date of the last report and up to the 1st of December, is the sum of \$18,985,165 11. This amount will be slightly, but only apparently, increased by the payments of adjudicated prize-money, and the bounties given by Congress to the heirs of those lost in the Oneida, which sums, though chargeable to other funds, will appear in the general sum of naval expenditure.

The actual expenditure of the year ending December 1, 1869, was \$20,081,285. This shows a decrease in the expenditure of the last year from that of the previous year of \$1,096,119 89.

The appropriations for the current fiscal year, ending on the 30th day of June next, amount, in the aggregate, to \$19,994,637 17.

The expenditure since the commencement of the fiscal year is within that proportion of the appropriations applicable to the five months which have passed, and shows a decrease, during that period, of \$2,488,585 30 from the expenditure of the corresponding five months of the last year.

A statement showing the amounts drawn, refunded, and expended for each month of the last year is hereto annexed.

The estimates for the general expenses of the service for the fiscal year ending June 30, 1872, amount to \$20,683,317 77, and are as follows :

Pay of officers and seamen of the Navy.....	\$6,500,000 00
Current repairs of buildings, docks, and incidental ex- penses in navy yards, &c	833,850 00
Pay of civil establishment in navy yards, hospitals, &c.	317,544 00
Ordnance and Torpedo Corps	987,000 00
Coal, hemp, and equipment	1,700,000 00
Navigation, navigation supplies, &c	137,500 00
Hydrographic work	40,000 00
Naval Academy	200,340 77
Naval Observatory and Nautical Almanac, &c	49,000 00
Repairs and preservation of vessels.....	3,925,000 00
Steam machinery, tools, &c	1,715,000 00
Provisions.....	1,500,000 00
Clothing	250,000 00
Repairs of hospitals and laboratories.....	40,000 00
Surgeons' necessaries.....	50,000 00
Contingent expenses of various Departments and Bu- reaus	1,392,000 00
Support of Marine Corps	1,046,083 00
Total	<u>20,683,317 77</u>

And to these is added the sum of \$955,100 as necessary for permanent improvements at the several navy yards and stations.

These estimates approach very nearly to the appropriations for the current year, though including some new expenditures deemed absolutely necessary, and their excess over the current appropriations is less than the amount of the deficiencies in the departments of provisions and clothing, occasioned by the return to the treasury, under the provisions of the law upon that subject, of moneys appropriated to discharge the regular and authorized expenses of those departments. These estimates are made closely, however, for the mere maintenance of the Navy as it now is, and they include but little in the way of permanent improvement. This seems to be the policy indicated by the recent legislation on the subject, and though I am of opinion that it is neither the wisest nor the most economical policy, yet it is the plain duty of the Department to accommodate the service, as far as may be, to the views of the representatives of the people.

I have not repeated at length many of the important suggestions and recommendations for the improvement of the Navy which I felt it my duty to make last year ; but those recommendations still remain, and I

beg to refer to and again press them, as suggestive of much that is needed not only for the efficiency of the naval service, and for the honor, safety, and welfare of the country.

Should Congress at any time think fit to adopt any measures looking to permanent improvement in the number and character of our naval force, the Department will be ready to furnish the proper information and estimates.

In this connection I will repeat, what I have had occasion before to remark, that neither ships, dock-yards, or ordnance can be legislated into existence at the moment when needed, but are the products of long-continued industry and skill. A ship of war, armed, equipped, manned, and officered for efficient service, cannot be extemporized, but is the combined result of much labor, skill, science, training, discipline, and experience, produced by slow processes and organized with great care.

Merchant vessels, whether of wood or iron, though of great value as an auxiliary force of privateers, dispatch boats, and cruisers, could not in time of war be relied on as a main body of the Navy. Not built to carry heavy batteries, nor to resist the effect of heavy shot or shell, they could not encounter the war ships of any enemy.

During the last session of Congress the following resolution was submitted to the House of Representatives by its Committee on Foreign Affairs:

Resolved, That it is clearly the duty of our naval officers on foreign stations to render all reasonable assistance to the diplomatic officers of the United States in the discharge of their duties; and that a refusal or neglect to render such assistance when required, or any discourtesy by such naval officers toward such diplomatic officers, should be the subject of inquiry and punishment by the Navy Department.

On this subject it is proper to remark that the Department fully concurs in the general views here expressed, and has enforced them in its regulations and orders to the commandants of the national vessels and fleets.

In the various suggestions which I have made in this report I have endeavored to confine myself to those questions with which the naval service is directly connected, leaving it to the representatives of the people to say how far their solution must affect the general policy of our Government, and the affirmative character and dignity of our relations at home and abroad. I have felt it my duty, however, to speak plainly in this, as in my last report, of the needs of our Navy, for its present and possible duties, that Congress, fully informed upon the subject, may assume its share of the responsibility before the country.

In conclusion, I would express my renewed obligations to the chiefs and officers of the several Bureaus for their skill and attention, and to the accomplished chief clerk of the Department, who has discharged his onerous duties with great industry and ability.

GEO. M. ROBESON,
Secretary of the Navy.

The PRESIDENT.

SUPPLEMENT.

Exhibit of expenditure chargeable to Navy appropriations.

Months.	Amount drawn.	Amount refunded.	Amount expended.
1869.			
December	£2,781,744 03	\$1,017,029 09	\$1,764,714 94
1870.			
January	3,413,771 16	659,783 03	2,762,988 13
February	2,188,848 88	889,251 65	1,299,597 23
March	2,045,903 54	551,841 19	1,494,062 35
April	1,810,047 03	876,224 88	933,823 05
May	2,222,958 04	181,355 51	2,041,603 13
June	1,644,987 83	293,821 66	1,351,166 17
July	1,600,220 72	129,585 02	1,470,635 70
August	1,884,523 27	170,207 84	1,714,315 43
September	1,934,396 03	369,420 12	1,564,975 91
October	1,837,999 43	82,035 37	1,755,964 06
November	1,368,832 20	537,513 19	831,319 01
Total	24,734,233 66	5,749,068 55	18,985,165 11

Force of foreign navies in vessels, guns, and horse-power.

Countries.	Steam.	Sail.	Total.	Guns.	Horse-power.
Great Britain.....			630	7,982	105,898
German Union	44	97	141	1,039	9,736
France	362	100	462	4,834	91,338
Netherlands	67	64	131	1,303	.....
Portugal	5	25	30	366	.....
Spain	74	48	122	1,000	.....
Italy	88	8	96	948	26,716
Austria	53	164	217	.....	12,474
Turkey	91	94	185	2,370	.....
Russia	237	37	274	2,900	.....
Sweden and Norway	33	256	289	1,323	.....
Denmark	31	58	89	455	3,890

* Forty-eight steam gun-boats.

List of vessels in the British navy that can be made available in a short time.

Thirty-six broadside vessels, carrying 555 guns of large caliber, (divided as follows:)

First class: Hercules, 6 to 14 inch armor, speed, 14½ knots; Sultan, 6 to 14 inch armor, 18-ton guns.

Second class: Audacious, Invincible, Vanguard, Iron Duke, Swiftsure, Triumph, 8 to 16 inch armor, speed, 13½ knots, 12-ton guns.

Third class: Bellerophon, Lord Warden, Lord Clyde, Minotaur, Agincourt, Northumberland, Royal Alfred, Repulse, Penelope, 5 to 6 inch armor, speed, 14 knots, 12-ton guns.

Fourth class: Achilles, Royal Oak, Prince Consort, Caledonia, Ocean, Valiant, Hector, Zealous, 4½-inch armor, speed, 12 knots, 9-ton guns.

Fifth class: Warrior, Black Prince, Defense, Resistance, 4½-inch armor, speed, 13 knots, 9-ton guns.

Sixth class: Pallas, Favorite, 4½-inch armor, speed, 13 knots, 2-ton guns.

Seventh class: Enterprise, Research, 4½-inch armor, speed, 10 knots, 6½-ton guns.

Three gun boats: Vixen, Viper, Waterwitch, 4½-inch armor, speed, 9 knots, 6½-ton guns.

Eleven turret ships now on hand.

Class 1 (turret ships) will include, finally, 20 vessels of a new design, protected by 10 to 14 inch armor, with a speed of 12 knots, 25-ton guns, 600-pound shot.

Class 2 will consist of the *Monarch*, carrying 8-inch armor, speed of 14 knots, carrying 25-ton guns.

Class 3 will consist of the *Glatton*, 10 to 12 inch armor, speed, 9 knots, 25-ton guns.

Class 4, *Hotspur*, 10 to 14 inch armor, 12 knots, speed, 18 to 25-ton guns.

Class 5, *Royal Sovereign* and *Prince Albert*, 4½-inch to 5½-inch armor, speed, 12 knots, 12-ton guns.

Class 6, *Scorpion* and *Wyvern*, 4½-inch armor, speed, 10 knots, 12-ton guns.

Vessels fitting and building in English naval dockyards, to be ready about December 1, 1870.

Devastation, 4 guns, (turret;) *Glatton*, 2 guns, (turret;) *Thunderer*, 4 guns, (turret;) *Sultan*, 12 guns, (heavy combination;) *Rupert*, 3 guns, (turret;) *Swiftsure*, 14 guns, (broadside;) *Iron Duke*, 14 guns, (broadside;) *Audacious*, 14 guns, (broadside;) *Invincible*, 14 guns, (broadside;) *Vanguard*, 14 guns, (broadside;) *Hotspur*, 2 guns, (turret;) *Fury*, 4 guns, (turret;) *Hercules*, 12 guns, (heavy combination.)

Available wooden steamships for immediate service, British navy.

Twelve line of battle ships, *Inconstant*; frigate, speed 15 knots; *Active* and *Volage*, frigates, speed 15 knots; twelve corvettes of *Blanche* class, speed 13 knots; two *Druid* class, speed 13 knots; twelve gun vessels, (new,) speed 13 knots; seventeen gunboats, speed 13 knots; eight heavy corvettes, (of old class,) besides ten other vessels of smaller tonnage.

List of vessels in the Spanish navy, with their stations.

First-class vessels, (iron-clad,) from 15 to 20 guns: *Victoria*, Havana; *Numancia*, Carthage; *Tetuan*, Mediterranean squadron; *Sagunto*, Ferrol arsenal; *Arapilis*, Ferrol arsenal; *Zaragoza*, Havana; *Resolucion*, Carthage; *Castilla*, Arragon, and *Navarra*, in construction at the arsenal at San Fernando.

Screw vessels: *Villa de Madrid*, Mediterranean squadron; *Almansa*, Havana; *Navas de Colosa*, Havana; *Gerona*, Havana; *Asturias*, Mediterranean squadron; *Carmen*, Ferrol; *Lealtad*, Havana; *Concepcion*, Ferrol; *Blanca*, South America; *Barenguela*, West Indies; *Maria de Molina*, Caracas.

Paddle-wheel vessels, (wooden,) averaging 12 guns: *Ciudad de Cadiz*, Havana; *Fernando el Catolico*, Havana; *Isabel la Catolico*, Havana; *Colon*, Cadiz; *Blasco de Garay*, Havana; *Pizarro*, Havana; *Cortez*, Havana; *Ulloa*, Havana; *Vasco Nuñez*, Havana; *Chincurra*, Havana; *Lipanto*, Barcelona; *Limers*, Cataluna; *Vigilante*, Valencia; *Alerta*, Malaga; *Venadito*, Havana; *Neuturno*, Havana; *Quande Austria*, Havana; *Peles*, San Lucas; *Bazan*, Havana.

Screw corvettes, (wooden,) 12 guns: *Consuelo*, Cadiz; *Vencedora*, Manila; *Narvaez*, Manila; *Circe*, Manila; *Santa Lucia*, Cadiz; *Diana*, Cadiz; *Africa*, Havana; *Vadras*, Manila; *Andalusa*, Havana; *Guadiana*, Havana; *Hueloa*, Havana; *Serruia*, Havana; *Legira*, Cadiz; *Favorita*, Havana; *Filomela*, Havana; *Constancia*, Manila; *Animosa*, Manila

Valiente, Grospondad, Coast of Calabria; Candor, Havana; Santa Ceriso, Cadiz; Buenaventura, Vigo; Caredad, Canary Islands; Concordia, Fernando Po; Editana, Baleares; Ceres, South America.

Screw transports, 6 guns: Borgia, Havana; Marquis de la Victoria, Manila; Esaus, Manila; Patino, Manila; Ferrol, Cadiz; San Antonio, Cadiz.

Sailing vessels, 54 guns: Esperanza, Cadiz; Santa Maria, Cadiz. These two vessels form the school squadron with the Trinidad.

Pontoon vessels: Iberia, Havana; Algerias, Algerias.

Monitors or gunboats, 1 gun, (100-pounder,) in Cuban waters: Activo, Rapido, Argos, Lince, Centanela, Quien Vive, Viga, Astuto, Almenares, Eco, Distello, Marenero, Soldado, Ericsson, Librel, Cazador, Canto, Gaceta, Telegrama, Creolo, Ardid, Indio, Caribe, Alarma, Discubridor, Jumari, Flecha, Dardo, and Prueba.

The following are at Manila: Mindoro, Paraguay, Calamidalis, Mindanao, Panay, Lamar, Filipino, Baluscar, Ioli, Marielies, Arayak, Pam-pauga, Boqueador, Altay, Manileuo, Canteno, Balanquinqui.

OPERATIONS OF THE FLEETS.

NORTH ATLANTIC FLEET.

Rear-Admiral Charles H. Poor, who was in command of the North Atlantic fleet at the date of the last report, was relieved at Hampton Roads, August 16, by Rear-Admiral S. P. Lee.

In December, 1869, Rear-Admiral Poor proceeded to Nassau, from which port he gave passage to Key West in his flag-ship, the Powhatan, to thirty-six destitute Americans, late of the steamer Lillian, engaged in the service of the Cubans. December 13 he transferred his flag to the Severn, which had arrived at Key West from New York. The Powhatan returned to Philadelphia and was put out of commission January 1. In January he visited Havana and Matanzas, the iron-clads Dictator and Saugus accompanying the flag-ship. In February he proceeded to the San Domingo coast, remained until April, repaired to Santiago de Cuba, where he investigated the treatment of the United States consul, and returned to Key West, via Kingston and Havana, May 12. He again visited Havana in June, and on the 30th July departed from Key West for Hampton Roads, where he was relieved, as above stated, August 16.

Rear-Admiral Lee expects to sail in a few days from Norfolk for Key West. The Severn, since her return, has been undergoing repairs, which are nearly completed. In the meantime, with the aid of the tug Triana, which was temporarily placed under the command of Rear-Admiral Lee, he has been engaged in carrying out special instructions of the Department.

Commodore Green hoisted his pennant on board the Congress as commander of the south squadron of the North Atlantic fleet, at Boston, April 26; sailed May 4; and arrived in Samana Bay May 22. He remained on the coast of San Domingo until July 21, when, in pursuance of orders, he proceeded to Key West, arriving there July 28, and assuming temporary command of the fleet July 30. With the exception of a visit to the coast of Cuba in November he has remained with the Congress at Key West, waiting the arrival of the admiral of the fleet.

The Nantasket has been stationed the greater part of the year in the waters of San Domingo. In April she convoyed the Dictator to Havana from Samana, and after visiting Key West and Trinidad de Cuba returned to her station, arriving June 5.

The Swatara has also been stationed principally in the waters of San Domingo. She arrived on that coast from New York in February; left there June 20 for Puerta Cabello, Venezuela; and returned July 9. Orders were issued in October directing her to visit St. Pierre, Laguayra, and Puerto Cabello, and she is probably now engaged in carrying them out.

The Tuscarora relieved the Seminole at Aspinwall in November, 1869, and in April returned to Key West. She visited the coast of Cuba in June; was subsequently engaged in assisting the iron-clads Wyandotte, Ajax, and Manhattan from New Orleans to Key West. Her last orders were to Havana.

The Albany returned to New York in December, 1869, last from the island of San Domingo, and was put out of commission January 7.

The Seminole was relieved by the Tuscarora at Aspinwall in November, 1869; visited Carthagena and Port au Prince; arrived at New York February 14 from Key West; and was put out of commission February 25.

The iron-clads Dictator, Saugus, and Terror, have been most of their time at Key West and Havana. The two first named accompanied the Severn to the coast of Cuba in January; the Dictator extending her cruise with the flag ship to the San Domingo coast, and returning to Key West via Havana May 12.

The Saugus visited Havana again in February, and was also there from March — to the 6th of June.

The Terror joined the fleet at Key West May 27; visited Havana in June; and has been at Key West from that date.

The Yantic was put in commission at New York February 3; sailed March 1; and arrived at San Domingo March 9. Thence she proceeded to Havana and Key West. From April to July she was engaged in making soundings in the waters of the West Indies, to promote the advancement of sub-marine cable communication, having, while in the performance of this particular service, visited several of the Cuban ports, Kingston, Jamaica, Antigua, Dominica, Port Castriés, St. Lucia, Barbadoes, Granada, Port au Spain, Demarara, St. Thomas, and Porto Rico. She is now on the San Domingo coast.

The tug Pilgrim joined the fleet in May, accompanying the Terror from Hampton Roads, and has been usefully employed.

SOUTH ATLANTIC FLEET.

This fleet consists of the Lancaster, Portsmouth, and Wasp, to which is to be added the Narragansett, and is commanded by Rear-Admiral Joseph Lanman, who arrived at Rio de Janeiro in the Lancaster, from the United States, via Madeira and Bahia, January 6.

The Lancaster sailed from Rio January 26; arrived at Port Stanley, Falkland Islands, February 14; remained there ten days, and returned to Montevideo March 13.

May 12 Rear-Admiral Lanman transferred his flag temporarily to the Wasp, and visited Colonia and Buenos Ayres. July 12, in the Lancaster, he sailed from Montevideo, and arrived at Rio August 3, via Maldonado. On the 25th August left Rio, and returned to Montevideo September 11, where he will probably remain for some time, as the politi-

cal situation and disturbed condition of affairs in Uruguay and the Argentine Republic make the presence of the flag-ship and commander of the fleet much more important than at any other point on the coast.

The Portsmouth sailed from Rio January 24 for a cruise on the coast of Africa, during which she visited Cape Town, St. Paul de Loando, St. Helena, and Ascension. She returned to Rio April 22; left there May 12; and arrived at Montevideo May 26. Visited St. Catharines in August and left there September 24, for Rio, Pernambuco, Maccio, and Bahia.

The Wasp has been employed during the greater part of the year in the La Plata and its tributaries. In April she visited St. Catharines, and in August conveyed the Hon. J. L. Stephens, United States minister to Uruguay and Paraguay, to Asuncion, calling on the way up at Buenos Ayres, Rosario, La Paz, Rincon Soto, and Corrientes.

The Quinnebaug, until her departure for home in April, was employed about the La Plata. In December Mr. Kirk, minister of the United States to Buenos Ayres, was received on board and conveyed from Montevideo to Buenos Ayres and Colonia. April 1, she left Montevideo for the United States, and arrived at Norfolk July 18, where she was put out of commission. On the way home she touched at Rio, Bahia, Pernambuco, Para, and St. Thomas, and gave passage to twenty-nine exiles, (whom she landed at Charleston,) from the United States to Brazil, who were destitute and anxious to return.

PACIFIC FLEET.

Rear-Admiral Thomas Turner arrived at San Francisco January 11, in the Mohican, to which vessel he had transferred his flag from the Pensacola in October 1869, from a visit to the Sandwich Islands. January 27 he shifted his flag to the Saranac and sailed from San Francisco on a cruise southward; arrived at Panama April 13, having touched on the way at Acapulco and Realejo, and left again the 18th for Tumbes and Payta, to inquire into the circumstances of the arrest of the United States consul at the former place. He left Payta April 25, and arrived at Callao April 28, via the Guañape Island. May 12 he transferred his flag temporarily to the Kearsarge, and sent the Saranac, on board which Commodore McDougal hoisted his flag as the commanding officer of the South squadron of the Pacific fleet, to the coast of Chili.

The Saranac returned to Callao July 22, having visited Valparaiso and Talcahuano, and Rear-Admiral Turner re-shifted his flag to her and sailed July 26 for San Francisco, to meet his successor. Arriving at Acapulco August 14, and learning of the destruction of the Forward, he proceeded to San Blas and Mazatlan to take such further action as might be required. September 1 he arrived at San Francisco, and September 7 turned over the fleet to Rear-Admiral John A. Winslow.

The North squadron of the fleet is still under the command of Commodore William Rogers Taylor.

Commodore Taylor left San Francisco March 21, in the Mohican, for the northwest coast. April 4 he arrived at Esquimault; subsequently visited the Island of San Juan, Port Townsend, and Victoria, and returned to San Francisco April 29. August 20 he sailed from San Francisco in the Ossipee for Magdalena Bay, and returned again October 23. During this cruise the Mohican visited repeatedly La Paz and Pichilique, also Cape St. Lucas, Mazatlan, and San Diego, and rendered valuable assistance to the officers and crew of the wrecked steamer Continental, and to the American colonists at Magdalena.

The *Ossipee* is under orders to the south squadron.

Commodore D. McDougal, after his return from Chili in the *Saranac*, hoisted his pennant temporarily on board the *Onward*, at Callao, July 26.

The *Mohican*, on her return from the northwest coast, was ordered to the south squadron. Leaving San Francisco May 19, she touched at Mazatlan, and there learned of the piratical movements and proceedings of the steamer *Forward*. Commander W. W. Low went at once in pursuit of the pirate and came up with her in the river Tecapan. Six boats of the *Mohican*, under command of Lieutenant W. H. Brownson, the executive officer of that vessel, attacked, captured, and burned the *Forward*. The particulars of this gallant exploit are detailed in the reports forming a part of the Appendix, and will be read with interest.

The promptness of Commander Low forestalled the action of Admiral Farquhar, commanding the British naval forces in those waters, who had issued orders for the capture of the *Forward*. The sole cause of regret connected with this affair is the casualties from the fire of the pirates. Ensign J. M. Wainwright, a young officer of great promise, was mortally wounded, dying shortly afterward; James Donnell, coxswain, was killed, and six other brave men wounded. The *Mohican*, continuing her course southward, arrived at Panama August 15, and sailed again September 17, for Callao.

The *Kearsarge* returned to Callao October 31, 1869, from an extended cruise through the islands of the South Pacific, and as far east as Sidney, New South Wales, and Wellington, New Zealand. From that date until she was stationed on the west coast of South America. September 29 she arrived at San Francisco from Callao, via the Sandwich Islands, and was put out of commission October 13.

The *Jamestown*, which was sent in August, 1869, on a cruise to the Feejee and Caroline Islands, returned to San Francisco January 21, without having fully carried out her mission. During this cruise she touched at the Marquesas group September 30; remained one day, and arrived at the Feejee October 22. She remained there until November 6, during which claims of long standing, of citizens of the United States against the natives, were under arbitration. From the Feejee she crossed the equator and steered for the Marshall Islands, reaching the Archipelago November 29; but failing to make a harbor after repeated efforts. March 11 she sailed from San Francisco, for the purpose of fulfilling previous instructions; arrived at Honolulu March 27; remained there until April 30. The Gilbert Islands, the Marshall group, and the Caroline Islands were visited by the *Jamestown* in succession, and a thorough inquiry into the condition of American interests in those distant islands appears to have been made. The *Jamestown* returned to Honolulu in August, and sailed from that port for Callao about the 29th of October.

The *Resaca* sailed from San Francisco October 31, and arrived at Panama November 23, 1869; remained there until _____, and then proceeded to Callao. May 16 she left Callao for a cruise among the Marquesas, Society, Friendly, and Feejee Islands, and as far as New Zealand, from which she will return to Valparaiso, where she may be soon expected. She had visited the Marquesas, and when last reported, June 15, was at Tahiti.

The *Pensacola* has been under repairs; the *Dacotah* was put out of commission at San Francisco in March; and the *Cyane* has been stationed at Sitka since October 7, 1869.

The *St. Mary's* was put in commission at Mare Island February 12, but the want of seamen to make up her complement delayed her depart-

ure for sea. October 18 she sailed from San Francisco for the South Squadron, via the Sandwich Islands.

The Nyack cruised on the coasts of Peru and Ecuador in the early part of the year; in March, April, and May was coöperating with the Darien Surveying Expedition. She sailed from Panama July 6, arrived at Callao August 7, and is supposed to be now on the way to San Francisco.

The Saginaw has been on service connected with the deepening of the entrance to the harbor at Midway Islands, which place she reached March 29, from San Francisco, via Honolulu. She has visited Honolulu at different times, and was to have sailed for San Francisco in October.

The Onward arrived at Panama November 17, 1869, took on board the stores from the storehouse, which was discontinued, and returned to Callao. She is used as a flag-ship temporarily by Commodore McDougal.

EUROPEAN FLEET.

The vessels composing the European fleet are, at present, the Franklin, Richmond, Plymouth, Juniata, Saco, Shenandoah, and Brooklyn, to which is to be added the Guerriere.

The following is an outline of the cruising of the fleet since the last annual report of the Department.

The flag-ship Franklin, bearing Rear-Admiral W. Radford, arrived at Genoa February 16, from Marseilles and Villefranche; visited Spezia in March, and returned to Villefranche April 14. In May she proceeded to Port Mahon, Malaga, and Lisbon, arriving at the latter place June 9. Sailed from Lisbon June 18 and reached Flushing, Holland, July 8, having stopped two days at the Downes, England. Variola having made its appearance on board during the passage, the Franklin was quarantined at Flushing from July 19 to August 2.

August 10, Rear-Admiral O. S. Glisson relieved Rear-Admiral Radford of the command of the fleet, at Flushing, and proceeded in the Franklin to Portsmouth, England, the latter part of August, where the vessel has been in dock for repairs. November 7 he arrived at Lisbon.

The Richmond arrived at Barcelona November 24, 1869, from Lisbon, having touched en route at Cadiz, Gibraltar, and Malaga; left there January 4; returned to Lisbon January 20; proceeded thence to Cadiz, Gibraltar, Carthage, Port Mahon, Marseilles, and Villefranche, reaching the last-named port April 27. She subsequently made a cruise in the Adriatic; visited Trieste, Nice, and Leghorn, and when last heard from, in October, was at Marseilles.

The Plymouth, after a protracted cruise along the coasts of Syria and Africa, returned to Marseilles November 19, 1869, and was sent to Portsmouth, England, to convey the remains of Mr. Peabody to the United States. She arrived there December 4, and the Monarch having been detailed by the British government to perform this duty, the Plymouth accompanied that vessel, leaving Portsmouth December 21, and reaching Portland, Maine, January 25. She participated in the funeral ceremonies; left Portland February 7; arrived at Portsmouth, New Hampshire, the following day; was refitted, and sailed June 27 for New York, where she remained from June 29 to July 12, and left for her station. She arrived at Lisbon August 5; visited Tangier; proceeded to Portsmouth, England; arrived there September 27, and was put under orders for Copenhagen and Kiel, in the Baltic.

The Juniata left Lisbon, touched at Gibraltar, Barcelona, and Rosas Bay, and reached Marseilles November 7, 1869. January 26 she sailed

for Villefranche and Spezia, and was dispatched from the latter port to Tunis April 2. She remained at Tunis from the 11th to the 21st of April; visited Malaga, Gibraltar, and Lisbon, and arrived in the English Channel in July. August 20, sailed from Antwerp, Belgium, for the Elbe and Weser Rivers. Objection having been made to her entering the lines of blockade, she left Jahde September 21, touched at Dover, and left for Havre September 23, for the protection of the large commercial interests of the United States there, in the event of bombardment.

The Saco joined the fleet in September, sailing from Norfolk August 6, and arriving at Lisbon September 10, and was at last report on the Spanish coast.

The Supply arrived at Spezia February 12, from Boston; proceeded to Villefranche in April; discharged stores, visited Malaga, Gibraltar, and Lisbon, and returned to New York July 7, where she was put out of commission.

The Shenandoah sailed from Boston September 5, and the Brooklyn from New York October 11, to join the fleet. The former arrived at Lisbon October 12 and the latter November.

ASIATIC FLEET.

In the last annual report the vessels embraced in this fleet were the Delaware, Oneida, Iroquois, Ashuelot, Monocacy, Maumee, Unadilla, and Idaho.

Two of these have been sold, the Unadilla and Maumee, on the 9th November and 15th December, 1869, respectively. The Oneida was sunk January 24, 1870, by the British mail steamer Bombay, and the Delaware and Iroquois have returned home.

The fleet has been reënforced during the year by the Colorado, Benicia, Alaska, and Palos, so that it at present consists of the Colorado, Benicia, Alaska, Monocacy, Ashuelot, Idaho, and Palos, and is under the command of Rear-Admiral John Rodgers, who relieved Rear-Admiral Rowan August 20, 1870.

The movements of the fleet, under Rear-Admiral Rowan, were confined chiefly to the ports of Japan and China. In his flag-ship, the Delaware, he left the coast of Japan November 12, and arrived at Hong Kong November 17, 1869; visited Macao in December, and Manila in January. On his return to Hong Kong February 7, from Manila, information of the loss of the Oneida was received, and on the 9th he left in the Delaware for Yokohama to investigate the affair. The Delaware having encountered a typhoon returned for repairs. Rear-Admiral Rowan took the mail steamer, March 12, for Yokohama, and the Delaware followed him when repairs were completed. May 26 he left Yokohama in the Delaware for Singapore, via Hong Kong, to meet his relief; arrived at Hong Kong June 6, and at Singapore July 2. August 20 he turned over the fleet to Rear Admiral Rodgers, sailed the 23d in the Delaware, and arrived at New York November 19, having touched at Anjer, Cape Town, and Ascension. The Delaware has been put out of commission.

The Monocacy and Ashuelot have been stationed most of the year in the waters of Japan, but have visited some of the ports of China. The Ashuelot, in September, was at Tientsin, China, to which place she proceeded on receiving information of the massacre of foreign missionaries.

The Iroquois sailed from Hong Kong November 20, 1869, for home.

She touched at Batavia, Cape Town, and St. Helena, reached Hampton Roads April 15, and was put out of commission at Philadelphia April 23.

The *Oncida* returned to Japan October 24, 1869, from a visit to New Chiang, and other ports in Northern China. January 24 she left the harbor of Yokohama for Hong Kong, and was run into and sunk the same evening by the Peninsular and Oriental steamer *Bombay*, with a loss of twenty officers and ninety-six men.

The *Idaho* has been stationed at Yokohama as a hospital and store-ship.

Rear-Admiral Rodgers hoisted his flag on board the *Colorado*, at New York, March 22, and proceeded in her to sea April 9, accompanied by the *Alaska*. The *Colorado* arrived at Rio de Janeiro June 6; at Simon's Town July 2; and Singapore August 12. Having received the transfer of the command of the fleet from Rear-Admiral Rowan, Rear-Admiral Rodgers sailed from Singapore August 22; touched at Hong Kong; and when last heard from, October 13, was at Wusung, below Shanghai. The *Alaska* reached the station —, having touched at Cape Town, Johanna Island, Point de Galle, and Singapore.

The *Benicia* sailed from Portsmouth, New Hampshire, March 2; arrived at Rio April 16; at Simon's Town June 2; Singapore July 28; Hong Kong August 12; and Shanghai August 24. In October she was ordered to Chifu to convey the American missionaries from that place back to Teng-chau-fu, which they had left in consequence of apprehensions of violence from the native population, after which she will proceed to Japan.

The *Palos* sailed from Boston June 20, proceeded via the Mediterranean and the Suez Canal, and arrived at Singapore, en route to Hong Kong, September 25, having touched, on the voyage, at Fayal, Gibraltar, Malaga, Naples, Aden, and Columbo.

MISCELLANEOUS.

The *Sabine*, which was temporarily connected with the European fleet, arrived at Boston July 22, and was put out of commission. The cruise of this vessel, on board of which were embarked the graduated class of midshipmen, embraced a period of little more than a year, during which she visited Spithead, Cherbourg, Lisbon, Villefranche, Genoa, Spezia, Naples, Gibraltar, Madeira, Rio de Janeiro, and Bahia.

The *Savannah*, with fifty members of the second and the same number of the fourth class of cadet midshipmen on board, for practical instruction, left the capes of the Chesapeake June 18; visited Plymouth, England, and Funchal, Madeira; and returned to Annapolis September 15.

The *Nipsic* and *Guard* were assigned to duty with the Darien expedition, and left New York the 22d and 28th of January, respectively. They returned from this service to New York, the first June 29, the second July 5, and were dispatched soon afterward to the fishing grounds in the vicinity of Prince Edward Island. They returned from this service in November. The *Guard* is refitting at New York, and the *Nipsic* at Washington, to be again assigned to the Darien expedition, after which the *Nipsic* will join the North Atlantic fleet.

The *Frolic* was employed on special service on our own coast until May, at which time she proceeded to the fishing grounds. She remained there until the close of the fishing season, returned to Washington November 4, and was put out of commission November 11.

The *Kansas* and *Mayflower* are connected with the Tehuantepec sur-

veying expedition. They left Washington October 14; arrived at Key West October 24; and sailed again November 5 for Mexico. On the completion of the survey the *Kansas* is to be assigned to the North Atlantic fleet.

The iron-clad *Miantonomoh* was in commission from November, 1869, to July, 1870, for home service. In January she was ordered to Portland, Maine, and, with the *Terror*, *Plymouth*, *Leyden*, and *Portfire*, constituted the fleet, under the late Admiral Farragut, which participated in the ceremonies observed on the arrival and landing of the remains of Mr. Peabody. The iron-clads escorted the *Monarch* into the harbor January 26, and after the ceremonies, which closed the 29th, returned to Boston.

The *Michigan*, stationed on the northern lakes, has, during the navigable season, performed the usual tour of cruising, visiting the principal commercial cities on the lakes and coöperating with the civil authorities in enforcing respect for our neutrality laws.

The *Guerriere*, now at New York, and to be attached to the European fleet, was put in commission August 10. In September she proceeded to Portsmouth, New Hampshire, to receive the remains of the late Admiral Farragut and convey them to New York. She unfortunately grounded off Nantucket, involving the transfer of the remains. The *Brooklyn*, which had also been detailed for participation in the obsequies, received the remains, in the lower harbor of New York, September 30, and landed them in the city with every honor and mark of respect. The *Guerriere* has been employed on special duty in the harbor of New York, under Rear-Admiral Stringham, admiral of the port.

APPENDIX.

No. 1.

*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872,
by the Navy Department.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
SALARIES.		
For salary of Secretary, per act March 3, 1853, (10 Stat. at L., p. 212, sec. 4).	\$8,060 00	
For salary of chief clerk, per acts July 5, 1862, (12 Stat. at L., p. 510, sec. 3;) July 12, 1870, (12 Stat. at L., p. 249, sec. 1.)	2,500 00	
For salary of disbursing clerk, per acts July 5, 1862, (12 Stat. at L., p. 510, sec. 3;) July 12, 1870, (12 Stat. at L., p. 249, sec. 1.)	2,000 00	
For salary of four clerks of class four, per acts March 2, 1865, (13 Stat. at L., p. 451, sec. 1;) July 12, 1870.	7,200 00	
For salary of four clerks of class three, per acts July 5, 1862, (12 Stat. at L., p. 511, sec. 3;) July 12, 1870.	6,400 00	
For salary of two clerks of class two, per acts July 5, 1862, (12 Stat. at L., p. 511, sec. 3;) July 12, 1870.	2,800 00	
For salary of three clerks of class one, per acts July 5, 1862, (12 Stat. at L., p. 511, sec. 3;) July 12, 1870.	3,600 00	
For salary of two messengers, at \$840 each, per acts July 5, 1862, (12 Stat. at L., p. 511, sec. 3;) March 3, 1869, (15 Stat. at L., p. 297, sec. 1;) July 12, 1870, (15 Stat. at L., p. 249, sec. 1.)	1,620 00	
For salary of two laborers, at \$700 each, same acts	1,440 00	
	35,620 00	\$33,100 00
CONTINGENT EXPENSES.		
For stationery, furniture, newspapers, and miscellaneous items	5,000 00	3,500 00
SOUTHWEST EXECUTIVE BUILDING.		
SALARIES.		
For salary of five watchmen, per acts July 5, 1862, (12 Stat. at L., p. 511, sec. 3;) March 3, 1869, (15 Stat. at L., p. 297, sec. 1;) July 12, 1870, pamphlet edition, p. 249, sec. 1, (appropriated.)	3,600 00	
For salary of two laborers, per acts March 2, 1865, (13 Stat. at L., p. 454, sec. 1;) March 3, 1869, (15 Stat. at L., p. 297, sec. 1;) July 12, 1870, p. 249, sec. 1, (pamphlet edition.)	1,440 00	
	5,040 00	5,040 00
CONTINGENT EXPENSES.		
For incidental labor, fuel, lights, and miscellaneous items, including \$250 for superintendence.	7,500 00	6,000 00
PERMANENT IMPROVEMENT AT NAVY YARDS AND STATIONS.		
Mare Island	300,000 00	75,000 00
Kittery, Maine	75,000 00	
Boston, Massachusetts	75,000 00	
New York	130,000 00	
Philadelphia	60,000 00	
Washington	80,000 00	
Norfolk	60,000 00	
Pensacola	25,000 00	
Sundry tools, appliances, and machinery for Mare Island navy yard	85,000 00	
Naval Asylum, Philadelphia: For support of the institution	65,100 00	63,100 00

No. 1.—*Estimates of appropriations for the Navy Department, &c.*—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
CONTINGENT EXPENSES.		
Rent and furniture of buildings and offices not in navy yards; expenses of courts-martial, courts of inquiry, boards of investigation, examining boards, with clerks and witness fees, and traveling expenses and costs; stationery and recording; expenses of purchasing paymasters' offices at the various cities, including clerks, furniture, fuel, stationery, and incidental expenses; newspapers and advertising; foreign postage; telegraphing, foreign and domestic; mail and express wagons, and livory and express fees, and freight; all books for the use of the navy; experts' fees, and costs of suits; commissions, warrants, diplomas, and discharges; relief of vessels in distress, and pilotage; recovery of valuables from shipwrecks; quarantine expenses; care and transportation of the dead; professional investigations, and information from abroad; and all other emergencies and extraordinary expenses arising at home and abroad, but impossible to be anticipated or classified.	\$125,000 00	\$125,000 00

No. 2.

NAVAL ACADEMY.

Report of the Board of Visitors.

UNITED STATES NAVAL ACADEMY,
Annapolis, Maryland, June 4, 1870.

SIR: The undersigned, appointed a Board of Visitors to the Naval Academy, to witness the annual examination of the several classes, to examine into the state of the discipline and general management of the institution, and report the result to the Secretary of the Navy, have the honor to submit the following report:

The board met at the library on the 20th day of May, being the day designated in their letters of appointment, all the members being present, when they organized themselves into sub-committees or sections, for the greater facility of carrying on the examination of the various classes at the same time. Every morning after, the board held a meeting before resuming their duties, at which the sub-committees arranged their plans for the day. By this arrangement they were enabled to attend the examinations of all.

It gives the board great pleasure to be able to state that the examinations witnessed by them afford the best evidence of the thoroughness with which the professors and instructors in all the branches of study have performed their duties, and exhibit also the most satisfactory proof that their efforts have been rewarded by a corresponding high attainment on the part of the pupils.

When not occupied in listening to the class examinations, the board attended in a body the exercises of the midshipmen in the more important duties appertaining directly to their profession, including seamanship, gunnery, boat exercise, fencing, battalion, infantry, and howitzer drill.

The general impression of the board as to the condition of the Academy in all its departments is most favorable.

In common with its predecessors, the board has kept in view the main object for which this Academy was instituted; that is to say, the preparation of young men for the practical duties of sea officers in the Navy

of the United States. It is not an easy matter to accomplish this object by a system of instruction which requires so much of the time of the midshipmen during the academic term of four years to be passed on shore, and constant care seems to be necessary, not only to prevent the course of study from being too much directed to branches which have no immediate connection with the management of ships of war at sea, but also to keep alive within the midshipmen themselves a desire to become at home upon the ocean. Their naval education when they leave the Academy, notwithstanding the very great advantages which they have enjoyed, is necessarily incomplete, because they have not had sufficient opportunity to acquire the requisite experience at sea, to fit them for receiving commissions as officers of the Navy. A summer cruise of a few months' duration during three seasons of their course (amounting to perhaps a twelvemonth in all) cannot supply that experience; and in order to remedy this deficiency, the board renews the recommendation of the board of last year, "that the midshipmen, on leaving the Academy, shall be sent to sea on board our ships of war in active service [and not again in practice ships] in numbers proportionate to the class of vessel," and that they serve at sea, as midshipmen, mending in the steerage, and performing the duties appropriate to their age and rank for at least two years before being examined for further promotion. The board also recommend that this examination shall be made competitive and shall determine the standing of midshipmen on promotion to ensigns.

The exercises of the midshipmen at howitzer and mortar practice; at target firing with great guns; at general quarters; at infantry drill; in boats; with sails and spars; at fencing; and at gymnastics, were most satisfactory, and their high proficiency in these varied exercises shows the excellence of their manual training.

The oral examination of the classes in seamanship as relating to rigging ships and as to maneuvers, was as satisfactory as the limited opportunities now afforded to the midshipmen in this branch during their term at the Academy permits. The board recommend most decidedly that more time shall be allotted to exercises and instruction in this department, the first and the last as it is in professional importance. Everything else that midshipmen can be taught is of but little consequence, if they are incapable in the care and management of ships, and in addition to previous recommendations, the board suggests that the practice cruises be extended to four months, mainly spent actually at sea, and that no midshipman or instructor of midshipmen in seamanship shall be excused from these cruises, if in health, for any reason whatever.

The oral examinations in gunnery were satisfactory, but the board consider that instruction in field fortifications should not be carried further than as relates to temporary earth-works.

Written examinations in naval construction and navigation were satisfactory as to theoretical knowledge. It appears to the board that practical instruction in nautical surveying, so far at least as is applicable to rivers and harbors, should be carried out. Hydrography in the naval profession is a coordinate of seamanship, and all midshipmen should be made capable, at the least, of taking part in the simple surveys which are likely to be carried on by ships of war during a cruise.

The specimens of drawing exhibited show that the midshipmen generally are proficient enough in this branch to make their skill available in plotting surveys, and also that due attention is paid to this accomplishment in regard to its ordinary usefulness.

The physical culture of the midshipmen in the great variety of pro-

fessional and gymnastic exercises, and in those of mere amusement, is so complete as to leave nothing additional to be recommended. Their morals are well cared for, and they seem to be, as indeed they well may be, so contented and so fully occupied within the walls of the Academy as to leave but little room for desire to go outside of its grounds.

The examinations of the midshipmen in mathematics and physics were well written. One section of the fourth class, in mathematics, at the request of the board, was examined orally. The board were well satisfied with the proficiency of the midshipmen in these important branches of study to the extent included, comprised in the regular course at this Academy. The examinations in steam enginery were also written and oral, including practical exercises by sections in working and management of steam engines and boilers and their various dependencies. The board were favorably impressed with the proficiency of the midshipmen and the confidence and readiness with which these operations were performed, and particularly with the written examinations and sketching of machinery included in the papers comprising the written examinations.

For the reasons stated by the Board of Visitors at the last annual examination, the necessity for a proper text-book, adapted to American practice in this department, is respectfully suggested. ...

The board witnessed the examination of the several classes in the departments of ethics and other English studies, and also of the French and Spanish languages. They likewise examined the written answers to questions in rhetoric and international law, which they found quite satisfactory.

In French and Spanish the pupils exhibited as much proficiency as could be expected for the time they have been studying these languages and for the limited hours assigned them. The board consider a knowledge of these languages as of the highest importance to naval officers, on account of our extended intercourse with countries where they are spoken, and with many of which this intercourse is chiefly carried on through these officers.

After a careful inspection of the system of police and discipline, the board is gratified to be able to pronounce it efficient and judicious.

In reference to the religious culture of the midshipmen while at the Academy, concerning which great public interest has been felt, the board approvingly and respectfully insert the following Order No. 8 of the superintendent, which provides for the observance of the Sabbath day, after the usual morning services.

[Order No. 8.]

UNITED STATES NAVAL ACADEMY,
Annapolis, Maryland, January 4, 1870.

In order that the midshipmen may have opportunities for religious instruction and meditation, hereafter the routine for studies on Sundays will be suspended.

Divine service will be held in the chapel every Sunday at 7.30 p. m., at which it is hoped all will attend.

The call to evening service will be sounded at 7.15, and the formation for the three upper classes will take place in the lower corridor, under direction of the cadet lieutenant commander, who will march them to the chapel. The formation of the fourth class will take place at the same hour, in front of recitation hall, under direction of the adjutant.

Midshipmen who do not avail themselves of the privilege of attending church in town on Sunday afternoons, or the chapel inside the yard on Sunday evenings, will confine themselves to their rooms during the hours which have heretofore been set apart for "study," viz., from 3 to 4, and from 7.30 to 9.30 p. m., with due regard to a proper observance of the Sabbath.

By order of the superintendent of the Naval Academy.

N. B. HARRISON,
Commandant of Midshipmen.

OBSERVATORY.

The present building, erected many years ago, is too small, and has few modern improvements; it is very damp—so much so as to render the instruments liable to injury therefrom. The cause of the dampness cannot be remedied, because the building has no cellar, no drainage, and no ventilation beneath it. The location is bad, there being in its immediate vicinity and surrounding it several columns of hot air from fires in almost constant use, which cause such vibrations of the atmosphere as to make accurate observations often impracticable. The chief instruments are good, and should be properly protected from injury. The board recommend the erection of a new building for an observatory in an appropriate position.

The engineer's department of the Naval Academy offers unsurpassed facilities for the instruction of the student in steam engineering, and it is to be regretted that advantage is not taken of the provision in the law of July 4, 1864, which allows of the annual appointments of cadet engineers. Were such classes regularly formed each year, the scientific schools of the country would have the opportunity to send to them men whose technical school education, supplemented by the professional training that may be so well afforded at this place in a two years' course, would enable them to enter the service well prepared to distinguish themselves when called upon to perform the important duties of the higher grades.

The board have visited the new hospital now in course of construction, and also the old hospital which has hitherto been devoted to the reception of patients as well from the Academy as from the fleet of vessels connected with it.

The new hospital, which it is expected will be completed and ready for occupancy in the autumn, is a commodious and substantial structure. Great care has been exercised in making provision for all the essential wants of such an institution. The system of drainage is excellent and could not well be improved; the soil and waste pipes of all kinds being made to empty outside of the building in a capacious sewer, which discharges itself several hundred yards off into tidal water. Thorough ventilation is effected by columns of fresh air driven through tubes by means of fans to all parts of the building. The usual appliances for warming the wards and halls with hot air have been supplied so abundantly that without doubt a sufficiently warm temperature may be maintained in them during the coldest weather. Water in abundance will be supplied from the works of the city of Annapolis. The wards, as far as we could judge in its present unfinished state, are airy and well lighted, and spacious enough to accommodate the sick and disabled of the Academy and practice ships for years to come.

The old hospital situated within the Academy is to a great extent devoid of the conveniences of such an institution, and is beginning to be dilapidated and will soon require repairs. On the completion of the new hospital, the former may still be advantageously employed for purposes connected with the medical department of the Academy. Space for the quarters of the assistant surgeons and apothecary, and for the accommodation of the dispensary and medical store-rooms, must necessarily be reserved in the old building, together with apartments for the reception of midshipmen who are too sick to remain in their own quarters without discomfort, and yet whose cases may reasonably be expected to terminate favorably before the lapse of many hours. In addition to these uses, it will be required for the convenience of the surgeon while making his physical examination of midshipmen, as well as of officers and men pre-

senting themselves for admission into the marine corps. For these reasons we recommend, on completion of the new hospital, that the old one be retained as at present for the necessary uses of the medical department.

As the result of careful inquiry, we are happy to have it in our power to state that the health of the midshipmen is not only excellent at this time, but that it has been so during the whole of the past year. No epidemic has prevailed, and few cases of serious illness of any kind have manifested themselves. Not a single death from any cause has occurred among the pupils of the Academy since the report of the last Board of Visitors.

The physical development of the midshipmen in the main is everything that could be desired. These fine results amply vindicate the soundness of judgment which fostered, though within rational limits, the natural fondness of these young men for athletic sports and exercises. Without doubt much of the robust health they have enjoyed may fairly be attributed to this cause.

As a sanitary measure, as well as on the ground of expediency, we would earnestly recommend that the art of swimming be taught to all the pupils of the Academy. Regarding this as a matter of great importance, we would suggest to the Department that a teacher of swimming be appointed and a suitable building erected at a moderate cost for the purpose indicated.

The board would also renew the recommendation of the board of last year for the purchase of about twelve acres of land adjacent to and overlooked by the new quarters of the midshipmen. This land is covered by a very undesirable class of tenements, and it is believed might be purchased by the Government at a moderate cost.

The board made a careful examination of the books of the paymaster, with a view to learn his mode of keeping the accounts of the midshipmen, as well as of all disbursements connected with the Naval Academy. Every facility for this inspection was freely extended by the paymaster, and it affords the board great satisfaction to state that the system pursued is an admirable one, beneficial alike to the Government and to the midshipmen.

An inspection of the store from which the midshipmen are furnished with their clothing, bedding, books, and other necessaries, was made. The several articles were examined, and all found to be of the best quality, and the clothing well made. These various goods are purchased by the paymaster in charge of stores at the lowest wholesale prices of the great markets of the country, where they can be procured on the most advantageous terms and furnished to the midshipmen at a small advance sufficient to cover the cost of transportation. For their outer garments a tailor visits the yard every week, and takes the measure of such as desire them. By this means the articles referred to are furnished at from 33 to 50 per cent. less than similar articles are usually obtained at retail in any market in the country. This system, so advantageous to the midshipmen, cannot, we think, be improved upon.

The board feel great pleasure in expressing their satisfaction with the excellent arrangements of the subsistence department, which is due to the long experience and efficiency of the commissary in charge, a gentleman who has performed these duties for twenty years. The large and airy mess-rooms, the tables and their furnishings, and the food prepared for the table, all of which are under the direct supervision of the purveyor, were particularly noticed by the board, and have their entire approval.

The system of rotating the heads of the several scientific departments of instruction in three or four years, which is understood to prevail to a certain extent in the institution, and which has attracted the attention of previous Boards of Visitors, may be regarded as of doubtful expediency. If the object of the Academy is to found a thorough educational course in the departments referred to, the experience of the best schools undoubtedly suggests greater permanency of administration in this regard. Gratifying progress has been made toward high professional scholarship, and the service is now realizing the advantages of the institution in the services of the graduates who have reached the grades which render them eligible to professorships. It may therefore be worthy of consideration, whether, where these heads of departments are found to be signally adapted to the departments in which their experience has enlarged their qualifications, it may not be best to retain them for long periods in such positions.

It is believed that the fixed habits and tastes of officers who have had their training in the naval service will insure to their teachings the pride and spirit of the profession, while their own educational advancement, and the increasing knowledge which they must necessarily gain by experience in communicating it, cannot fail to yield to the pupils superior facilities for higher attainment in general and professional science, without diminishing the practical efficiency of the special and appropriate duties of the naval service.

The board is also of the opinion that the age of admission into the Academy can be modified with decidedly beneficial effect. Boys of fourteen are seldom fitted to pursue the course of study adopted in the institution, nor do they appreciate the advantages arising from strict attention to study and discipline. If the minimum age of admission was fixed at sixteen, it is believed that the number of failures would be reduced, and the interest of the service advanced.

The requirements for admission into the Academy are lower than seem to the board desirable. Four months are now devoted to the study of arithmetic, and a large portion of time to grammar and geography. Surely the common schools in every part of the country afford every facility for candidates to prepare themselves in these branches, and if those who are appointed would know the fact a few months previous to the time they would be required to report for admission, they would prepare themselves, even if their education in these branches had been previously neglected.

The board heartily approves of competitive examinations, in the selection and appointment of midshipmen. Those now at the Academy selected in this manner have proven to be among the most efficient in the institution, and it is gratifying to the board to learn that in several of the congressional districts where appointments are to be made, young men desirous to enter the Academy have been invited to appear before a body of teachers and submit to an examination; the one standing highest in the departments of study required, to receive the nomination for the Academy. A physical examination might also be made, before the candidate presents himself at the Academy for admission. By such a course in the selection of young men for the Academy, a better class, both mentally and physically, would be obtained; the choice would be made without regard to the social or political position of the candidate; and the young men who, upon examination, are not found qualified to enter the Academy, would be saved the expense of coming to Annapolis, as well as the mortification attending a rejection.

Since the last annual examination, the anticipated retirement of Vice-

Admiral Porter from the superintendency of the Academy has taken place; but it may be regarded as a ground of public congratulation that the efficient system which was so successful under the administration of the late distinguished head of the institution, is realizing to it all the expected benefits.

The present superintendent has brought to the administration of the institution the ripe experience of a brilliant professional service; and his diligence in the oversight of its affairs and his humane and instinctive judgment of character seem to render his strict discipline cheerfully acceptable in its application, while the permanent objects of the Academy are fully comprehended and enforced.

HENRY K. HOFF,

Rear-Admiral, President of the Board.

T. G. PITCHER,

Col. and Brevet Brig. Gen. U. S. A., Sup't U. S. M. A.

T. CADWALADER,

New Jersey.

STANLEY G. TROTT,

South Carolina.

A. M. PENNOCK,

Commodore United States Navy.

JOHN R. BARTLETT,

Rhode Island.

H. B. WILSON, *Minnesota.*

W. T. RAYNOLDS,

Lieut. Col. Corps of Engineers and Brevet Brig. Gen. U. S. A.

WM. REYNOLDS,

Captain United States Navy.

GEO. F. CUTTER,

Paymaster United States Navy.

WM. W. W. WOOD,

Chief Engineer United States Navy.

PAUL DILLINGHAM,

Vermont.

J. BEALE,

Surgeon United States Navy.

HON. GEORGE M. ROBESON,

Secretary of the Navy, Washington.

NAVAL ACADEMY.

Report of the Superintendent.

NAVAL ACADEMY, *October 24, 1870.*

SIR: I have the honor to submit the usual annual report made by the superintendent of the United States Naval Academy, together with the estimates for the fiscal year ending June 30, 1872.

Agreeably to the orders of the Navy Department, I assumed charge of this institution on the 1st of December last, relieving Vice-Admiral D. D. Porter, under whose able superintendency I found that it had been advanced to so high a standard of organization and of discipline that it was only necessary for me to maintain that standard as nearly as possible in order to obtain the best results to the students and to the public service.

The prescribed course of instruction was pursued, with reasonable success, until the 20th of May last, when the annual examination of the several classes was commenced, and continued on each secular day in the presence of the Board of Visitors, up to the 7th of June, when it was concluded.

The whole number of midshipmen in the several classes at the beginning of the academic year was 253 members, as follows:

First class, 68 members; second class, 55 members; third class, 38 members; fourth class, 92 members, and two Japanese students. Sixty-eight members of the first class graduated and were detached for active service; 34 members of the third class passed a successful examination and were granted leave of absence for the summer; 51 members of the second and 51 of the fourth classes passed successful examinations, and were embarked on board the practice ship "Savannah," for the summer cruise. Four of the same class were granted leave of absence by order of the Department.

On the 16th of June the Savannah, under the command of Commander S. P. Carter, commandant of midshipmen, sailed from the Naval Academy with 104 midshipmen and 2 Japanese students on board. She visited, on the cruise, Plymouth, England, and Funchal, Madeira, and returned to the mouth of Chesapeake Bay on the 5th of September, and to Annapolis on the 15th, having been at sea, during that interval of time, sixty-three days. Under the able and judicious control of Commander Carter, I am satisfied that the practice cruise has resulted in great practical benefit to the midshipmen, both in seamanship and in navigation, and I am glad to say that his report of their conduct on the cruise is highly favorable as to their subordination, attention to duty, and general correct bearing.

For more full information upon these points I beg leave to refer you to Commander Carter's interesting report of the cruise, dated September 16, 1870, which I sent to the Department on the 4th instant.

Fifty-one candidates for admission to the Academy reported in June last, four of whom were rejected by the medical board; seventeen by the academic board, and one declined to take the oath of allegiance; leaving twenty-nine who were admitted.

One hundred and two presented themselves for admission in September, five of whom were rejected by the medical board, twenty-five by the academic board, and one left pending examination; leaving seventy-one who were admitted. Total number found qualified and admitted in June and September, one hundred.

It has been earnestly recommended by my predecessor that the land immediately adjacent to the Academy grounds, on the northwest, known as Lockwoodsville, be purchased and added to the grounds occupied by the Academy. I unite most heartily in that recommendation. Its possession and enclosure, within the grounds would not only add greatly to the facilities and convenience of the school, but it is desirable as a sanitary measure. A portion of it, lying within a short distance of the new midshipmen's quarters, is low and marshy, and produces malaria and malarial diseases, which could be remedied by a moderate amount of draining and filling in.

I have the honor to be, sir, very respectfully, your obedient servant,

JOHN L. WORDEN,

Commodore and Superintendent U. S. Naval Academy.

HON. GEORGE M. ROBESON,

Secretary of the Navy, Washington.

No. 1.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the United States Naval Academy.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
NAVAL ACADEMY.		
Pay of professors and others:		
Five professors, viz: One of mathematics, (head of department,) at \$3,000, and one at \$2,400, (assistant;) one of chemistry, of ethics, and English studies, and of French, at \$2,400 each.	\$12,600 00	
Fourteen assistant professors, viz: Five of French, two of Spanish, three of ethics and English studies, one of mathematics, one of astronomy, and two of drawing, at \$1,600 each.	22,400 00	
Sword-master, at \$1,200, and two assistants, at \$1,000 each	3,200 00	
Boxing-master and gymnast, at \$1,200, and assistant librarian, at \$1,400.....	2,600 00	
Three clerks to superintendent, at \$1,200, \$1,000, and \$800.....	3,000 00	
One clerk to paymaster.....	600 00	
Commissary, at \$288, messenger to superintendent, at \$600, and cook, at \$325 50.	1,213 50	
Armorer, at \$529 50, gunners' mate, at \$469 50, and quarter-gunner, at \$409 50	1,408 50	
Coxswain, at \$469 50, and three seamen in department of seamanship, &c., at \$349 50 each.	1,518 00	
Band-master, at \$528, and eighteen first-class musicians, at \$348 each	6,792 00	
Seven second-class musicians, at \$300 each, and two drummers and one fifer, (first-class,) at \$348 each.	3,144 00	
	58,476 00	\$58,856 00
<p>[NOTE.—It will be seen by the above estimate that the number of civil assistant professors is reduced, and an increase of pay is recommended for the professors and assistant professors. At its last session Congress made a liberal increase to the pay of commissioned professors in the Navy, and it seems but just that the civil professors and assistants at this Academy should participate in its liberality. Trusting to that liberality, and in the best interests of the Academy, this estimate for the professors has been based upon the minimum pay allowed to commissioned professors. The rate of pay now allowed to professors here is not sufficient to command and retain competent ones. In the case of the professor at the head of the department of mathematics, it is important that, in that essential branch of learning, its chief should not only be an accomplished mathematician, but have decided executive ability, and it is impossible to obtain or retain the services of such an one on less pay than that estimated for. The decrease of \$380 from the estimate submitted for the year ending June 30, 1871, is occasioned by the reduction of the clerical force of the Academy.]</p>		
Pay of watchmen and others:		
Captain of the watch, at \$2 50 per diem.....	912 50	
Four watchmen, at \$2 25 per diem, each	3,285 00	
One foreman at the gas and steam-heating works, at \$4 per diem.....	1,460 00	
Twelve attendants at the gas and steam-heating works at Academy, new quarters for cadet-midshipmen, and school-ships, one at \$3 50, three at \$3, and eight at \$2 50 per diem.	11,862 00	
Three joiners, two painters, and two masons, at \$3 50 per diem, each.....	8,942 50	
One tinner, one gas-fitter, and one blacksmith, at \$3 50 per diem, each.....	3,832 50	
	30,294 50	27,831 25
<p>[NOTE.—The excess of \$2,463 25 over the amount appropriated last year is occasioned by an increase of 50 cents per day to the pay of several of the mechanics, and an addition of two attendants at the steam-heating works, at the new quarters for cadet-midshipmen, at \$2 50 per diem, each.]</p>		
Pay of mechanics and others:		
One mechanic at workshop, at \$2 25 per diem	\$921 25	
One master-laborer, to keep public grounds in order, at \$2 28 per diem.	832 50	
Fourteen laborers to assist in same, three at \$2 per diem, each, and eleven at \$1 75 per diem, each.	9,216 50	
One laborer to superintend quarters of cadet-midshipmen, public grounds, &c., at \$2 28 per diem.	832 50	
Four attendants at recitation-rooms, library, chapel, and offices, at \$20 per month.	960 00	
Twenty servants, to keep in order and attend to quarters of cadet-midshipmen, public buildings, &c., at \$20 per month.	4,800 00	
	17,462 75	17,462 75
Pay in department of steam enginery:		
One machinist, at \$3 50 per diem.....	1,277 50	
One machinist, at \$3 per diem.....	1,095 00	
One blacksmith, at \$3 50 per diem	1,277 50	
One boiler-maker, at \$3 50 per diem.....	1,277 50	
One pattern-maker, at \$3 50 per diem.....	1,277 50	
One molder, at \$3 50 per diem	1,277 50	
Two laborers, at \$1 75 per diem	1,277 50	
	8,760 00	8,760 00

No. 1.—*Estimates of appropriations, &c.*—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
<i>Repairs and improvements.</i>		
For necessary repairs of public buildings, and furniture and fixtures for the same. \$9,500 00		
For repairing the walls inclosing the grounds of the Academy, and for protecting cemetery lot from damage by water. 2,500 00		
For repairs of wharves. 2,500 00		
For furniture for house appropriated to the use of the Board of Visitors. 6,758 52		
	\$21,258 52	\$40,000 000
<i>Contingent expenses.</i>		
Material for heating and lighting the Academy, and school-ships, quarters, &c.. 19,500 00		
Purchase of books for the library. 2,000 00		
Stationery, blank books, maps, and models. 3,459 00		
For expenses of the Board of Visitors. 2,000 00		
Postage in public service. 750 00		
Expenses in the astronomical and philosophical departments. 500 00		
Purchase of steam machinery, steam pipe and fixtures, for rent of buildings for use of the Academy, for freight, cartage, water, musical instruments, uniforms for bandmen, telegraphing, and for the current expenses and repairs of all kinds, and for incidental labor not applicable to any other appropriation. 34,200 00		
For rent of quarters for foreman of gas and steam-heating works, at \$15 per month. 180 00		
Engineers' stores in department of steam enginery. 500 00		
Material for repair of steam machinery. 1,000 00		
	64,089 00	67,430 00
Total. 200,340 77		220,340 00
Decrease. 10,999 23		

Respectfully submitted,

JOHN L. WORDEN,
Commodore and Superintendent Naval Academy.

NAVAL ACADEMY, Annapolis, Maryland, October 24, 1870.

No. 3.

BUREAU OF NAVIGATION.

BUREAU OF NAVIGATION, NAVY DEPARTMENT,
Washington, October 25, 1870.

SIR: I have the honor to submit the following report of the Bureau of Navigation for the past year, together with estimates for its support, and for the expenditures that will probably be required in that division of the naval service committed to its immediate charge, for the fiscal year ending June 30, 1872. Included in this report, and transmitted herewith, are the reports and estimates of the Superintendents of the Naval Observatory and Nautical Almanac, of the officer in charge of the Hydrographic Office, and of the Chief Signal Officer of the Navy.

I.—NAVIGATION.

Navigation supplies.—Under this head there is little to be added to the report of last year.

Relative to the allusion in the preceding report to the trial then being made of liquid azimuth compasses on board vessels of the Navy, with a view to ascertain their relative fitness for use at sea, in comparison with *dry* ones, it may now be remarked that, as experience shows how much the former are superior to the latter, orders have been given for the adoption in the Navy of the *wet* compass, both for azimuth and steering. The *dry* are still issued as spare compasses.

Allusion was made in the last report to the dependence of the United States, in both its naval and merchant marine, on foreign sources for its supply of charts and sailing directions. This, with certain as yet not very important exceptions, still continues; and it must continue until the means are afforded, through liberal appropriations, for providing an adequate supply under Government supervision.

Trials have been made during the year of several different arrangements for signal communication on board ship, having for their object to afford improved facilities for the prompt and certain transmission of orders to the wheel and engine room. Considerable promise of improvement in this way has been realized.

II.—NAVAL OBSERVATORY.

During the past year the new west wing for the large transit circle has been completed, and that fine instrument set up and brought into active use.

A contract has been made by the Superintendent, under the provisions of section 18 of the act making appropriations for the Navy, July 15, 1870, for a refracting telescope of the largest size, to be completed in four years.

I respectfully recommend to your favorable consideration the estimates of the Superintendent of the Naval Observatory, as necessary to preserve the high standing it has attained among such institutions. The publication of its annual volume always contains most valuable contributions to science, evincing great industry on the part of its *personnel*, and should receive the fostering care of the Department and of the Government.

III.—NAUTICAL ALMANAC.

The work on the Nautical Almanac during the year calls for no special remark. The efforts made for several years past to advance the date of this publication have finally resulted in enabling the office to supply the almanac to navigators fully three years in advance of date. It is thus available for the longest whaling or cruising voyages.

The almanac is now supplied generally to the Navy, to American merchant ships, to the Engineer Corps of the Army, to geographical exploring parties, and to private astronomers, as well as to colleges and other public institutions throughout the country.

IV.—HYDROGRAPHIC OFFICE.

Considerable progress has been made, as will be seen by the report of the officer lately in charge, in preparing and publishing charts and sketches during the past year. It is, however, to be regretted that, in consequence of the limited appropriation for this purpose, the less expensive but more imperfect kind of *autographic* work must be more or less resorted to, instead of the preferable but more costly mode of plate or stone engraving. All the work of this office should be done with a

view to permanent results, and, to this end, every proposed chart of sufficient importance to justify it should be carefully engraved, the plate electrotyped, and the printing done from the latter, in order to preserve the former in permanence.

The estimates submitted by the present officer in charge, providing for an enlarged scale of operations, are respectfully recommended to your most favorable consideration. The urgent need of such an enlargement is set forth by that officer in a note appended to these estimates. The commercial marine of the United States, for obvious reasons, should not be dependent upon foreign sources for its charts and sailing directions; and still less should the Navy be required to import these indispensable nautical auxiliaries. All foreign maritime governments, without exception, supply these articles through their hydrographic offices, which are generally most amply provided with the requisite facilities for their production, with due regard to accuracy of construction and to a creditable appearance.

The building occupied in common by the Hydrographic Office and Nautical Almanac Office is insufficient in several respects for the wants of the former; more immediately for the enlarged arrangement of the plate and stone printing. This building being leased by the Government makes it inexpedient to expend much in alteration or addition.

V.—THE NAVY SIGNAL SYSTEM.

The report of the Chief Signal Officer of the Navy sets forth what has been done under his immediate direction during the past year toward introducing the use of the Army signal system into the Navy, as an auxiliary to the Navy signal code. Its utility in signal communication with the Army, and in many other cases of shore and ship communication, is unquestionable, and would seem to well justify the small annual expense now incurred for instruction and material.

The importance can hardly be overestimated of providing means for signal communication, not only between the Navy and merchant vessels of the United States, but also between the war and merchant ships of the *different* maritime nations. The occasions for such communications frequently occur, and sometimes under the most urgent and critical circumstances.

The commercial code of signals having been prepared and reported to the British Board of Trade in 1856 by a special commission, composed of representatives from the Board of Trade, the British Admiralty, the Trinity House, Lloyd's Committee, and the several prominent British shipping associations, its use was immediately provided for in the services of both the naval and merchant marine of Great Britain. This code was introduced into the United States Navy by a Department order in 1860; its use was also recognized to a limited extent in the merchant marine of this country, but since the war it has practically disappeared from both services.

During the last few years the commercial code has been translated into the different languages of the principal maritime nations of Europe, but preserving in every case identically the same arrangement, so as to admit of precise equivalents in those languages for the same signal, throughout the book. By these means, two naval or two merchant ships, or a naval and a merchant ship, of different nations may readily communicate by signals. It has, in short, become an international code of signal communication.

It would therefore seem to be very desirable that the same code, with

the necessary means for using it, should be placed on board all sea-going vessels of the United States.

I have the honor to be, very respectfully, your obedient servant,
JAMES ALDEN,
Chief of Bureau.

Hon. **GEORGE M. ROBESON,**
Secretary of the Navy.

UNITED STATES NAVAL OBSERVATORY,
 Washington, September 28, 1870.

COMMODORE: I submit herewith, in compliance with the Bureau's order of the 15th instant, estimates of the amount that will be required for the support of the Naval Observatory for the year ending June 30, 1872.

I have asked for a small increase to the pay of the aids and the clerk, which I think should be added, in order to retain assistant observers of proper standard of capability; and the clerk—there being but one—who performs duties which entitle him to the pay of a fourth-class clerk.

To cover the expense of copying from the observing-books, and preparing for publication our astronomical and meteorological observations, an item is included, which is rendered necessary by the order of the Department relieving from duty one of the retired officers who assisted in that work.

For the purchase of a new chronograph, to supply the place of the one that is old and worn out, the required sum of \$500 is asked for.

The work upon the "Theory and Tables of the Moon" will have progressed so far by the 1st of July next, as to require at that time the services of computers, and I have accordingly put in an estimate therefor.

In view of the part it is expected we should take in the coming transit of Venus, it will be necessary to prepare proper instruments, and a small estimate is made for their construction.

In the items above will be found the only difference between the sum now asked and that appropriated for the current year.

Respectfully submitted.

B. F. SANDS,
Commodore U. S. N., Superintendent.

Commodore **JAMES ALDEN,** U. S. N.,
Chief of Bureau of Navigation, Navy Department.

UNITED STATES NAVAL OBSERVATORY,
 Washington, October 10, 1870.

COMMODORE: On the 28th ultimo I had the honor to submit estimates for the support of the United States Naval Observatory for the fiscal year ending June 30, 1872. I beg leave now to present a report of the operations of that establishment during the past year.

ASTRONOMICAL WORK.

The equatorial instrument.—The observers with the equatorial instrument during the past year have been Professors Simon Newcomb and Asaph Hall. Professor Newcomb's attention has, however, been given

chiefly to the "Theory of the Moon," and most of the observations have been made by Professor Hall. These consist, as usual, of observations of the minor planets, of comets, and occultations. The telescope of the transit circle possessing nearly the same optical power as the equatorial, very few observations of the older asteroids are now made with the equatorial, except occasionally to determine the error of an ephemeris. In the case of a newly discovered planet, the observations are continued as long as possible.

The observations of the stars in Proæpe have been concluded, and a catalogue of 151 stars in this group has been made and published.

The new equatorial.—Congress at its last session authorized the Superintendent to contract for a telescope of the largest size, of American manufacture. Messrs. Alvan Clark & Sons, of Cambridgeport, Massachusetts, considered the best opticians of this country, have been selected for the work; and they contract to furnish one for this observatory, of twenty-six inches aperture, being one inch greater than the famous telescope lately completed in England for Mr. R. S. Newall, of Gateshead, and which is at the present time the largest refractor in the world. The work is now in hand, and is expected to be finished in four years. The second payment will be required during the next fiscal year, and an appropriation of \$10,000 is inserted therefor in our estimates.

The transit circle has, since last January, been under the charge of Professor William Harkness, United States Navy, assisted by Professor J. R. Eastman, United States Navy, and Mr. Edgar Frisby, aid. On March 28, Mr. Ormond Stone was appointed aid, and he also was assigned to duty as an assistant on this instrument. At the time Professor Harkness took charge, the instrument had been mounted in the new west wing, but there were many things to be done in order to fit it for use, and it was not till February 2 that the first observations were made. From that time until August 15, the instrument was in constant use, and 2,038 observations were made on the sun, moon, planets, and a selected list of the fixed stars. In addition, the usual determinations of instrumental constants were made twice a day.

Congress having made an appropriation for regrinding the object-glass, it was, on August 16, removed from the instrument and sent to Alvan Clark & Sons for that purpose. The instrument has been dismounted, awaiting the return of the object-glass. Advantage has been taken of the instrument being thus out of use to direct Mr. Gardner, the instrument maker at the observatory, to make a much needed alteration in its eye-end.

On the 10th of January, the Kessels sidereal clock, which is used in connection with the transit circle, was removed from its position in the basement to the vault in the new clock room in the west wing.

The wires necessary to include it in our telegraphic system were at once attached to it in its new position, and it was in use up to the time that the object-glass of the transit circle was sent away.

The new west wing, erected since my last report, for the transit circle, is a decided improvement, and gives us great hope of its success as the best observing room for purely astronomical purposes. To this time it has answered all our expectations, and only requires the coming winter to test its completeness.

Transit instrument and mural circle.—Professor M. Yarnall, United States Navy, has had the charge of these instruments. He continued to observe with the former until the end of the past year, leaving Mr. Doolittle, aid, to work, as previously, with the mural circle. Mr. Doo-

little resigned in January, and Mr. A. N. Skinner was appointed aid in his stead, and reported about the first of April. After the first of January, Professor Yarnall observed with both instruments, as occasion required, but confined his attention mostly to the mural circle, and observed a large number of stars whose declinations were partially or wholly unobserved, which places were necessary to fill up the hiatus in the general catalogue. Mr. Skinner has observed with the transit instrument, with occasional assistance from Professor Yarnall when he could spare the time from the mural circle. We have now nearly finished our star lists, and by the middle of the next year they will be completed. All stars observed after that time will have to go into a subsequent catalogue, and it will be desirable to commence the publication of the general catalogue as soon thereafter as possible, when a larger force will be required for computing and copying.

Since my last report Professor Yarnall has finished preparing for publication the observations made with the transit instrument during the year 1868, that work being now in press. Captain Whiting assisted in copying the observations of that year, and Professor Nourse in comparing with the original records work already copied. Mr. Frisby, aid, prepared a list of the mean places of the stars. Professor Yarnall also finished computing and reducing the observations made in 1869 with the same instrument; all of which observations and reductions are being copied from the record-books by Mr. Thomas Harrison, clerk, in addition to his other duties. After a list of mean places shall have been made, the entire work of the instrument will be ready for the printer.

Professor Yarnall is now engaged in reducing the observations made in 1870 with the mural circle, and has more than half the year's work reduced, having been delayed by severe sickness caused by malaria, so prevalent this year at the observatory. Mr. Skinner is engaged reducing the observations made with the mural circle in 1869. This work will be ready in time for publication, it being now copied upon sheets for that purpose.

Captain Whiting and Professor Beecher were employed in preparing and copying the observations for publication. Professor Beecher (retired) being relieved from duty, under the order of the Department relating to retired officers, I have inserted in the estimates the sum of \$1,200, that the work of copying may be kept up.

Telegraphic apparatus and connections.—The electro-magnetic and telegraphic apparatus connected with the observatory is under the charge of Professor Harkness, assisted by Mr. Gardner, and has worked well.

There are three lines of telegraph running out of the building. The first line runs to the Navy Department, where it controls a clock, which is made to beat in unison with the marble-case mean-time clock of the observatory. Correct time is thus furnished to the Department, the working of the apparatus continuing in all respects satisfactory.

The second line of telegraph runs to the Washington Fire Alarm Telegraph Office. It puts the observatory in connection with the fire-bells, and is used to furnish correct time to the city by striking them daily at 7 a. m., 12 m., and 6 p. m.

The third line of telegraph belongs to the Western Union Telegraph Company, and is a loop from the wire which they designate as No. 7 south. By means of it are distributed the time signals which serve to regulate the clocks of nearly all the railroads in the Southern States. In November the mean-time clock, by which these signals are sent, was taken down, its movement cleaned, its dials resilvered, and a new tele-

graph connection for its pendulum attached. Since then, it has been running remarkably well.

The Western Union Telegraph Company have continued their kindness, frequently shown us in this way, by giving us the free use of their wires to determine the difference of longitude between this city and St. Louis. Signals were exchanged on four nights, between April 12 and April 30, and they place the station near the southwest corner of Washington University, at St. Louis,

$$0^{\text{h}} 52^{\text{m}} 36^{\text{s}}.91 \pm 0^{\text{s}}.015$$

west of the center of the dome of this observatory. This work was done at the request of, and jointly with, the United States Coast Survey; the observations and reductions at St. Louis being made by their officers, and the observations and reductions at Washington by the officers of the observatory.

Meteorological observations.—Professor J. R. Eastman, in addition to his other duties as observer, has charge of the meteorological department of the observatory.

The observations have been made at certain hours through day and night, as in previous years, and with the same instruments, by the watchmen, under the direction of the officer having charge of the work. Extra duty during a portion of the year, in the astronomical department, has prevented the desired progress in the preparation of the observations of 1868 and 1869 for the press. The work for those years is about half completed.

There is still a lack of proper instruments and accommodations, and I earnestly request that the appropriation asked in 1869 for meteorological instruments may be urged for this year, that we may keep pace with the improvements of the age made in Europe and in the private observatories of our own country.

Chronometers.—In the chronometer room there are 138 chronometers; all of which are ready for issue, with the exception of 11, which, having been repaired and cleaned within the last three months, are now under trial. During the year 62 chronometers have been issued to vessels of the Navy fitting for sea; 23 have been sent for cleaning and repairs; and 6 were loaned to the Coast Survey for use in the exploration of the Isthmus of Darien.

The chronometers made by Messrs. Negus, of New York, have given great satisfaction. They are extremely accurate as time-keepers, and are less affected by changes of temperature than other chronometers.

A history of the chronometers from the date of manufacture and purchase—a system of records lately adopted, and very desirable to enable us to determine the degree of reliability to be attached to each instrument and to give data for their adjustment—is progressing to completion; after which it will be less trouble to keep up the record to date, if the Department can detail the officers for the purpose.

Commander W. N. Jeffers, in charge of the chronometer room, was detached from the observatory in November 1869; since then, Commander J. Young has had charge to the 1st of October, when he was detached, as was also his assistant, Commander W. C. West, (retired,) leaving Commander S. L. Breese in charge, assisted by Lieutenant Commander Theodore F. Jewell.

The following officers have been on duty as assistants in the chronometer room, namely: Lieutenant Commander Charles McGregor, from April 26 to 17th August, 1870; Lieutenant Commander W. W. Maclay, from the 14th to 19th February; Master (Lieutenant) Frank Turnbull,

from October 1869 to August 1870; Ensign (Master) R. Clover, from October 1869 to March 1870; Ensign C. W. Jarboe, from March to July; and Ensign J. W. Carlin, in June and July of the present year.

It is to be hoped the Department will be able to continue the detail of younger officers, who are to be navigators, that they may become conversant with the requirements of the observatory in the care of chronometers.

Theory and tables of the moon.—In the work of revising the theory and tables of the moon, upon which Professor Newcomb is engaged, a new and more exact method of computing the effect of the attraction of the planets upon the motion of the moon has been worked out. A nearly complete list of stars, occultations of which by the moon have been observed since 1750, has been prepared; the total eclipse of 1715 at London has been calculated from Hansen's tables and compared with observations; and two occultations of Aldebaran, observed at Greenwich and London in 1680, have been similarly compared with Hansen's tables.

The results indicate that the positions of the moon at those dates are better represented by the old tables of Burekhardt than by those of Hansen. As the work is now approaching that stage in which a large amount of merely routine computation is to be performed, an appropriation of \$2,000 for this purpose is respectfully requested, and that sum is inserted in the estimates for the next fiscal year.

Transit of Venus.—The arrangements necessary to secure the successful observation of the transit of Venus, which will occur on December 8, 1874, have begun to receive the attention of the observatory.

It is essential to the complete success of these observations that the various parties which may be sent out by the Government should make their observations on a uniform and carefully prepared plan.

The Superintendent of the Observatory has been invited to become a member of a committee of the National Academy of Sciences, appointed to devise such a plan. The functions of the Academy being purely advisory, and it being expected that the coöperation and assistance of the ablest astronomers of the country would be secured by this committee, the invitation was accepted.

Although this committee has not yet met, certain experiments and trials with the apparatus and instruments of observation are necessary in any case. As many experiments and many alterations of apparatus, all requiring time and careful consideration, may be necessary, the small appropriation of \$3,000, for instruments and apparatus, is called for.

ECLIPSE OF DECEMBER 22, 1870.

The eminent success of the officers of the observatory, engaged in the observation of the August eclipse, 1869, made it desirable that their experience should not be lost in the approaching eclipse in Europe, and the observatory made an early movement to organize parties for that purpose. Failing to obtain an appropriation for the purpose of engaging the services of observers outside of our own institution, the Department, ever ready to contribute all in its power to the advancement of science, ordered, at the request of the Superintendent of the Observatory, four of its professors for that duty, namely, Professor S. Newcomb, in addition to other special duty in Europe; Professors A. Hall, William Harkness, and J. R. Eastman, each having special duties, to occupy stations at Gibraltar, or Algiers, and at Syracuse in Sicily. The observatory reports of these officers of the August eclipse, already pub-

lished, give promise of able contributions to science; and in this way we hope to add our mite to the information to be gained upon such interesting occasions.

The officers will depart for their several destinations on October 20 and 2d of November.

THE LIBRARY.

Through its increasing exchanges with other institutions, its chief reliance, the library has a steady growth. The number of copies of the annual volume of observations having been increased, the observatory will be better prepared to answer the calls made for these. The volume for the year 1867, a quarto of 892 pages, was received from the Government Printing Office September 8. Its distribution was begun the same day to observatories, colleges, and scientific institutions and individuals at home and in foreign countries.

In February last, the eclipse report, already referred to, was received from the printer, and nearly one thousand copies almost immediately distributed. Many requests for this work are now on file, awaiting the issue of the second edition ordered by Congress.

It is gratifying to the observatory to have upon its files very high commendations of this work from some of the first astronomers abroad as well as in the United States, and the same remark is true of the annual volume lately sent out, so far as acknowledgments of its receipts have come to hand.

The correspondence of the library in conducting its exchanges, and in distributing its publications, remains in the charge of Professor J. E. Nourse, United States Navy. He also assists in the preparation of the sheets of the annual volume of observations for the press.

The erection of the new observing room for the great transit circle left the old room available for the library, which had hitherto been in the frame portion of the south wing, an unsafe building for our valuable collection of scientific works, and the entrance to which was through the prime vertical room, much to the interruption of the observers. This change is now being made by the removal of the shelves and books to the safer and more convenient apartment vacated by the removal of the transit circle.

The suggestion which I made in my last report, in regard to the pay of the professors, to enable the observatory to retain an efficient corps of astronomers, having been carried out in the Navy pay-bill, passed last session of Congress, I have now only to repeat the request made in that report in regard to the three aids:

These gentlemen, before being appointed, were required to undergo a strict examination as to mathematical attainments and knowledge of general science, and to prove their fitness for appointment by a high standard. They are frequently required to perform the duties of observer as well as computer; the more experienced observing on alternate nights with the professors. Considering the value of their services, I earnestly recommend a small increase to the pay of the three assistant observers or aids. They now receive at the rate of \$1,333 33 each, (\$4,000 for the three.) I recommend that their pay be graduated or classified as follows:

First aid or assistant observer	\$1,600 per annum.
Second aid or assistant observer.....	1,500 per annum.
Third aid or assistant observer.....	1,400 per annum.

which will only be an increase of \$500, distributed among the three according to their experience or capability.

I would also urge that the clerk, the only one allowed the observatory, who has charge of all its correspondence, accounts, &c., and whose

duties are of a peculiarly arduous nature, be placed upon the footing, as to pay, of a fourth-class clerk.

Very respectfully, your obedient servant,

B. F. SANDS,
Commodore, Superintendent.

Commodore JAMES ALDEN, U. S. N.,
Chief of Bureau of Navigation, Navy Department.

NAUTICAL ALMANAC OFFICE,
Washington, D. C., October 15, 1870.

SIR: I have the honor to submit the following report of the work of this office during the past year:

The preparation of the American Ephemeris and Nautical Almanac has continued as in previous years, the work and the methods by which it is accomplished being the same from year to year.

The complete Ephemeris for each year comprises all relating to the places of the sun, moon, planets, and fixed stars, that is needed by astronomers. It is supplied to the Navy and naval stations, observatories, astronomers, and to colleges and other public institutions whose professors are engaged in astronomical observations or investigations; also, to the Coast Survey, the Bureau of Engineers, and the Land Office, for their surveying and exploring parties. About 200 copies are sold each year, besides those distributed gratuitously.

A smaller volume, containing one-half of the former, is published for the use of navigators. Nearly 5,000 copies are required each year for the supply of the mercantile marine.

During the year have been printed 500 copies of the large almanac for 1870; 500 copies of the large almanac for 1872; 2,000 copies of the small almanac for 1870; 4,000 copies of the small almanac for 1871; 1,000 copies of the small almanac for 1872; 200 copies of the Tables of Harmonia.

At the date of my last report the Ephemeris for 1872 was nearly all in the hands of the printer. The small volume was received in March last, the large volume in April.

The Ephemeris for 1873 is completed and stereotyped. The small volume is printed, and is daily expected from the binder; the complete Ephemeris awaits only the final correction of the plates.

Considerable progress has also been made in the Ephemeris for 1874, with the expectation that its preparation will be completed before next May. The portions relating to the sun and several of the planets are already in the hands of the printer.

This office provides for the Ephemeris of 8 only of the 112 small planets which have been discovered between the orbits of Mars and Jupiter. Astronomers may fairly claim from us a larger proportion of this work.

The work of revising the elements and tables of the four larger planets is still progressing, though less rapidly than desired. A revision of the elements and tables of Venus has also been undertaken, as a necessary preparation for the transits of Venus in 1874 and 1878.

The revision of the tables of the moon was commenced several years ago under the direction of Professor Peirce, but after some progress had been made, was suspended for want of a sufficient and adequate force of computers. It is understood that Professor Simon Newcomb, United

States Navy, has now undertaken it under the auspices of the Naval Observatory.

Estimates of the expenses of the office for the fiscal year ending June 30, 1872, have already been submitted to you.

I am, very respectfully, your obedient servant,

J. H. C. COFFIN,

Professor Mathematics United States Navy, Superintendent.

Commodore JAMES ALDEN, U. S. N.,

Chief of Bureau of Navigation, Washington, D. C.

HYDROGRAPHIC OFFICE,

Washington, October 1, 1870.

COMMODORE: I have the honor to submit the following report of the operations of this office during the last year, leaving to my successor to present to you such estimates as he may deem necessary for the coming fiscal year:

The spirit as well as the language of the law of 1866, establishing this office, has been carried out, faithfully and successfully, during the past year; much more could, however, have been accomplished in the same direction with a larger appropriation. The field for improvement is as extensive as the oceans and seas traversed by our commerce, and to the latter is due a sufficient appropriation to enable this office, through the supervising aid of the Department, not only to utilize a large amount of material now on hand, but to collect, systematize, and publish useful and reliable nautical information from whatever source derived.

Notwithstanding the small force employed in the office, and the many changes that have taken place during the year, the usual routine of supplying books, charts, hydrographic notices, &c., to squadrons, agents, dealers, &c., has met with no serious interruption; while the constant work of correcting charts issued and to be issued, has steadily progressed, resulting in placing before the country many new charts, and leaving corrected and ready for the engraver many more that are only waiting the authority of the Bureau to be published. (See accompanying list.)

A revised edition of the Pacific Dangers is now being published, and with a little additional aid, which I hope it will be the pleasure as well as in the power of the Bureau to furnish, the office will soon be able to furnish general sailing directions, for our own coast at least, without being dependent upon foreign publications.

The demand for our charts is gradually increasing, notwithstanding the decline of our commerce within the last few years; they are especially intended for ocean commerce, and not to infringe upon the United States Coast Survey charts, which are necessarily confined to *our own coast* and its inland waters.

We are still indebted to foreign governments for charts of distant seas, and although we have been enabled to reduce our demand for such charts during this year, the expense remains considerable. A further reduction has been made by adopting a cheaper mode of duplicating charts by a process of autographing and transfer, which, although less perfect in many cases, may be made to answer the general purposes of navigation.

This process, however, is exceptionable, and cannot be universally and successfully adhered to; hence it is necessary to return to the more

expensive mode of engraving, lithographing, and electrotyping, which requires time as well as expense.

I am, very respectfully, your obedient servant,

GEO. F. EMMONS,

Commodore United States Navy.

Commodore JAMES ALDEN,

Chief of the Bureau of Navigation.

List of charts made since October 9, 1869.

- No. 5. The bar at the entrance to Welles Harbor, Midway Islands. (Autographed.)
- No. 227. Kuru-Sima no Seto, Japan Inland Sea. (Autographed.)
- No. 228. Gulf of Osaka and Akasi Straits, Japan. (Copperplate.)
- No. 229. Opunohu or Open Bay, Eimeo Island, Society Group. (Stone.)
- No. 230. Kodiak Island, Alaska. (Autographed.)
- No. 255. Sagitsu-no-Uru, Japan, Kiusiu west coast. (Autographed.)
- No. 256. Channel between Lamtia Island and House Hill, China Sea. (Autographed.)
- No. 257. Hai-Tan Strait, China, east coast. (Autographed.)
- No. 258. Entrance of Samana Gulf and plan of Samana Bay. (Autographed.)
- No. 259. Duncan Bay, North America, west coast. (Autographed.)
- No. 260. Harbors and anchorages in Magellan Strait. (Autographed.)
- No. 261. Santa Cruz Islands, Southwest Pacific. (Autographed.)
- No. 262. Marquesas Islands, general chart, South Pacific Ocean. (Autographed.)
- No. 263. Harbors in the Marquesas Islands. (Autographed.)
- No. 264. Harbors and anchorages in Magellan Strait. (Autographed.)
- No. 265. Plans on the west coast of Patagonia, South America. (Autographed.)
- No. 266. Plans on the west coast of Patagonia, South America. (Autographed.)
- No. 267. Harbors and anchorages on the northwest coast of Nipon. (Autographed.)
- No. 268. Nanao Harbor, northwest coast of Nipon. (Autographed.)
- No. 269. Harbors and anchorages in Magellan Strait. (Autographed.)
- No. 270. The port of Matanzas, north coast of Cuba. (Autographed.)

List of charts corrected from plates purchased from G. W. Blunt.

- No. 27. Bermuda Islands.
- No. 34. Gulf of Mexico, West Indies, and Caribbean Sea, sheet 4.
- No. 35. Gulf of Mexico, West Indies, and Caribbean Sea, sheet 5.
- No. 36. Gulf of Mexico, West Indies, and Caribbean Sea, sheet 6.
- No. 238. East coast of North America, sheet 4.
- No. 239. East coast of North America, sheet 5.
- No. 240. North coast of Gulf of Mexico, sheet 1.
- No. 241. North coast of Gulf of Mexico, sheet 2.

Additional corrections made on charts from later information, hydrographic notices, &c.

- Nos. 9, 15. River and Gulf of St. Lawrence, Newfoundland, Nova Scotia, and adjacent banks, sheets 1 and 2.
- No. 11. North Pacific Ocean, sheet 1. (Eastern part.)
- No. 16. East coast of North America, sheet 1.
- No. 17. East coast of North America, sheet 2.
- No. 18. East coast of North America, sheet 3.
- No. 19. Bahama Banks and Gulf of Florida, sheet 1.
- No. 21. North Atlantic Ocean, (western part,) sheet 1.
- No. 225. Southeast coast of Alaska.

Charts corrected on paper, and made ready for the engraver.

- No. 70. North Pacific Ocean, sheet 2.
- No. 12. North Pacific Ocean, sheet 3.
- No. 14. South Pacific Ocean, sheet 2.
- No. 13. South Pacific Ocean, sheet 3.
- No. 42. Indian Ocean, sheet 1.
- No. 43. Indian Ocean, sheet 2.
- No. 49. Gaspar Straits.
- No. 191. Keelung Harbor, Formosa Island.

Appended note relative to the estimates for hydrographic work.

HYDROGRAPHIC OFFICE,
Washington, October 7, 1870.

COMMODORE: As the amount of appropriations required for the coming year is being considered, I would respectfully ask the attention of the Bureau to the necessity of an additional appropriation for this office, in order to place it on a permanent footing and for its gradual increase. The amount appropriated for the present year is barely sufficient to carry on the office work and issue the charts at present belonging to this office.

In order to furnish our commerce with the necessary charts and books for navigation, it is necessary to increase, from year to year, the number of our plates, until we are in a condition to furnish every chart independent of the hydrographic office of Great Britain. Within the United States commerce has no office but this to look to for such a supply. I consider it also of the most vital importance that the building in which this office is located should belong to the Government, and be sufficiently extensive and fire-proof.

At the present moment the collection of charts, books, and instruments stored in this building is valuable; infinitely more so when it is considered that were any accident to happen to it, all our naval vessels would be without charts, &c., until another supply could be imported from England, and many of the books could not readily be replaced.

I would also state that the demand for the charts now published at this office is increasing. With a more extended commerce and an increase of the hydrographic publications, the office will yearly approach to self-paying, and the amount of purchase from abroad will decrease until we are wholly independent.

In addition to the amount heretofore appropriated for office work, correction of plates, &c., I would respectfully suggest that at least \$50,000 would be required for engraving and gradually increasing the number of plates; and for the purchase or construction of an appropriate building, \$40,000.

Looking to the necessity of a hydrographic establishment, both for our Government and commercial marine, I believe that the above estimate cannot but be considered as moderate.

I am, sir, very respectfully, your obedient servant,

R. H. WYMAN,

Captain U. S. Navy, in charge of Hydrographic Office.

Commodore JAMES ALDEN,

Chief of the Bureau of Navigation.

SIGNAL OFFICE, BUREAU OF NAVIGATION,
October 20, 1870.

SIR: In regard to the duties and operations of the Signal Corps of the Navy during the past year, I hereby respectfully report that twenty-six officers have received instruction at Washington, and successfully passed the full course of study and practice in the use of the Army code of signals, which has been introduced into, and adopted by, the Navy. In addition to these twenty-six officers, nine officers, after commencing instruction, were detached and ordered to sea before finishing the course.

This system of signals is found to be very conducive to efficiency in the way of rapid work with vessels and with parties, in communicating with each other.

Acknowledgment is due to Brigadier General A. J. Myer, United States Army, Chief Signal Officer, for the many facilities he has afforded to the Navy in prosecuting this system of instruction.

I am gratified to state that the officers take great interest in perfecting themselves in the use of these signals, and indeed in the use of all signals of late. The detailing of an officer for signal duty on board of each vessel of the Navy, to make a quarterly report of the skill and proficiency of those assigned to receive instruction, is found to work well, and the quarterly reports received at the Bureau of Navigation are highly satisfactory.

The new telegraphic dictionary issued by official circular September 5, 1870, will go into operation on the 1st of January, 1871. This will be a great improvement over the dictionary at present in use, having been enlarged and systematized.

One thing is greatly needed in the Navy and in the mercantile marine, in regard to signaling, and that is the having a systematic and efficient means of communicating at sea between American men-of-war and American merchantmen. A code should be adopted, by legal enactment if necessary, requiring every man-of-war and merchant vessel to carry a certain book and the requisite flags, so that signal communication could at all times be made with facility. The necessity of this has often been felt by our naval as well as by our merchant vessels when outside on our own coast, when abroad, when convoying in time of war, and when coöperating with the Army, as in the late civil war, in the transportation of troops and war supplies. Rogers's and Marryat's codes are considered the best, and one or the other should be adopted.

The work which I should recommend is Rogers's American edition, and "Marine Signal Flags of the Commercial Code of Signals for the use of all Nations," edition of 1864.

For the ensuing year about \$3,500 will be required for office rent, including fuel, for mules, ambulances, miscellaneous and contingent expenses, for carrying on the work of the Signal Department.

I am, sir, very respectfully, your obedient servant.

JOHN J. ALMY,

Commodore United States Navy and Chief Signal Officer.

Commodore JAMES ALDEN, U. S. N.,

Chief of the Bureau of Navigation.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Navigation, Navy Department.

SUPPORT OF THE BUREAU OF NAVIGATION.

For salary of chief clerk, as per act of July 5, 1862, section 3.....	\$1,800
For salary of one clerk (fourth class,) as per act of July 23, 1866, section 8..	1,600
For salary of one clerk, (second class,) as per act of July 23, 1866, section 8	1,400
For salary of messenger, as per act of July 5, 1862, and proviso of March 3, 1869	840
For salary of laborer, as per act of February 25, 1862, and proviso of March 3, 1869	720
For contingent expenses.....	800
Total amount required.....	7,160
Appropriated for fiscal year ending June 30, 1871.....	*10,660

*Salary of Chief of Bureau included, amounting to \$35,00.

A.

1. NAVIGATION AND NAVIGATION SUPPLIES.

For foreign and local pilotage and towage of ships of war.....	\$50,000
For services and materials in correcting compasses on board ship, and for adjusting and testing compasses on shore.....	3,000
For nautical and astronomical instruments, nautical books, maps and charts, and sailing directions, and repairs of nautical instruments, for ships of war	10,000
For books for libraries for ships of war.....	3,000
For navy signals and apparatus, namely, signal lights, lanterns, and rockets, including running lights, drawings and engravings for signal books.....	6,000
For compass fittings, including binnacles, pedestals, tripods, and other appendages of ship's compasses, to be made in the yards.....	5,000
For logs and other appliances for measuring the ship's way, leads and other appliances for sounding.....	3,000
For lanterns and lamps and their appendages for general use on board ship, including those for the cabin, wardroom, and stowage, for the hold and spirit room, for decks and quartermaster's use.....	6,000
For bunting and other materials for flags, and making and repairing flags of all kinds.....	3,000
For oil for ships of war, other than that used for the engineer department, candles, when used as a substitute for oil in running lights, for chimneys and wick, and soap used in navigation department.....	40,000
For stationery for commanders and navigators of vessels of war.....	5,000
For musical instruments and music for vessels of war.....	1,000
For steering signals and indicators, and for speaking tubes and gongs, for signal communication on board ships of war.....	2,500
Total amount required.....	<u>137,500</u>
Appropriated for fiscal year ending June 30, 1871.....	<u><u>\$137,500</u></u>

2. CIVIL ESTABLISHMENT.

For the support of the civil establishment at the different navy yards.....	\$12,000
Appropriated for fiscal year June 30, 1871.....	<u><u>\$12,000</u></u>

3. NAVIGATION CONTINGENT.

For contingent expenses of the Bureau of Navigation; freight and transportation of navigation materials, instruments, books, and stores; postage and telegraphing on public business; advertising for proposals; packing boxes and materials; blank books, forms, and stationery at navigation offices..	\$6,000
Appropriated for fiscal year ending June 30, 1871.....	<u><u>\$6,000</u></u>

4. HYDROGRAPHIC WORK.

For drawing, engraving, and printing charts; for electrotyping; for correcting old plates; for preparing and publishing sailing directions, and other hydrographic information, (increased estimate submitted).....	\$30,000
For rent of building, fuel, lights, and office furniture; for care of building and other labor; for purchase of books for library; for drawing materials and other stationery; for postage, freight, and all other contingent expenses.....	10,000
Total amount required.....	<u>40,000</u>
Appropriated for fiscal year ending June 30, 1871.....	<u><u>\$20,000</u></u>

B.

1. NAVAL OBSERVATORY.

For salary of one clerk.....	\$1,500
For salary of three aids or assistant observers.....	4,000
For wages of one instrument maker, three watchmen, one messenger, and one porter; for keeping grounds in order, and for repairs of buildings and inclosures; for fuel, light, and office furniture; for purchase of books for library, and chemicals for batteries; for stationery, postage, freight, and all other contingent expenses.....	13,500
Total amount required.....	19,000
Appropriated for fiscal year ending June 30, 1871.....	19,000

2. REFRACTING TELESCOPE.

For payment, in part, for the great refracting telescope in course of construction.....	\$10,000
Appropriated for fiscal year ending June 30, 1871.....	10,000

C.

NAUTICAL ALMANAC.

For pay of computers and clerk.....	\$18,500
For rent, fuel, labor, stationery, boxes, expresses, and other office expenses..	1,500
Total amount required.....	20,000
Appropriated for fiscal year ending June 30, 1871.....	\$20,000

RECAPITULATION.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Navigation, Navy Department.

FOR SUPPORT OF BUREAU.

Salaries and contingent.....	\$7,160
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FOR THE NAVAL SERVICE.

A. 1. Navigation and navigation supplies.....	\$137,500
2. Civil establishment.....	12,000
3. Navigation contingent.....	6,000
4. Hydrographic work.....	40,000
B. 1. Naval observatory.....	19,000
2. Refracting telescope.....	10,000
C. Nautical Almanac.....	20,000

No. 4.

BUREAU OF ORDNANCE.

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
October 19, 1870.

SIR: I have the honor to submit the annual report of the Bureau of Ordnance, with accompanying estimates for the fiscal year commencing July 1, 1871.

Since the date of my last annual report the work of the Bureau has

been confined almost entirely to the ordnance equipment of the ships ordered into commission by the Department and to such repairs and improvements as the appropriations granted by Congress would permit.

The contract for 2,000 barrels of cannon powder, mentioned in my last report, has been completed, and another, for the 5,000 barrels authorized in the appropriation for the present fiscal year, is in progress of satisfactory execution.

A contract has also been entered into with the Builders' Iron Foundry of Providence, Rhode Island, for the manufacture of the ten 15-inch guns required for the battery of the Colossus. These will be completed and in readiness at New York to place on board the ship when she is completed.

The Bureau will also be prepared to furnish suitable carriages for these cannon, made of iron, with all the improvements for their rapid and precise handling in broadside or pivot.

The board convened, under authority of the Department, to examine and decide upon the most suitable system of breech-loading arms for the Navy, especially for a rifle to be used by the seamen when acting as light infantry, concluded their labors and submitted a voluminous report thereon, dated August 2, 1869. An extract from their report is hereto appended, from which it will be seen that, after a careful examination and trial of the several systems submitted to them, they unanimously recommended the Remington as the best for naval purposes. In consequence of this report, the Bureau, with the consent of the Department, engaged the manufacture of 10,000 Remington rifles, caliber .50, at the Springfield Armory, and entered into a contract with Mr. James T. Ames, of Chicopee, Massachusetts, to make the sword bayonets for them. The work has progressed satisfactorily, and by the 1st of January next the service will be supplied with a portion of the new arms. The muzzle-loading muskets and breech-loading Sharp and Hawkins carbines used during the war will be entirely withdrawn and sold.

In connection with this subject, and in confirmation of the judgment of the board and the action of the Bureau in adopting the Remington system of breech-loading, I would remark that the Army board, convened at St. Louis subsequently to the adjournment of the Navy board, also recommended for adoption the same system, and the very large shipments abroad of these arms, under orders from nearly all the governments of Europe, indicate that their military authorities are sensibly impressed with its excellence.

The payment for these arms will be made from the balances remaining in the treasury to the credit of appropriation "naval ordnance" at the date of the contracts, and not from the appropriation for the present fiscal year, which has been confined strictly to its objects.

I am gratified to report to the Department that the establishment of a torpedo station at Goat Island, in the harbor of Newport, has been, so far, productive of good results.

The reduced appropriation granted by Congress for the present fiscal year, though not by any means commensurate to this important object, has enabled the Bureau to supply each ship sent to sea since the 1st of July with a number of excellent torpedoes for offensive work, while at the same time a judicious expenditure has been made in necessary improvements upon the island, and in purchasing the needed machinery, chemicals, and materials for the manufacture and service of torpedoes, and in experiments. The nature of the work involves the observance of secrecy, and this is rigidly exacted from officers and employes. In fact, so much progress has been made that I have been enabled to request the Depart-

ment to order a number of young officers to the station to receive instructions in offensive torpedo service, in order that they may, when ordered to ships, be enabled to use this most formidable weapon with intelligence and a certainty of effect.

In this connection I feel it my duty to suggest to the Department that a special appropriation be asked for to construct at least five suitable vessels for torpedo service, and, with this view, that the naval constructor be called upon for plans and models of steam vessels, to be strongly built, sufficiently armored to resist the effort of ordinary shot or shells, and to have as much speed as may be consistent with their form and size. The conversion or adaptation of old or obsolete vessels to this service is out of the question.

The estimates submitted are much larger than the amount granted for the present fiscal year. They are, however, the result of careful consideration, and it is hoped that Congress will view them favorably.

The 15-inch cannon are necessary for the armament of our iron-clads, some to replace disabled guns and the remainder as a stock for any emergency that may arise.

There is also another most important subject relating to ordnance which I respectfully submit for the consideration of the Department and respectfully suggest that it be brought to the attention of the naval committees of Congress with the view of obtaining the necessary legislation; I refer to the subject of a suitable place for an experimental battery, where the important questions relating to ordnance and gunnery can be thoroughly and systematically tested.

Before the war the battery in the Washington navy yard answered to a limited extent the purposes of firing for range, testing fuses, &c., subject at all times, however, to repeated delays and interruptions from passing vessels and the operations of the navy yard. These obstacles were of course multiplied during the war, and prevented entirely the making from that battery of the very important experiments upon iron targets. To do this, it was therefore necessary to plant a battery on the opposite side of the river, upon the property of the Insane Asylum, which, however, was very much circumscribed in its operations, produced only partial results, and was finally abandoned at the request of the superintendent of the asylum, who needed the ground for other purposes.

Since the war, commerce upon the river has increased, and many dwellings have been erected on its shores, rendering practice from the navy-yard battery highly dangerous. In fact the firing of loaded shells cannot be carried on. Under these circumstances it is imperatively necessary that immediate steps should be taken to secure some suitable location for a permanent experimental battery, embracing a clear and unobstructed range of at least six miles, and with a sufficient breadth to admit of the erection of targets and the necessary appliances for conducting experiments.

An open beach of hard sand would be preferable for many reasons; and the spot selected should be sufficiently near to railroad or water communication for the easy transportation of guns, targets, and supplies of all kinds. No doubt such a place can be found either upon the sea-coast or on the shores of the Chesapeake Bay; and I would recommend that at least some inquiry be made in that direction, in order that full information will be in readiness for the use of the naval committees.

Our present condition is really a virtual abandonment of all effort to solve the great ordnance questions of the day. Even the smaller States of Europe are greatly in advance of us in experimental practice; and

the evidences are that unless we bestir ourselves we will shortly be left behind in the race for supremacy in ordnance.

I have the honor to be, with highest respect, your obedient servant,
A. LUDLOW CASE,
Chief of Bureau.

Hon. GEO. M. ROBERTSON,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Ordnance, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
SALARIES.		
For salary of chief clerk, per act of July 23, 1866, (14 Stat. at L., p. 207, sec. 8)	\$1, 800 00	
For salary of one draughtsman, per act of March 2, 1867, (14 Stat. at L., p. 450 sec. 1.)	1, 800 00	
For salary of one clerk of class three, per act of July 12, 1870	1, 600 00	
For salary of two clerks of class two, per act of July 12, 1870	2, 800 00	
For salary of one messenger, per acts July 5, 1862, (12 Stat. at L., p. 511, sec. 3;) March 3, 1869, (15 Stat. at L., p. 287, sec. 1.)	840 00	
For salary of one laborer, per act of July 12, 1870	720 00	
	9, 560 00	\$13, 060 00
CONTINGENT EXPENSES.		
Stationery, books, and miscellaneous items	\$200 00	\$200 00
ORDNANCE AND ORDNANCE STORES.		
10 15-inch guns, to meet contingencies	\$70, 000 00	
2,500 barrels gunpowder	50, 000 00	
[NOTE.—The magazines are quite depleted, and the amount of powder estimated for is considered necessary to meet the current demands of the service and the gradual refilling of the magazines.]		
Fuel and materials necessary in carrying on the mechanical branches of the Ordnance Department at the navy yards and stations	161, 970 00	
Labor at navy yards	394, 168 00	
Repairs to ordnance buildings, magazines, gun parks, machinery, &c.	70, 509 00	
Miscellaneous items, freight, &c.	6, 150 00	
[NOTE.—The amounts required for the last four items are less than asked for by the several navy yards, and are the lowest estimates that can be safely made.]		
Experiments in ordnance	25, 000 00	
<i>Improvements as follows, viz: (See explanation marked A.)</i>		
Magazine, Boston:		
New house for hose carriage	500 00	
Fences and gates replaced, and division fence built	578 00	
New house for shell and powder filling	12, 000 00	
Rebuilding unloaded shell house	175 00	
New gas posts and lumps	125 00	
Enlarging and painting office of gunner	300 00	
Niter Depot, Malden:		
Painting niter store-house	850 00	
New vaults for crude niter, (see explanation marked B)	6, 500 00	
Water company, for water in superintendent's house	10 00	
Magazine, Ellis Island, New York:		
Filling ground between shell house and gunners' quarters and on west side of island	\$2, 800 00	
Storehouse on wharf, (south side,) for temporary storage of ordnance stores from or for vessels	8, 800 00	
Two-story building for shop, watch-houses, and store-room	15, 500 00	
Washington navy yard:		
Fittings and machinery for new ordnance foundry	30, 000 00	
Magazine, Washington:		
For new shell house and new filling house	12, 000 00	
[NOTE.—The present buildings are of wood, and are consequently dangerous. They were erected to meet a temporary emergency during the war, and they should be removed and replaced by substantial buildings of brick and masonry.]		

Estimates of appropriations, &c.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
ORDNANCE AND ORDNANCE STORES—Continued.		
Norfolk navy yard:		
Putting up racks and arranging stores in building	\$1,000 00	
Magazine, Norfolk:		
Putting down railroad, boxing trees, &c	1,000 00	
	869,935 00	\$488,000 00
TORPEDO CORPS.		
Expenses of the torpedo corps:		
Purchase and manufacture of gunpowder, nitro-glycerine, gun-cotton, &c.....	\$7,000 00	
Purchase and manufacture of electrical machines, galvanic batteries, insulated wire, &c.	33,000 00	
Purchase of copper, iron, wood, and other material used in the manufacture of torpedoes, with work on the same	18,000 00	
Construction of torpedo boats, purchase of coffer-work or hulks, and contingent expenses.	37,000 00	
Additional buildings, repairs to buildings and to wharf	11,000 00	
Labor, including one chemist, at \$2,000, one foreman machinist, at \$1,503, and two clerks, at \$1,700.	21,065 00	
	117,065 00	\$60,000 00
CIVIL ESTABLISHMENT.		
Pay of superintendents, and the civil establishment at the several navy yards, under this Bureau.	\$20,000 00	\$15,000 00
[NOTE.—This estimate is \$5,000 more than was made and appropriated last year, but limits the Bureau to a very small force for the performance of the clerical work in the Ordnance Department at the navy yards.]		
CONTINGENT.		
Contingent expenses of the ordnance service of the Navy	\$1,000 00	\$1,000

Respectfully submitted.

A. LUDLOW CASE,
Chief of Bureau of Ordnance.

OCTOBER 11, 1870.

RECAPITULATION OF ESTIMATES, 1871-72.

Object.	Required, year ending June 30, 1872.	Appropriated, year ending June 30, 1871.
Support of Bureau	\$10,360	\$13,860
Ordnance	869,935	488,000
Torpedo corps	117,065	60,000
Civil establishment	20,000	15,000
Contingent	1,000	1,000
Total	1,018,360	577,860

A. LUDLOW CASE,
*Chief of Bureau.*BUREAU OF ORDNANCE, *October 11, 1870.*

A.

The estimates for improvements and repairs are made in consequence of the balances from special appropriations for the same purposes remaining in the treasury at the end of the fiscal year 1869-70, having been covered into the surplus fund under a law of the last Congress, and thereby preventing the needed repairs, &c., being made during the present fiscal year.

B.

NEW VAULTS FOR CRUDE NITER.

There is a lot of *crude* niter in barrels at the depot, which cannot be stored with that which is *refined*. This estimate is intended for a vault for its storage.

EXTRACTS FROM THE REPORT ON BREECH-LOADING SYSTEMS, MADE BY
A BOARD OF NAVAL OFFICERS TO THE BUREAU OF ORDNANCE, IN THE
YEAR 1869.

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
Washington City, March 24, 1869.

GENTLEMEN: The Bureau desires to substitute breech-loading muskets for the muzzle-loading muskets now in service, and you have been appointed a board for the purpose of ascertaining how this can be best carried into effect.

You will therefore—

First. Make an examination of the best systems of breech-loading, and test them fully in respect to endurance, convenience, and general efficiency.

Second. Uniformity with the land service should be kept in view, and therefore like weight, caliber, and ammunition are to be assumed as necessary conditions for naval small-arms.

Third. Inasmuch as the least length of arm is preferable for use on board ship and in boats, you will consider whether it is advisable to use a shorter barrel than that of the land service, though of like weight, so as to have equal recoil, together with a sword bayonet. The Bureau will premise that the drill and maneuver of seamen acting ashore should always be that of light infantry.

Fourth. The board will consider the details of equipment and the manual of the piece they recommend, and will report their views thereon.

Fifth. The board will convene at Washington, and report to the commandant of the navy yard there, who will be instructed to furnish all necessary facilities.

Sixth. If any member of the board except to any part of the report, he will state the difference of opinion at the end of the report of the board.

Very respectfully,

J. A. DAHLGREN,
Rear-Admiral and Chief of Bureau.

Captain WILLIAM REYNOLDS, *Senior Member.*

Captain S. NICHOLSON.

Commander K. R. BREESE.

Captain McLANE TILTON, *United States Marine Corps.*

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
Washington City, May 24, 1869.

SIR: In connection with the duties of the board of which you are the senior member, the Bureau desires that the question of suitable cartridge-boxes for the new breech-loading pistols and carbines may be examined and reported upon.

For the present the Bureau has issued to service boxes prepared on the plan of Mr. Howlett, of New York, and also for the *carbines* boxes fitted with blocks to hold the cartridge, and for the *pistols* the percussion-cap boxes used with the muzzle-loading musket.

Samples of these, and other boxes designed for the same purpose, are in the office of the inspector of ordnance of the navy yard; but the Bureau does not confine the scope of your examination to them.

I am, sir, your obedient servant,

J. A. DAHLGREN,
Rear-Admiral and Chief of Bureau.

Captain WILLIAM REYNOLDS,

Senior Officer Board on Rifled Muskets, Navy Yard, Washington.

ORDNANCE ROOMS, *Navy Yard, August 3, 1869.*

SIR: I transmit herewith the report of the board on breech-loading rifles, with the accompanying test records.

Also, as specimens—

One Remington breech-loading rifle.

One bayonet of ordinary form, and one sword-bayonet, in one package.

One package of *Martin* cartridges, as made by or for the Sharp's Rifle Company.

One package of cartridge and pistol boxes.

One package of screw-drivers and wipers.

Very respectfully, your obedient servant,

WM. REYNOLDS,

Captain and President Board on Breech-loaders.

Rear-Admiral C. H. POOR,

Commandant Navy Yard, Washington, D. C.

Referred to Rear-Admiral J. A. Dahlgren, United States Navy, Chief of Bureau of Ordnance.

Respectfully,

C. H. POOR, *Commandant.*

ORDNANCE ROOMS, NAVY YARD,
Washington, August 2, 1869.

SIR: In compliance with your instructions, which are herewith annexed in the original, we have to report—

That the board convened at this yard on the 25th of March last, and proceeded with the examination and testing of breech-loading rifles as specimens were received, and as the weather and other circumstances permitted.

An announcement of the session of the board, and of its objects, was made public through the *Washington Chronicle*, the *Army and Navy Journal*, and other newspapers.

A set of rules was drawn up, prescribing the conditions on which specimen breech-loaders would be received, and copies of these rules were furnished to exhibitors on application. The original is annexed, marked A.

A series of tests to which the different systems of breech-loaders should be subjected was also determined on. The original is annexed, marked B.

As there were no modern specimens of breech-loading rifles on hand here, the board made a requisition, through the Bureau of Ordnance, on the Army Ordnance Department, for the following arms:

One Springfield breech-loading rifled musket, caliber .50, model 1866.

One Springfield breech-loading rifled musket, caliber .50, model 1868.

One Springfield breech-loading rifled musket, caliber .58, Allen's plan.

One Remington breech-loading rifled musket, caliber .50.

These pieces were received on the 27th of April, and were furnished for the purpose of testing.

Previously a Roberts breech-loader and a Berdan breech-loader were sent to the board by the Army Ordnance Department for examination only.

Subsequently, various specimens of breech-loading rifles were received from the inventors, or from their agents or representatives, as follows:

A Roberts rifled musket, by General B. S. Roberts, caliber .50, Springfield barrel.

A Remington rifle, caliber .50, new Springfield barrel; a Remington rifle, caliber .50, Remington barrel; a Remington rifle, caliber .42, Spanish barrel; and a Remington-Rider rifle, caliber .50, Remington-Rider barrel—by Messrs. Remington & Sons, through Mr. W. C. Squire.

A Barton rifle, by General W. G. Ward, caliber .50, inventor's barrel.

A Barton rifle, by J. W. Keene, caliber .42, inventor's barrel.

A Barton rifle, by J. W. Keene, caliber .50, inventor's barrel.

A Sharp's rifle, by Sharp's Rifle Company, caliber .50, inventor's barrel.

A Morganstern rifle, by W. Morganstern, caliber .42, inventor's barrel.

A Needham rifled musket, by H. Noah, caliber .50, Springfield barrel.

A Roberts rifled musket, by C. F. Manson, caliber .50, Springfield barrel.

A Millbank rifled musket, by J. M. Millbank, caliber .50, Springfield barrel.

A Maynard rifled musket, by E. Maynard, caliber .50, Springfield barrel.

A Weatherby rifled musket, by C. Weatherby, caliber .50, Springfield barrel.

The breech-loaders above enumerated, as presented to the board, may be classed as follows:

The lever system, with perpendicular sliding breech block, as the Roberts and Sharp's.

The bolt and horizontal sliding breech-block system, as the Barton and Maynard; the

bolt and hinged breech-block, as the Morgaustern; and the bolt and ratchet and lever system of Weatherby.

The swinging or hinged breech-block system, as the Allen, Needham, Berdan, and Millbank.

The Remington system, which has the breech-block pivoted below the level of the chamber, and which has neither lever, bolt, nor trough-like receiver.

The board has carefully examined all the breech-loaders presented to it, and has tested one or more of each system, as will appear upon examination of the "test records," herewith submitted. These "test records" are referred to for a description of each piece, and for an exhibit of its performance under the various trials to which it was subjected.

Each system of breech-loaders put under trial has fairly withstood all the tests for endurance as applied by this board.

Every breech-loader tested by the board can be loaded and fired from the shoulder with greater rapidity than will be practicable in ordinary service.

While each system of breech-loading examined or tested by this board has its own peculiar merits, the board is unanimous in preferring the Remington system for naval use, in the service of the United States, and therefore recommend that it be adopted for the naval service.

Having determined upon the Remington system of breech-loading for breech parts, the board had to consider next the description of barrel to be adopted, and also the cartridge best adapted to the barrel selected.

Having concluded the series of experiments to determine upon the barrel and the cartridge, the board consider that the Springfield barrel, such as the sample now in its possession, labeled April 5, 1869, and received from the Army Ordnance Department, is well adapted for naval use, and therefore recommend that it be adopted for the naval service, in connection with the Remington system of breech-loading. The barrel to be bright for the marines and brown for the ship's company; bright bayonet, as per pattern, for the former; sword bayonet, as per pattern, for the latter.

With its present experience, the board recommend that the *Martin* cartridge, as made by or for the Sharp's Rifle Company, as per pattern, be adopted for naval use with the breech-loading rifle now proposed. This cartridge is copper case, central fire, fulminate in cup, lubricant of tallow and beeswax, and card wad between powder and bullet. Weight of powder 70 grains, weight of bullet 458 grains. The board prefers to leave it to the Bureau to decide upon the make and quality of powder to be used.

In the course of the experiments made by the board, it was evident that every description of cartridge used produced more or less leading of the barrel during rapid and continuous firing, except those which were paper-patched on the bullet, as well as lubricated between the powder and bullet; and the board would now recommend a paper patch on the bullet, if it was certain that the paper would not be softened or injured during a cruise at sea by the salt moisture of shipboard stowage. In order to test this question, the board recommend that a supply of *Martin's* cartridges, as made by or for the Sharp's Rifle Company, as per pattern, (except that the fulminate be in a cup,) paper patched, but not lubricated on the bullet, with lubricant and wad between powder and bullet, be procured and furnished to sea-going ships for occasional use, and for report during and at end of cruise.

The board recommend that a proportion of blank cartridges be furnished each sea-going ship, and to the marines at every shore station. And as these metallic case cartridges cannot be procured abroad or be made on shipboard, an increase over the present allowance of cartridges to ships is also recommended.

The board submit herewith a Remington breech-loading rifle as a pattern of the piece they recommend in all its particulars, except the head of the ramrod, which is to be cupped instead of solid, so as to avoid striking the firing pin when used.

Also, a specimen bayonet, (furnished by the Messrs. Remington,) which stands, when fixed, below the barrel. To be bright for the marines, as recommended.

Also, a specimen bayonet-sword, furnished by the Messrs. Remington, for the rifles for the ship's company, as recommended.

Also, specimen screw-driver and wiping brush; one of the latter for each rifle furnished, and one of the former to every tenth rifle furnished.

Also, a specimen *Martin's* cartridge, as made by or for the Sharp's Rifle Company, unpatched bullet, as recommended; and one with patched bullet, but with fulminate on anvil instead of in cup, as recommended for trial at sea.

Also, a specimen cartridge-box for breech-loading rifle.

Also, a specimen cartridge-box for breech-loading pistols.

In relation to these cartridge-boxes, and in compliance with the order of the Bureau of May 24, (annexed herewith in the original,) the board, having examined the various descriptions of boxes before it, recommend that the cartridge-box now in service be altered, as per pattern transmitted with this report, and so issued to the service. The alteration can be readily made on shipboard. The cartridges to be put up in

blocks, as at present in this Ordnance Department; two blocks, containing 20 cartridges each, to go in every box. On using out the upper block, if time permits, it will be placed below the remaining filled one in the box; if not, it can be thrown away. All uninjured blocks to be carefully preserved and returned in with the ordnance stores at the end of a cruise.

For a pistol cartridge-box the board recommend the percussion-cap boxes now in use in the service for muzzle-loaders, without alteration.

Very respectfully, your obedient servants,

WM. REYNOLDS,
Captain and President Board.

S. NICHOLSON,
Commander and Member.

K. R. BREESE,
Commander and Member.

McLANE TILTON,
Captain U. S. Marines and Member.

GEO. C. REID,
Second Lieutenant U. S. Marines and Recorder of Board.

Rear-Admiral JOHN A. DAHLGREN, U. S. N.,
Chief of Bureau of Ordnance, Navy Department.

Extracts from additional reports of the board.

OCTOBER 1, 1869.

Having visited these different establishments for the manufacture of breech-loading arms and of their ammunition, and having carefully considered all the information we have thus obtained, we find ourselves confirmed in the recommendations made in our first report of August, and adhere to each and all of them.

Very respectfully, your obedient servants,

WM. REYNOLDS,
Captain and President.

S. NICHOLSON,
Commander U. S. Navy.

K. R. BREESE,
Commander U. S. Navy.

McLANE TILTON,
Captain U. S. Marine Corps.

CARLISE P. PORTER,
Lieutenant U. S. Marine Corps and Recorder.

NOVEMBER 20, 1869.

Each of the breech-loading systems presented have their peculiar merits, and may be classed among the most serviceable; but the board are still of the opinion that for naval purposes the Remington system is the best.

K. R. BREESE,
Commander U. S. Navy.

McLANE TILTON,
Captain U. S. Marine Corps.

NOTE.—The breech-loading systems referred to in the above extract (November 20, 1869) were the following:

Roberts gun, (new,) by General Roberts.	} <i>New arms.</i>
Berdan gun—by Colt's Arms Company.	
Prince self-cocker gun, by Colonel Prince.	
Prince non-self-cocker gun, by Colonel Prince.	
Meigs' gun, by Captain J. V. Meigs— <i>Converted muzzle loader.</i>	
Meigs' repeating gun, Captain J. V. Meigs— <i>New arm.</i>	
Meigs' single breech-loader, Captain J. V. Meigs— <i>Incomplete.</i>	

No. 5.

BUREAU OF EQUIPMENT AND RECRUITING.

NAVY DEPARTMENT,

Bureau of Equipment and Recruiting, October 25, 1870.

SIR: I have the honor to submit the annual report of the Bureau of Equipment and Recruiting, together with the estimates for the fiscal year ending 30th June, 1872.

During the past fiscal year, under my predecessor in this Bureau, 24 vessels were fitted for sea in the Equipment Department; at present work is proceeding on others as far as the amount of money appropriated will permit.

Wire rope has been adopted lately for the lighter standing rigging of all vessels requiring a new outfit, as it has been previously for the heavier; the trials made with it on the upper spars of several ships having proved most satisfactory. The greater durability of wire over hemp will lessen the cost of rigging vessels materially, and it is coming into universal use for this purpose.

A set of machinery for the manufacture of wire rope was purchased out of the appropriation of last year, and an estimate will be submitted, if not with this report, subsequently, for the cost of putting it into operation at the Boston navy yard. The ropewalk at that yard has furnished all the different sizes and quality of hemp, Manila, and hide cordage required for naval use. 1,373,835 pounds Russia hemp, at a cost of \$271,157 60; 85,320 pounds Manila hemp, at a cost of \$15,784 20; 112,587 pounds American hemp, at a cost of \$21,825 15, have been purchased during the year. 956,457 pounds rope from American and Russian hemp, 648,612 pounds rope from Manila, and 23,000 pounds rope from hide cordage, have been manufactured at an aggregate cost of \$385,423 36.

Anchor, chain-cables, galleys, &c., have been made during the last year, at the Washington navy yard, for all the wants of the service, and their manufacture is continued with regard to the amount of money that can be applied to such purposes.

Condensers for distilling fresh water, ovens for baking fresh bread for the crew, balsas for life-rafts, and boat-lowering apparatus have been added to the equipment of vessels of the Navy during the past year.

Thirteen thousand tons of steamer coal have been contracted for during the present fiscal year, 10,000 tons deliverable at Philadelphia at \$4 08½, and 3,000 tons at New York at \$4 34 per ton.

Coal-sheds, for the protection of coal, belonging to this Bureau, at the different navy yards, are much needed, and have been asked for in previous reports. An estimate for this purpose, at the Washington yard, is again included in report of the Bureau of "Yards and Docks."

A considerable reduction in the quantity of coal used by our cruising ships is due to recent improvement in their rig, and to the introduction of propellers, giving them less drag to overcome while under canvas. In 1868-'69, 40,172 tons were used by 48 vessels; in 1869-'70, 27,539 tons were used by 42 vessels. Coal stations, and contracts for coal abroad, at ports where coal is abundant in the market, will not be maintained or made at present, as greater economy can be observed by buying the small amount of coal now needed by purchase, when and where it may be required.

The number of men allowed by law has been kept up, but not exceeded. Enlistments were stopped twice when the quota was full, and have now been resumed to a limited extent.

The recommendations of my predecessor, as to furnishing enlisted men with an outfit on entering the service, and as to apprehending deserters after the time of their enlistment has expired, and causing them to serve out their lost time, as is the case in the Army, are respectfully renewed.

I have the honor to be, very respectfully, your obedient servant,

WM. REYNOLDS,
Chief of Bureau.

Hon. GEO. M. ROBESON,
Secretary of the Navy.

E. & R., No. 1.

Estimate of the amount required for the support of the Bureau of Equipment and Recruiting for the fiscal year ending June 30, 1872.

For salary of chief clerk, (act July 5, 1862).....	\$1, 800
For salary of one fourth-class clerk, (act July 23, 1866).....	1, 800
For salary of one third-class clerk, (act July 23, 1866).....	1, 600
For salary of two second-class clerks, (act July 12, 1870).....	2, 800
For salary of two first-class clerks, (act July 23, 1866).....	2, 400
For salary of one messenger, (act March, 1869).....	840
For salary of one laborer, (act July 12, 1870).....	720
	<hr/>
	11, 960
For contingent expenses of Bureau.....	1, 200
	<hr/>
Total.....	13, 160
	<hr/> <hr/>
Appropriated for the fiscal year ending June 30, 1871.....	\$16, 210
	<hr/> <hr/>

E. & R., No. 2.

Estimate of the amount required for the purchase of materials, articles, &c., for the equipment of vessels in the Navy for the fiscal year ending June 30, 1872.

For the purchase of various articles of equipment, viz: coal for steamer's use, (including expenses of transportation, storage, labor, &c. ;) hemp and wire and other articles for the manufacture of rope ; hides, cordage, canvas, leather ; iron for the manufacture of cables, anchors, galleys, &c. ; furniture, hose, bake-ovens, condensing and boat-detaching apparatus, life-rafts, heating apparatus for receiving ships, and for the payment of labor in equipping vessels and manufacture of articles pertaining to this Bureau at the different navy yards.....	\$1, 700, 000
	<hr/> <hr/>
Appropriated for the fiscal year ending June 30, 1871.....	\$1, 500, 000
	<hr/> <hr/>

E. & R., No. 3.

Estimate for the pay of the Navy for the fiscal year ending June 30, 1872.

For pay of commissioned and warrant officers, and for mileage or transportation of officers travelling under orders, and for pay of the petty officers, seamen, ordinary seamen, handsmen, and boys, including men for the engineer's force, 8,500 men, at an average pay of \$300 each per annum.....	\$6, 500, 000
	<hr/> <hr/>
Appropriated for the fiscal year ending June 30, 1871.....	\$7, 000, 000
	<hr/> <hr/>

E. & R., No. 4.

Estimate of the amount required for the pay of civil officers under the cognizance of the Bureau of Equipment and Recruiting for the fiscal year ending June 30, 1872.

PORTSMOUTH, NEW HAMPSHIRE.	
Clerk in equipment office.....	\$1,400
Store clerk \$1,100, time clerk \$900.....	2,000
BOSTON.	
Superintendent of ropewalk.....	1,900
Clerk to same.....	1,200
Clerk in equipment office.....	1,500
One store and time clerk, at \$1,200 each.....	2,400
PHILADELPHIA.	
Clerk in equipment office.....	1,400
One store and time clerk, at \$1,200 each.....	2,400
WASHINGTON.	
Clerk in equipment office.....	1,500
One store clerk \$1,400, and one time clerk \$1,200.....	2,600
BROOKLYN, NEW YORK.	
Clerk in equipment office.....	1,500
One store and one time clerk, at \$1,200 each.....	2,400
NORFOLK.	
Clerk in equipment office.....	1,400
Store clerk \$1,125, time clerk \$900.....	2,025
PENSACOLA.	
Clerk in equipment office.....	1,300
MARE ISLAND.	
Clerk in equipment office.....	1,875
One store clerk, \$1,200.....	1,200
Total.....	<u>\$30,000</u>
Appropriated for the fiscal year ending June 30, 1871.....	<u>\$32,280</u>

E. & R., No. 5.

Estimate of the amount required for contingent expenses of the Bureau of Equipment and Recruiting for the fiscal year ending June 30, 1872.

For expenses that may accrue for the following purposes, viz: freight and transportation of stores, &c.; transportation of enlisted men, mileage to honorably discharged men, printing, advertising, telegraphing, postage, and stationary; for apprehension of deserters, assistance to vessels in distress, &c.....	<u>\$125,000</u>
Appropriated for the fiscal year ending June 30, 1871.....	<u>\$125,000</u>

RECAPITULATION.

For salaries.....	\$11,960
For contingent.....	1,200
Total.....	<u>13,160</u>

NAVAL SERVICE.

For equipment of vessels	\$1,700,000
For pay of officers and men	6,500,000
For pay of civil officers	30,000
For contingent	125,000
Total	<u>8,355,000</u>

BUREAU OF EQUIPMENT AND RECRUITING.

Offers to furnish materials for the Navy, under the advertisement of the Bureau of the 11th July, 1870, at the navy yard, Kittery, Maine.

Class No. 2. Cotton canvas, &c.:		Class No. 16. Ship chandlery:	
Wm. A. Wheeler.....	\$2,673 00	William A. Wheeler.....	\$266 90
Brinckerhoff, Turner & Polhemus.....	*2,226 50	D. Babcock & Co.....	250 80
B. Y. Pippet & Co.....	2,633 50	Hyatt & Spencer.....	259 98
Prescott, King & Co.....	2,506 50	George H. Creed.....	*229 96
Geo. H. Creed.....	2,412 00	S. H. Mills & Co.....	280 20
Fearing, Rodman & Swift	2,445 40	George T. Vaughan.....	318 41
Class No. 8. Hardware:		Class 17. Tar and tar oil:	
Wm. A. Wheeler.....	33 10	William A. Wheeler.....	328 00
D. Babcock & Co.....	38 45	D. Babcock & Co.....	283 00
Hyatt & Spencer.....	*32 05	George H. Creed.....	328 00
Geo. H. Creed.....	33 55	S. H. Mills & Co.....	271 60
S. H. Mills & Co.....	76 60	George T. Vaughan.....	*228 90
Geo. T. Vaughan.....	47 03	Class No. 18. Stationery:	
Class No. 12. Leather:		William A. Wheeler.....	193 15
Wm. A. Wheeler.....	667 20	Dempsey & O'Toole.....	*141 03
D. Babcock & Co.....	661 20	E. Devoe & Co.....	145 96
George H. Creed.....	*442 80	Class No. 19. Dry goods:	
S. H. Mills & Co.....	714 60	William A. Wheeler.....	137 50
William Porter & Son.....	573 00	D. Babcock & Co.....	*110 00
Moses H. Goodrich.....	1,248 00	Hyatt & Spencer.....	121 25
Clapp, Evans & Co.....	619 50	George H. Creed.....	121 00
Josiah Gates & Son.....	530 40	S. H. Mills & Co.....	150 00
Class No. 13. Soap and tallow:		Class No. 20. Fire-wood and coal:	
William A. Wheeler.....	*15 00	William A. Wheeler.....	14,978 75
D. Babcock & Co.....	18 75	S. P. Brown & Son.....	*14,410 00
George H. Creed.....	15 75	Class No. 21. Sand:	
S. H. Mills & Co.....	22 50	William A. Wheeler.....	30 00
George T. Vaughan.....	15 75	Samuel Adams.....	*25 00

Offers to furnish materials for the Navy, under the advertisement of the Bureau of the 11th July, 1870, at the navy yard, Charlestown, Massachusetts.

Class No. 2. Cotton canvass:		Class No. 3. Cotton hammock and bag stuff:	
William A. Wheeler.....	\$20,392 25	William A. Wheeler.....	\$11,211 25
Brinckerhoff, Turner & Polhemus.....	*18,131 00	Brinckerhoff, Turner & Polhemus.....	*9,475 00
B. Y. Pippet & Co.....	20,553 00	B. Y. Pippet & Co.....	10,125 00
Prescott, King & Co.....	20,610 50	Prescott, King & Co.....	10,456 25
George H. Creed.....	19,195 00	George H. Creed.....	11,475 00
Fearman, Rodman & Swift.....	20,024 00		

* Accepted.

Class No. 4. Iron and steel:	
William A. Wheeler.....	\$478 21
D. Babcock & Co.	351 75
Prescott, King & Co	303 49
George H. Creed.....	*280 05
Class No. 8. Hardware:	
William A. Wheeler.....	445 76
D. Babcock & Co.....	*406 53
Hyatt & Spencer	503 75
George H. Creed.....	457 15
S. H. Mills & Co.....	852 30
Class No. 9. Cooking utensils:	
William A. Wheeler.....	418 05
D. Babcock & Co.	336 89
Hyatt & Spencer	273 04
George H. Creed.....	*226 80
Class No. 12. Leather:	
William A. Wheeler.....	3,680 50
D. Babcock & Co.....	3,391 20
Webster & Co.....	2,784 90
George H. Creed.....	*2,744 50
S. H. Mills & Co.....	3,586 50
William Porter & Son...	3,139 00
Clapp, Evans & Co.	3,360 00
Josiah Gates & Son.	2,774 00
Chester, Guild & Son....	2,940 70
Class No. 13. Soap and tallow:	
William A. Wheeler.....	100 00
D. Babcock & Co.....	110 00
George H. Creed.....	*95 00
S. H. Mills & Co.....	140 00

Class No. 14. Ox hides:	
William A. Wheeler.....	\$11,940 00
D. Babcock & Co.....	12,600 00
Webster & Co.....	11,100 00
George H. Creed.....	*11,040 00
Class No. 15. Brushes:	
D. Babcock & Co.....	699 75
George H. Creed.....	*588 50
Class No. 16. Ship chandlery:	
William A. Wheeler.....	2,480 10
D. Babcock & Co.....	2,141 00
Hyatt & Spencer	2,760 28
George H. Creed.....	*2,112 40
Class No. 17. Tar and tar oil:	
William A. Wheeler.....	1,794 00
D. Babcock & Co.....	1,980 00
George H. Creed.....	*1,560 00
S. H. Mills & Co.....	1,620 00
Class No. 18. Stationery:	
William A. Wheeler.....	492 34
Dempsey & O'Toole.....	421 62
E. Devoe & Co.....	*413 75
Class No. 20. Fire-wood and coal:	
William A. Wheeler.....	33,117 50
S. P. Brown & Son.....	*32,831 50
C. Leytan Foxwell.....	428,635 75

Offers to furnish materials for the Navy, under the advertisement of the Bureau of the 11th July, 1870, at the navy yard, Brooklyn.

Class No. 1. Flax canvas:	
William A. Wheeler.....	\$225,310 00
William E. Brand.....	212,323 62
George H. Creed.....	240,492 70
De Groot & Peck.....	313,536 90
Class No. 2. Cotton canvas:	
William A. Wheeler.....	20,294 10
Brinckerhoff, Turner & Polhemus.....	*17,142 00
R. Y. Pippet & Co.....	19,525 50
George H. Creed.....	18,677 82
Fearing, Rodman & Swift.....	18,929 00
Class No. 3. Cotton hammock and bag stuff:	
William A. Wheeler.....	9,912 50
Brinckerhoff, Turner & Polhemus.....	8,162 50
B. Y. Pippet & Co.....	8,662 52
George H. Creed.....	10,600 00
Class No. 8. Hardware:	
William A. Wheeler.....	419 25

D. Babcock & Co.....	\$306 25
Hyatt & Spencer	317 25
George H. Creed.....	*286 00
S. H. Mills & Co.....	372 25
Class No. 9. Cooking utensils:	
William A. Wheeler.....	837 75
D. Babcock & Co.....	794 40
Hyatt & Spencer	672 75
George H. Creed.....	*612 75
S. H. Mills & Co.....	901 50
Benham & Stantenborough.....	863 25
Class No. 12. Leather:	
William A. Wheeler.....	1,684 00
D. Babcock & Co.....	1,600 00
George H. Creed.....	*1,260 00
S. H. Mills & Co.....	1,716 00
William Porter & Sons..	1,460 00
Josiah Gates.....	1,264 00
Class No. 13. Soap and tallow:	
William A. Wheeler.....	230 00

* Accepted.

† Informal.

D. Babcock & Co.....	\$240 00	D. Babcock & Co.....	\$1,193 50
George H. Creed.....	*220 00	George H. Creed.....	*1,048 80
S. H. Mills & Co.....	248 00	S. H. Mills & Co.....	1,094 40
Class No. 15. Brushes :		Class No. 18. Stationery :	
William A. Wheeler.....	392 00	William A. Wheeler.....	819 97
D. Babcock & Co.....	385 00	Dempsey & O'Toole.....	682 14
Hyatt & Spencer.....	366 00	E. Devoe & Co.....	*660 89
S. H. Mills & Co.....	459 80		
George H. Creed.....	365 00		
Class No. 16. Ship chandlery :		Class No. 20. Coal, &c. :	
William A. Wheeler.....	10,672 30	William A. Wheeler....	43,144 60
D. Babcock & Co.....	12,917 75	S. P. Brown & Son.....	*42,984 10
Hyatt & Spencer.....	13,918 79		
George H. Creed.....	*10,578 95	Class No. 21. Sand :	
James Symington.....	13,418 35	William A. Wheeler.....	160 00
Class No. 17. Tar and tar oil :		D. Babcock & Co.....	*120 00
William A. Wheeler.....	1,249 00	George H. Creed.....	320 00

Offers to furnish materials for the Navy under the advertisement of the Bureau of the 11th July 1870, at navy yard, Philadelphia.

Class No. 2. Cotton canvas, &c. :		Hyatt & Spencer.....	\$744 00
William A. Wheeler.....	\$7,923 80	George H. Creed.....	1,142 00
Brinckerhoff, Turner & Polhemus.....	*6,694 50	S. H. Mills & Co.....	1,000 00
B. T. Pippy & Co.....	7,950 50	J. B. Shannon.....	823 50
George H. Creed.....	7,213 60	Paul J. Field.....	*550 05
Fearing, Rodman & Swift	7,353 60	Class No. 17. Tar and tar oil :	
Class No. 8. Hardware :		William A. Wheeler.....	165 00
William A. Wheeler.....	102 00	D. Babcock & Co.....	160 44
D. Babcock & Co.....	70 20	George H. Creed.....	174 50
Hyatt & Spencer.....	*65 70	S. H. Mills & Co.....	*140 10
George H. Creed.....	78 96	J. B. Shannon.....	230 70
S. H. Mills & Co.....	130 80	Class No. 18. Stationery :	
J. B. Shannon.....	64 98	William A. Wheeler.....	438 00
Paul J. Field.....	90 90	Dempsey & O'Toole.....	446 70
Class No. 12. Leather :		Devoe & Co.....	*351 21
William A. Wheeler.....	327 00	Class No. 19. Dry goods :	
D. Babcock & Co.....	312 00	William A. Wheeler.....	173 40
George H. Creed.....	*221 00	D. Babcock & Co.....	183 40
S. H. Mills & Co.....	310 00	Hyatt & Spencer.....	236 50
William Porter & Son..	265 00	George H. Creed.....	*155 00
Josiah Gates & Son.....	260 00	S. H. Mills & Co.....	276 00
Paul J. Field.....	447 00	Paul J. Field.....	185 00
Class No. 16. Ship chandlery :		Class No. 20. Coal, &c. :	
William A. Wheeler.....	666 25	William A. Wheeler.....	3,350 25
D. Babcock & Co.....	622 65	S. P. Brown & Son.....	*3,278 90

* Accepted.

Offers to furnish materials for the Navy under the advertisement of the Bureau of the 11th July, 1870, at the navy yard, Washington, D. C.

<p>Class No. 2. Cotton canvas, &c. :</p> <p>William A. Wheeler..... \$1,327 00 Brinckerhoff, Turner & Polhemus..... *1,097 00 B. T. Pippy & Co..... 1,283 00 George H. Creed..... 1,184 40 Fearing, Rodman & Swift 1,302 80</p> <p>Class No. 4. Iron and steel :</p> <p>William A. Wheeler..... 513 50 D. Babcock & Co..... 590 00 George H. Creed..... *509 60</p> <p>Class No. 5. Galley iron :</p> <p>William A. Wheeler..... 886 40 D. Babcock & Co..... 685 51 George H. Creed..... *647 84</p> <p>Class No. 6. Pig iron :</p> <p>William A. Wheeler..... 1,225 00 D. Babcock & Co..... 1,100 00 George H. Creed..... *1,087 00</p> <p>Class No. 7. Chain iron :</p> <p>William A. Wheeler..... 4,474 19 George H. Creed..... *4,450 56</p> <p>Class No. 8. Hardware :</p> <p>William A. Wheeler..... 907 60 Hyatt & Spencer..... *644 12 George H. Creed..... 652 97</p> <p>Class No. 11. Tin and zinc :</p> <p>William A. Wheeler..... 638 60 D. Babcock & Co..... *615 50 George H. Creed..... 674 50 William Porter & Son.. 623 00</p>	<p>Class No. 12. Leather :</p> <p>William A. Wheeler..... \$434 50 D. Babcock & Co..... 495 08 George H. Creed..... 396 80 S. H. Mills & Co..... 515 20 William Porter & Son.... *395 00 Josiah Gates & Son..... 470 20</p> <p>Class No. 13. Soap and tallow :</p> <p>William A. Wheeler..... 100 00 D. Babcock & Co..... 85 00 George H. Creed..... *77 50 S. H. Mills & Co..... 110 00</p> <p>Class No. 16. Ship chandlery :</p> <p>William A. Wheeler..... *878 25 D. Babcock & Co..... 942 85 Hyatt & Spencer..... 959 80 George H. Creed..... 1,042 40 S. H. Mills & Co..... 1,286 75</p> <p>Class No. 17. Tar and tar oil :</p> <p>William A. Wheeler..... 507 00 D. Babcock & Co..... 485 00 George H. Creed..... *462 00 S. H. Mills & Co..... 544 00</p> <p>Class No. 18. Stationery :</p> <p>William A. Wheeler..... 499 00 Dempsey & O'Toole..... 274 95 Devoe & Co..... *181 50</p> <p>Class No. 20. Coal, &c. :</p> <p>William A. Wheeler.... 14,290 00 S. P. Brown & Son..... 12,680 00 John B. Turtan..... 13,592 00 Mayfield & Hiestan.... 13,254 00 James A. Symington... 18,600 00 C. Seyton Foxwell, agent. 11,200 00</p>
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Offers to furnish materials for the Navy under the advertisement of the Bureau of the 11th July, 1870, at navy yard, Norfolk, Va.

<p>Class No. 2. Cotton canvas, &c. :</p> <p>William A. Wheeler..... \$3,341 00 Brinckerhoff, Turner & Polhemus..... *2,668 00 B. T. Pippy & Co..... 3,186 00 George H. Creed..... 2,981 50 Fearing, Rodman & Swift. 2,944 80</p> <p>Class No. 3. Cotton hammock and bagstuff:</p> <p>William A. Wheeler..... 1,550 00 Brinckerhoff, Turner & Polhemus..... *1,220 00</p>	<p>B. T. Pippy & Co..... \$1,370 00 George H. Creed..... 1,715 00</p> <p>Class No. 8. Hardware :</p> <p>William A. Wheeler..... 737 74 D. Babcock & Co..... 582 62 Hyatt & Spencer..... 590 69 George H. Creed..... 553 10 Taylor, Martin & Co..... *528 10 E. B. Tabb & Co..... 554 80</p> <p>Class No. 9. Cooking utensils:</p> <p>William A. Wheeler..... 213 20</p>
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* Accepted.

† Rejected.

D. Babcock & Co	\$189 60	S. H. Mills & Co.....	\$240 00
Hyatt & Spencer.....	*165 46	Taylor, Martin & Co.....	*123 75
George H. Creed	170 00		
S. H. Mills & Co	279 00	Class No. 16. Ship chandlery:	
Taylor, Martin & Co.....	204 00	William A. Wheeler.....	848 25
E. B. Tabb & Co.....	193 50	D. Babcock & Co	457 25
		Hyatt & Spencer.....	*428 25
Class No. 11. Tin and zinc:		George H. Creed	782 00
William A. Wheeler.....	421 75	S. H. Mills & Co.....	1,061 50
D. Babcock & Co	362 32		
George H. Creed	*343 75	Class 17. Dry goods:	
Taylor, Martin & Co.....	407 75	William A. Wheeler.....	487 00
E. B. Tabb & Co.....	610 00	D. Babcock & Co	505 00
		George H. Creed	475 50
Class No. 12. Leather:		Jacob E. Myers	986 00
William A. Wheeler.....	677 50	S. H. Mills & Co	*424 00
D. Babcock & Co	607 00		
George H. Creed	*492 50	Class No. 18. Stationery:	
Jacob E. Myers	715 00	William A. Wheeler.....	257 19
S. H. Mills & Co.....	612 50	Dempsey & O'Toole.....	486 35
William Porter & Son.....	512 50	E. Devoe & Co.....	*183 72
Taylor, Martin & Co	725 00		
Josiah Gates & Son.....	620 00	Class No. 19. Dry goods:	
		William A. Wheeler.....	49 50
Class No. 13. Soap and tallow:		D. Babcock & Co.....	45 40
William A. Wheeler.....	103 00	Hyatt & Spencer.....	35 80
D. Babcock & Co	102 50	George H. Creed	*33 10
George H. Creed	*100 70	S. H. Mills & Co.....	75 60
Jacob E. Myers	205 00		
S. H. Mills & Co	111 00	Class No. 20. Coal, &c.:	
Taylor, Martin & Co	107 00	William A. Wheeler.....	16,639 40
		Thomas Gemmill, president..	14,674 88
Class No. 15. Brushes:		S. P. Brown & Son.....	*14,354 20
William A. Wheeler.....	155 00	Jacob E. Myers	4770 00
D. Babcock & Co	154 75	James Symington.....	16,941 50
Hyatt & Spencer.....	137 50	R. J. and W. Neely & Co..	1,7583 10
George H. Creed	152 00	C. Seyton Foxwell, agent..	43,000 00
Jacob E. Myers	251 25		

Offers to furnish coal for the Navy, under the advertisement of the Bureau of the 23d May, 1870.

For 10,000 tons, at Philadelphia:

Audenried, Norton & Co., per ton.....	\$4 39
S. P. Brown & Son, per ton.....	4 08½
Philadelphia Coal Com- pany, per ton.....	4 19
William B. Scott, per ton ..	4 93
William A. Wheeler, per ton.....	4 97
William Underdown, per ton.....	4 24

* Accepted.

For 3,000, at New York:

Chamberlain & French, per ton.....	\$5 37½
S. P. Brown & Son, per ton.....	*4 34
Philadelphia Coal Com- pany, per ton.....	6 19
William B. Scott, per ton..	5 47
William A. Wheeler, per ton.....	5 96
William Underdown, per ton.....	4 48

† Informal.

No. 6.

BUREAU OF YARDS AND DOCKS.

NAVY DEPARTMENT, BUREAU OF YARDS AND DOCKS,
Washington, D. C., October 25, 1870.

SIR: I have the honor to submit the annual report of operations at the several navy yards during the fiscal year ending 30th June, 1870, and other subjects relating thereto, coming under the cognizance of this Bureau, with estimates for improvements, repairs, &c., for the fiscal year ending 30th June, 1872.

The report of the board convened by the Department, and composed of Rear-Admirals C. K. Stribling, J. L. Lardner, and Samuel P. Lee, to examine the actual condition of the several navy yards, and make recommendations as to future improvements, has been considered by this Bureau. Copies of the report and plans made by the board have been sent to the different commandants of the navy yards, and other officers of high rank. In the full consideration of this subject, it is not unlikely that a change of the purpose of a building with suitable alterations would obviate the necessity of its removal, or that a different location of some of the works as now recommended might be found advantageous. The general discussion of the subject, with the proposed plans as a basis, will make it possible to improve the navy yards upon a fixed plan. The original plans of the yards were made many years ago, and were well adapted to the wants of the service at that time; the introduction of steam, and the changes made in ordnance and projectiles, rendered a modification of the plans, and the construction of new kinds of workshops necessary; and at this time still other classes of workshops are required for the construction of armored vessels, all of which should be properly arranged as a whole. Hence a revisal and modification of the plans of the different navy yards is of the utmost importance.

Great weight should be given to the report already made, if it should not be adopted entirely. It is most valuable, and indicates what is possible within the limits of our present establishments.

A large increase of workshops and dry-docks is recommended. Without an abundance of them no nation can hope to be considered or be formidable on the high seas. We have now only three stone dry-docks, two of which were completed thirty-seven years ago, and the third has been completed more than twenty years. These docks were built before armored vessels were in use, in fact, before steam vessels of war were general. The changes that have occurred in vessels adapted to naval warfare necessitate more numerous and enlarged docks, such as have been constructed in large numbers by the great maritime powers. Our deficiency in docks and navy yard facilities has been noted and reported to the most powerful European governments by persons charged with that subject. This lack of preparation may lead at any time to expenditures of enormous sums with small comparative results, as is always the case when made hastily. Even an inferior power may presume upon this want of preparation and make a war necessary, which a more judicious and timely expenditure of money might have obviated.

With the exception of a small appropriation made by the last Congress for the Mare Island navy yard, no appropriations have been made for improvements during the past four years; and those made for repairs of all kinds have been so insufficient at the different yards, that instead of gradual improvement, as was intended, we have dilapidation and

decay. In May 1869, the expenses of all the class of watchmen known as ship-keepers, and several other onerous expenses, were assigned to this Bureau, without an assignment of funds to meet this extra demand upon the Bureau's resources. Estimates were made for the present fiscal year as required to meet these increased expenses, but no appropriation was made. Under your instructions and in accordance with a law, this Bureau covered into the treasury \$951,000, a large portion of which was taken from the fund from which these extra expenses were paid.

The assignment of "contingent" has been made to the different navy yards, from which these increased and other expenses are met, and the utmost economy in expenditure is practiced. It is yet a matter of doubt whether it will be possible for the commandants of the different yards to limit the expenditures by the discharge of watchmen and other persons within the sums assigned, without grave injuries to the public interests, through a lack of sufficient care and through thefts, resultant from the reduction of the number of watchmen and others to a point below what is believed to be necessary for the security of the public property.

The filling up with mud and other material of the Wallabout Channel at the New York navy yard; of the waters adjacent the wharves at the Philadelphia navy yard; at the Norfolk navy yard, from sunken vessels; and the narrow, tortuous channel below the navy yard at Washington, renders considerable dredging necessary at those places. To meet this necessity four dredging machines of great power have been built on contract, and the work at some of the points named is in progress, and will be at the others as soon as appropriations are obtained.

The channel-way between the Washington navy yard and the arsenal has been examined by General Michler, of the Engineer Corps, who has submitted plans for its improvement, and the different plans considered in detail. The plan, modified as recommended by General Humphreys, meets the concurrence of this Bureau. I beg to call your attention to the importance of straightening and deepening this channel. A dredging machine of great power has been procured, and will be ready to operate when an appropriation is made for that purpose.

The question of the removal of the Brooklyn navy yard involves so many difficulties that it is thought, as a preliminary, that until a new site is selected within the lines of defense of New York City, the removal or sale of the navy yard cannot be considered advantageous. If, as seems not at all unlikely, torpedo boats can be made that will openly meet and destroy armored vessels, the present area of that yard will prove sufficient for all that may be required of it in the future.

The removal of the Naval Asylum from the suburbs of the city of Philadelphia to some agreeable water site on our coast, bays, or harbors, would be a judicious economy, and an act of humanity to the disabled men whose necessities make them dependent on the nation. Their past services merit a thoughtful care for their comfort and happiness; a want of pleasing objects to engage their attention is unavoidable where they now are, and would at once be attained by selecting a suitable site. The bad conduct shown at times by some of the inmates of the asylum is the natural consequence of the absence of agreeable objects to engage their attention and employ their minds.

The sale of the asylum and grounds would provide amply for the purchase of suitable grounds, the erection of buildings, and all the expenses incident to a removal, and probably leave a considerable sum to be disposed of as directed.

The operation of the law requiring all balances of appropriations remaining unexpended at the end of the fiscal year to be covered into the

treasury is particularly detrimental to the progress of work under this Bureau. All appropriations for improvements at navy yards are for specific objects, and hence no preparations can be made for the purchase of materials until it is known what appropriations are to be made by Congress. The appropriation bills are generally passed at the last of the session, and the method prescribed by law for purchasing materials requires from two to three months, so that by the time the contracts are made the most of the working season has passed away, and the materials are received during the winter, when work of construction cannot be done; the result is that we have but three or four months of the next calendar year to perform the labor, and, by the time a building is in a fair state of progress of erection, the law takes the funds from the Bureau, and the work is suspended and subjected to injury and loss from exposure to the weather, and the Department has again to apply to Congress for a reappropriation of funds to complete the work; the consequence is increased expense of construction, and loss of time in the completion. Under these circumstances it is hoped that Congress will see the propriety of repealing this law, or modifying it so far as the operations of this Bureau are affected.

It will be seen that nothing is asked for improvements beyond the urgent necessities of the present, except at the navy yard in California, which should be made capable of supplying the general wants of our Asiatic and Pacific squadrons. The expenditures during the past fiscal year and estimates for the next are at

KITTERY, MAINE.

The amount expended under the head of "Navy yard, Kittery," during the fiscal year ending 30th June, 1870, is, for materials, \$15,935 66, and for labor, \$72,450 83; making an aggregate of \$88,386 49.

The amount expended under the head of "Civil establishment" is \$11,150. The amount expended during the year for objects coming under the head of "Contingent" is \$119,732 45.

Estimates are submitted for the fiscal year ending 30th June, 1872: For navy yard, Kittery, Maine, \$150,000; for civil establishment at navy yard, Kittery, Maine, \$11,400.

BOSTON, MASSACHUSETTS.

The amount expended at this yard under the head of "Navy yard, Boston," during the fiscal year ending 30th June, 1870, is, for materials, \$28,487 47, and for labor, \$79,218 94; making an aggregate of \$107,706 41.

Under the appropriation "Emergencies at naval stations" there has been expended, for materials, \$3,561 15, and for labor, \$4,629 49; making an aggregate of \$8,190 64.

The amount expended under the head of "Civil establishment" is \$16,500. The amount expended under the head of "Contingent" is, for materials, \$40,285 21, and for labor, \$134,321 61; making an aggregate of \$174,606 82.

Estimates are submitted for the fiscal year ending 30th June, 1872: For navy yard, Boston, \$150,000; for Civil establishment at navy yard, Boston, \$12,700.

NEW YORK.

The amount expended under the head of navy yard, New York, dur-

ing the fiscal year ending 30th June, 1870, is, for materials, \$109,827 11, and for labor, \$295,053 41; making an aggregate of \$404,880 52.

The amount expended under the head of "Civil establishment" is \$14,472. The amount expended under the head of "Contingent" is \$288,446 89.

Estimates are submitted for the fiscal year ending 30th June, 1872: For civil establishment, \$12,600; for navy yard, New York, \$230,000.

PHILADELPHIA.

The amount expended under the head of "Navy yard, Philadelphia," during the fiscal year ending 30th June, 1870, is, for materials, \$15,698 73, and for labor, \$7,144 78; making an aggregate of \$22,843 51.

The amount expended under the head of "Civil establishment" is \$10,900. The amount expended under the head of "Contingent" is \$77,329 85.

Estimates are submitted for the fiscal year ending 30th June, 1872: For navy yard, Philadelphia, \$100,000; for civil establishment, \$9,200.

WASHINGTON, D. C.

The amount expended under the head of "Navy yard, Washington," during the fiscal year ending 30th June, 1870, is, for materials, \$22,710 73, and for labor, \$33,054 53; making an aggregate of \$55,765 26. Under the appropriation for "Emergencies at naval stations" there has been expended, for material, \$90 00; and for labor, \$6,174 89; making an aggregate of \$6,264 89.

The amount expended under "Civil establishment" is \$9,900. The amount expended under head of "Contingent" is \$134,889 96.

Estimates are submitted for the fiscal year ending 30th June, 1872: For navy yard, Washington, \$155,000; for civil establishment, \$11,400.

NORFOLK, VIRGINIA.

The amount expended at this yard under the head of "Navy yard, Norfolk," during the fiscal year ending 30th June, 1870, is, for materials, \$11,376 40, and for labor, \$32,016 29; making an aggregate of \$43,392 69.

The amount expended under appropriation for "Civil establishment" is \$15,825. The amount expended under the head of "Contingent" is \$85,901 66.

Estimates are submitted for the fiscal year ending 30th June, 1872: For navy yard, Norfolk, \$135,000; for civil establishment, \$7,400.

PENSACOLA, FLORIDA.

The amount expended under head of "Navy yard, Pensacola," during the fiscal year ending 30th June, 1870, is, for materials, \$9,658 09; and for labor, \$6,642 77; making an aggregate of \$16,300 86.

Under the head of "Emergencies at naval stations" there has been expended for materials, \$5,046 42, and for labor, \$10,195 25; making an aggregate of \$15,241 67.

The amount expended under "Civil establishment" is \$5,150. The amount expended under the head of "Contingent" is \$36,910 12.

Estimates are submitted for the fiscal year ending 30th June, 1872: For navy yard, Pensacola, \$50,000; for civil establishment, \$5,100.

MARE ISLAND, CALIFORNIA.

The amount expended under the head of "Navy yard, Mare Island," during the fiscal year ending 30th June, 1870, is, for materials, \$29,199 46, and for labor, \$47,182 59; making an aggregate of \$76,382 05.

The amount expended under the head of "Civil establishment" is \$19,340. The amount expended under the head of "Contingent" is \$253,699 32.

Estimates are submitted for the fiscal year ending 30th June, 1872: For navy yard, Mare Island, \$400,000; for civil establishment, \$10,675.

SACKETT'S HARBOR.

The amount expended during the fiscal year ending 30th June, 1870, under head of "Naval station, Sackett's Harbor," is \$747 52.

The amount expended under the head of "Contingent" is \$75 03.

Estimates are submitted for the fiscal year ending 30th June, 1872: For naval station, Sackett's Harbor, \$1,000.

MOUND CITY.

The amount expended under the head of "Naval station, Mound City," during the fiscal year ending 30th June, 1870, is \$27,653 38.

The amount expended under the head of "Contingent" is \$19,116 46.

Estimates are submitted for the fiscal year ending 30th June, 1872: For naval station, Mound City, \$4,000.

NEW LONDON.

The amount expended during the fiscal year ending 30th June, 1870, under the head of "Naval station, New London," is \$1,273 51.

Estimates are submitted for the fiscal year ending 30th June, 1872: For naval station, New London, \$5,000.

LEAGUE ISLAND.

The amount expended at this station, under the head of "Emergencies at naval stations," during the fiscal year ending 30th June, 1870, is \$3,895. The amount expended under the head of "Contingent" is \$26,056 23.

KEY WEST.

The amount expended under the head of "Naval station, Key West," during the fiscal year ending 30th June, 1870, is \$3,559 04.

The amount expended under the head of "Coal depot" is \$321 36.

Estimates are submitted for the fiscal year ending 30th June, 1872: For naval station, Key West, \$30,000.

EMERGENCIES AT NAVAL STATIONS.

Under this head, as before enumerated, there has been expended at the several yards during the fiscal year ending 30th June, 1870, the sum of \$33,592 20. These expenditures, beyond the special appropriations, were found necessary at Boston, for the repair of wharves that had become unsafe; at Washington, from the destructive effects of a gale of wind; at Pensacola, from an insufficient appropriation for effecting

necessary repairs; and at League Island, from the necessity of strengthening and repairing dykes, seriously injured by two extraordinary floods in the Delaware River.

Estimates are submitted for the fiscal year ending 30th June, 1872: For emergencies at naval stations, \$100,000.

NAVAL ASYLUM, PHILADELPHIA.

On the 1st July, 1869, there were 153 persons, including officers and attendants, borne on the rolls of the asylum. During the fiscal year ending 30th June, 1870, 19 beneficiaries have been admitted, 12 have died, and 1 has been sent to the insane asylum. The expenses of the institution, for the support of the beneficiaries and pay of officers and attendants during the fiscal year, are—

For subsistence.....	\$18,631 92
For clothing, tobacco, &c.....	9,589 26
For miscellaneous items.....	13,633 55
For officers and attendants.....	20,341 68
	<hr/>
Total.....	62,196 41
	<hr/> <hr/>

The total amount estimated for the support of the institution during the fiscal year ending 30th June, 1872, is, for the annual repairs of buildings, improvement of cemetery, and support of beneficiaries, \$65,100, which by law is paid out of the naval pension fund.

CONTINGENT.

The amount expended at the several navy yards and stations, under this head, during the fiscal year ending 30th June, 1870, is \$1,216,764 79.

Estimates are submitted for the fiscal year ending 30th June, 1872, for contingent, \$1,030,000.

The amount asked for under this head is considerably less than the estimates submitted from the yards. It has been reduced to the smallest amount which it is believed will be sufficient to meet the numerous heavy demands which are necessarily made upon this fund. The heaviest expenses paid out of this fund are such as cannot be avoided, and do not depend upon the amount of work performed in other departments. It is hoped that the amount estimated will be granted, as a material reduction will greatly embarrass the Bureau and necessitate a deficiency bill.

ORDINARY.

Estimates are submitted for the fiscal year ending June 30, 1872, for "Pay and support of ordinary at navy yards," \$119,850.

This is a new item of appropriation, designed for the pay and support of a number of laborers, at each of the navy yards, whose duty it will be to have the care and protection of the large number of vessels in ordinary; to render such services about the yards, in hauling ships, cleaning and clearing up yards, &c., as they may be called upon to perform, and to be in the yards or at the place assigned them for quarters, at all times, and be ready in case of fire or other emergency requiring their services. This body of men will be of essential service; the cost of maintaining them will be much less than that of common laborers, and will result in great economy to the Government; it is therefore

hoped that Congress will make the necessary appropriation for their maintenance.

PROTECTION OF TIMBER LANDS.

Prior to the war a number of agents were employed under this Bureau, whose duty it was to visit the timber lands frequently and to guard them against depredators. During the war the operations of these agents were suspended, and since then none have been appointed, there being no funds at the disposal of the Bureau to meet the expense. During the past year an officer was detailed to make a thorough examination of these lands, and report their condition and that of the timber on them. He has performed the duty with great energy, and made a lengthy report, containing much valuable information on the subject. It appears that there are large quantities of valuable timber upon these lands, and that, during the suspension of a proper supervision over them, many depredations have been and are now being committed. To guard against these losses, and to prosecute the parties who may be found pillaging the public property, an appropriation of \$9,000 is asked.

Respectfully, your obedient servant,

DAN'L AMMEN,
Chief of Bureau.

HON GEORGE M. ROBESON,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Yards and Docks, Navy Department.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
BUREAU OF YARDS AND DOCKS.		
SALARIES.		
Civil engineer, per act of March 3, 1863, (12 Stat. at L., p. 818, sec. 1).....	\$3,000 00	
Chief clerk, per act of July 5, 1862, (12 Stat. at L., p. 511, sec. 3).....	1,800 00	
Draughtsman, per act of March 2, 1867, (14 Stat. at L., p. 450, sec. 1).....	1,800 00	
One clerk of class four, per act of March 2, 1867, (14 Stat. at L., p. 450, sec. 1)...	1,800 00	
Two clerks of class three, per act of March 2, 1867, (14 Stat. at L., p. 450, sec. 1)...	3,200 00	
One clerk of class two, per act of March 2, 1867, (14 Stat. at L., p. 450, sec. 1)...	1,400 00	
One clerk of class one, per act of March 2, 1867, (14 Stat. at L., p. 450, sec. 1)...	1,200 00	
One messenger, per act of July 5, 1862, (12 Stat. at L., p. 511, sec. 3,) and act of March 3, 1869, (15 Stat. at L., p. 287, sec. 1.)	840 00	
Two laborers, at \$720 each, (same acts).....	1,440 00	
	16,480 00	\$19,260 00
CONTINGENT EXPENSES.		
Stationery, books, plans, drawings, incidental labor, and miscellaneous items..	1,800 00	800 00
CIVIL ESTABLISHMENT.		
At the navy yard, Kittery, Maine:		
Draughtsman and clerk to civil engineer, at \$1,400 each.....	2,800 00	
Clerk of pay rolls and mustering clerk.....	1,500 00	
Receiver and inspector of stores.....	1,500 00	
Writer to receiver and inspector.....	1,000 00	
Chief accountant.....	1,800 00	
Clerk to chief accountant.....	1,200 00	
Gatekeeper and detective.....	1,000 00	
Messenger to commandant's office.....	600 00	
	11,400 00	14,700 00

Estimates of appropriations required by Bureau of Yards and Docks—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
At the navy yard, Boston, Massachusetts:		
Assistant civil engineer	\$1,500 00	
Draftsman and clerk to civil engineer, at \$1,400 each	2,800 00	
Clerk of pay rolls and mustering clerk	1,500 00	
Receiver and inspector of stores	1,500 00	
Writer to receiver and inspector	1,000 00	
Writer to commandant	1,000 00	
Chief accountant	1,800 00	
Gatekeeper and detective	1,000 00	
Messenger to commandant's office	600 00	
	12,700 00	\$14,139 00
At navy yard, New York:		
Assistant civil engineer	1,500 00	
Draftsman and clerk to civil engineer, at \$1,400 each	2,800 00	
Clerk of pay-rolls and mustering clerk	1,500 00	
Receiver and inspector of stores	1,500 00	
Writer to commandant	1,000 00	
Chief accountant	1,800 00	
Gatekeeper and detective	1,000 00	
Mail carrier	900 00	
Messenger to commandant's office	600 00	
	12,600 00	13,200 00
At navy yard, Philadelphia:		
Draftsman and clerk to civil engineer, at \$1,400 each	2,800 00	
Clerk of pay-rolls and mustering clerk	1,500 00	
Receiver and inspector of stores	1,500 00	
Chief accountant	1,800 00	
Gatekeeper and detective	1,000 00	
Messenger to commandant's office	600 00	
	9,200 00	12,700 00
At navy yard, Washington, D. C.:		
Draftsman and clerk to civil engineer, at \$1,400 each	2,800 00	
Clerk of pay-rolls and mustering clerk	1,500 00	
Receiver and inspector of stores	1,500 00	
Chief accountant	1,800 00	
Clerk to chief accountant	1,200 00	
Gatekeeper and detective	1,000 00	
Mail messenger	1,000 00	
Messenger to commandant's office	600 00	
	11,400 00	12,700 00
At navy yard, Norfolk, Virginia:		
Draftsman and clerk to civil engineer, at \$1,400 each	2,800 00	
Clerk of pay-rolls and mustering clerk	1,500 00	
Receiver and inspector of stores	1,500 00	
Gatekeeper and detective	1,000 00	
Messenger to commandant's office	600 00	
	7,400 00	10,900 00
At navy yard, Pensacola, Florida:		
Superintendent of yard improvements	2,000 00	
Receiver and inspector of stores	1,500 00	
Gatekeeper and detective	1,000 00	
Messenger to commandant's office	600 00	
	5,100 00	4,978 00
At navy yard, Mare Island:		
Assistant civil engineer and draftsman	1,800 00	
Clerk to civil engineer	1,500 00	
Clerk of pay-rolls and mustering clerk	1,875 00	
Receiver and inspector of stores	1,875 00	
Chief accountant	1,875 00	
Gatekeeper and detective	1,000 00	
Messenger to commandant's office	750 00	
	10,675 00	13,875 00
At the Naval Asylum, Philadelphia:		
Secretary to governor	1,200 00	
Steward to asylum	480 00	
Matron	300 00	
Cook	168 00	
Assistant cook	120 00	

Estimates of appropriations required by Bureau of Yards and Docks—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
Four laundresses, at \$108 each.....	\$432 00	
Eight scrubbers, at \$96 each.....	768 00	
Master at arms.....	480 00	
Ship's corporal.....	300 00	
Superintendent.....	540 00	
Barber.....	360 00	
Seven laborers, one at \$264, and six at \$240 each.....	1,704 00	
	6,852 00	\$6,142 00
Total for Bureau of Yards and Docks.....	87,327 00	103,334 00
REPAIRS AT NAVY YARDS AND STATIONS.		
Navy yard, Kittery, Maine: For repairs of all kinds.....	75,000	50,000
Navy yard, Boston, Massachusetts: For repairs of all kinds.....	75,000	100,000
Navy yard, New York: For repairs of all kinds.....	100,000	100,000
Navy yard, Philadelphia: For repairs of all kinds.....	40,000	25,000
Navy yard, Washington, D. C.: For repairs of all kinds.....	75,000	50,000
Navy yard, Norfolk: For repairs of all kinds.....	75,000	30,000
Navy yard, Pensacola: For repairs of all kinds.....	25,000	30,000
Navy yard, Mare Island: For repairs of all kinds.....	100,000	50,000
Naval station, Sackett's Harbor: For repairs of all kinds.....	1,000	1,000
Naval station, Mound City: For repairs of all kinds.....	4,000	3,000
Naval station, New London: For care and protection of public property.....	5,000	
Naval station, Key West: For repairs of all kinds.....	30,000	
Emergencies at naval stations: For emergencies that may arise at naval stations.....	100,000	
CONTINGENT.		
Freight and transportation of materials and stores for Bureau of Yards and Docks purposes; printing, stationery, and advertising for Bureau of Yards and Docks purposes, including the commandant's office; books, maps, models, and drawings for Bureau of Yards and Docks purposes; purchase and repair of fire-engines; machinery, and patent-right to use the same, for Bureau of Yards and Docks purposes; repairs on steam-engines, and attendance on the same, for Bureau of Yards and Docks purposes; purchase and maintenance of oxen and horses, and driving teams; carts and timber wheels for navy yard purposes, and tools and repairs of the same, for Bureau of Yards and Docks purposes; postage on letters on public service and telegrams; furniture for Government houses and offices in navy yards; coal and other fuel for Bureau of Yards and Docks purposes; candles, oils, and gas for Bureau of Yards and Docks purposes; cleaning and clearing up yards and care of public buildings; attendance on fires, lights, fire-engine and apparatus; incidental labor at navy yards for Bureau of Yards and Docks purposes; water tax; tolls and ferringes for Bureau of Yards and Docks purposes; pay of watchmen in the navy yards; flags, awnings, and packing-boxes for Bureau of Yards and Docks purposes.....	1,030,000	800,000
PAY OF ORDINARY.		
Pay and support of ordinary at navy yards, (submitted).....	110,850	
PROTECTION OF TIMBER LANDS.		
Pay of timber agents and for prosecution of depredators, (submitted).....	9,000	
PERMANENT IMPROVEMENTS AT NAVY YARDS AND STATIONS.		
Navy yard, Kittery, Maine: For permanent improvements.....	75,000	
Navy yard, Boston, Massachusetts: For permanent improvements.....	75,000	
Navy yard, New York: For permanent improvements.....	130,000	
Navy yard, Philadelphia: For permanent improvements.....	60,000	
Navy yard, Washington: For permanent improvements.....	80,000	
Navy yard, Norfolk: For permanent improvements.....	60,000	
Navy yard, Pensacola: For permanent improvements.....	25,000	
Navy yard, Mare Island: For permanent improvements.....	300,000	75,000
Naval Asylum, Philadelphia: For support of the institution.....	65,100	63,100

Y. & D.—No. 6.

ABSTRACT OF OFFERS FOR SUPPLIES (EMBRACING AS WELL THOSE WHICH ARE REJECTED AS THOSE WHICH ARE ACCEPTED) RECEIVED FOR FURNISHING ARTICLES COMING UNDER THE COGNIZANCE OF THE BUREAU OF YARDS AND DOCKS, MADE IN CONFORMITY TO THE ACT OF CONGRESS APPROVED MARCH 3, 1843.

Offers for supplies for the navy yard at Kittery, Maine, under advertisement dated September 1, 1870.

Class No. 6. White pine, spruce, juniper, and cypress:		Class No. 18. Stationery:	
George A. Hammond	\$3,490 00	Hall L. Davis	*600 94
Joseph W. Duryce	3,846 00	E. Devoe & Co.	†\$591 77
Samuel Adams & Co	*3,288 00	William A. Wheeler	690 89
J. Bigler & Co.	3,582 00	Dempsey & O'Toole	707 06
James Symington	4,467 00	Class No. 20. Hay and straw:	
Trickey & Jewett	3,414 00	George A. Hammond	3,500 00
S. P. Brown & Son	3,930 00	Charles C. Barrell	*2,800 00
Class No. 15. Paints, oils, and glass:		James Symington	3,486 00
D. Babcock & Co	712 20	Trickey & Jewett	3,000 00
Prescott, Ring & Co	732 30	William A. Wheeler	5,500 00
John H. Bailey	710 00	Class No. 21. Provender:	
Platt & Boyd	†82 60	William Porter & Sons	1,669 50
George H. Creed	*643 25	Charles G. Pickering	1,291 85
Hyatt & Spencer	673 31	James Symington	*1,218 64
William A. Wheeler	767 55	George H. Creed	1,298 75
S. P. Brown & Son	750 65	Trickey & Jewett	1,238 00
Class No. 17. Hardware:		William A. Wheeler	1,348 25
D. Babcock & Co	1,825 68	Class No. 22. Charcoal:	
Prescott, Ring & Co	1,910 80	Charles G. Brown	300 00
John H. Bailey	1,979 89	George H. Creed	450 00
George H. Creed	*1,642 20	William A. Wheeler	*280 00
Hyatt & Spencer	1,721 97	S. P. Brown & Son	630 00
William A. Wheeler	2,114 49	Class No. 32. Machinery and tools:	
		D. Babcock & Co	*4,365 55
		William A. Wheeler	5,657 90

Offers for supplies for the navy yard at Charlestown, Massachusetts, under advertisement dated September 1, 1870.

Class No. 1. Bricks:		Class No. 6. White pine, spruce, juniper, and cypress:	
Prescott, Ring & Co	\$1,700 00	Trickey & Jewett	*\$5,915 00
George P. Wescott	1,850 00	Joseph W. Duryce	6,460 00
J. F. & F. L. Gilman	*1,650 00	J. Bigler & Co.	6,535 00
Oakman & Eldridge	1,850 00	George A. Hammond	6,990 00
William A. Wheeler	1,800 00	Watson & Pittinger	7,235 00
S. P. Brown & Son	1,750 00	James Symington	7,560 00
D. Babcock & Co	2,020 00	S. P. Brown & Son	6,965 00
Class No. 2. Stone:		Class No. 7. Lime, hair, and plaster:	
George P. Wescott	3,990 00	J. F. & F. L. Gilman	*180 00
J. F. & F. L. Gilman	5,225 00	Oakman & Eldridge	195 00
Oakman & Eldridge	5,475 00	William A. Wheeler	282 50
William A. Wheeler	†186 00	D. Babcock & Co	192 50
S. P. Brown & Son	*3,725 00		
D. Babcock & Co	8,240 00		

*Accepted.

† Informal.

Class No. 8. Cement:

Prescott, Ring & Co	\$337 50
J. F. & F. L. Gilman	*330 00
Oakman & Eldridge	375 00
William A. Wheeler	345 00
S. P. Brown & Son	450 00
D. Babcock & Co	375 00

Class No. 9. Gravel and sand:

J. F. & F. L. Gilman	1, 875 00
John Turner	*1, 425 00
Oakman & Eldridge	1, 800 00
William A. Wheeler	2, 750 00
S. P. Brown & Son	3, 000 00
D. Babcock & Co	2, 100 00

Class No. 10. Slate:

Hyatt & Spencer	889 25
J. F. & F. L. Gilman	*840 00
William A. Wheeler	1, 250 00
William E. Underwood	895 00
S. P. Brown & Son	1, 365 00
D. Babcock & Co	1, 240 50

Class No. 11. Iron, iron nails, and spikes:

George H. Creed	*1, 964 50
Prescott, Ring & Co	2, 136 25
James Symington	2, 207 35
William A. Wheeler	3, 125 00
D. Babcock & Co	2, 317 00

Class No. 12. Steel:

George H. Creed	† 82 50
Prescott, Ring & Co	90 00
William A. Wheeler	82 50
D. Babcock & Co	90 00

Class No. 14. Files:

George H. Creed	*184 78
Hyatt & Spencer	188 31
Pollard, Sabin & Co	241 98
Smyth & Pennington	192 19
William A. Wheeler	209 25
D. Babcock & Co	227 56

Class No. 15. Paints, oils, and glass:

George H. Creed	*1, 074 00
Hyatt & Spencer	1, 290 40
Prescott, Ring & Co	1, 195 00
Platt & Boyd	†125 00
William A. Wheeler	1, 617 00
S. P. Brown & Son	1, 593 00
D. Babcock & Co	1, 217 75

Class No. 16. Ship chandlery:

George H. Creed	*1, 130 25
Hyatt & Spencer	1, 318 81
Prescott, Ring & Co	1, 650 70
Mullett & Bradbury	†153 70

William A. Wheeler	\$1, 324 75
D. Babcock & Co	1, 279 72

Class No. 17. Hardware:

George H. Creed	*3, 063 26
Hyatt & Spencer	3, 355 75
William A. Wheeler	3, 935 34
D. Babcock & Co	3, 338 95

Class No. 18. Stationery:

M. R. Warren & Co	1, 595 67
E. Devoe & Co	†1, 354 61
Dempsey & O'Toole	*1, 534 85
William A. Wheeler	1, 577 29

Class No. 20. Hay and straw:

George H. Creed	4, 875 00
Trickey & Jewett	4, 875 00
Mullett & Bradbury	4, 811 25
James Symington	*4, 250 00
William A. Wheeler	6, 125 00

Class No. 21. Provender:

George H. Creed	2, 965 00
Trickey & Jewett	3, 568 00
Mullett & Bradbury	3, 138 00
James Symington	*2, 782 50
William A. Wheeler	3, 562 50
William Porter & Sons	4, 260 00

Class No. 22. Charcoal:

George H. Creed	200 00
Mullett & Bradbury	*110 00
Oakman & Eldridge	200 00
William A. Wheeler	140 00
S. P. Brown & Son	225 00

Class No. 23. Belting, packing, and hose:

George H. Creed	*2, 852 50
Prescott, Ring & Co	3, 066 00
William A. Wheeler	3, 067 80
D. Babcock & Co	2, 877 30
Albert T. Allen	3, 314 65

Class No. 24. Sperm and lubricating oils:

George H. Creed	*279 50
Prescott, Ring & Co	283 00
Mullett & Bradbury	343 50
William A. Wheeler	343 00
S. P. Brown & Son	369 75
D. Babcock & Co	338 50

Class No. 25. Iron work, piping, &c.:

George H. Creed	*1, 774 50
Prescott, Ring & Co	2, 744 33
William A. Wheeler	4, 989 50
Jas. J. Walworth & Co	3, 039 10
D. Babcock & Co	3, 721 60

* Accepted.

† Informal

‡ Decided by lot.

Class No. 31. Copper and composition nails :

George H. Creed	\$158 00
William A. Wheeler.....	152 20
D. Babcock & Co.....	* 148 80

Class No. 32. Machinery and tools :-

George H. Creed.....	\$1,797 25
William A. Wheeler.....	1,662 50
D. Babcock & Co.....	* 1,368 53

Offers for supplies for the navy yard, Brooklyn, New York, under advertisement dated September 1, 1870.

Class No. 1. Bricks :

William A. Wheeler	* \$1,180 00
D. Babcock & Co.....	1,280 00
S. P. Brown & Son.....	1,250 00

Class No. 9. Gravel and sand :

William A. Wheeler.....	\$50 ⁰⁰
D. Babcock & Co.....	* 37 50

Class No. 3. Yellow pine timber :

D. Babcock & Co.....	2,597 89
James Symington.....	2,545 03
S. P. Brown & Son.....	2,479 32
Watson & Pittinger.....	2,789 62
R. J. & W. Neely & Co..	2,886 93
Joseph W. Duryee.....	2,339 98
J. Bigler & Co.....	2,473 40
Trickey & Jewett	* 2,165 28
Joshua L. Fentress.....	2,978 48

Class No. 9½. Molding, and fire-sand and fire-clay :

William A. Wheeler.....	40 00
D. Babcock & Co.....	† 40 00

Class No. 4. Yellow pine lumber :

D. Babcock & Co.....	931, 25
James Symington.....	921 60
S. P. Brown & Son.....	* 785 00
Watson & Pittinger.....	920 00
R. J. & W. Neely & Co..	1,062 50
Joseph W. Duryee.....	850 00
J. Bigler & Co.....	862 50
Trickey & Jewett	900 00

Class No. 11. Iron, iron nails, and spikes :

William A. Wheeler.....	4,318 40
George H. Creed.....	3,276 10
D. Babcock & Co.....	3,398 42
Hyatt & Spencer	3,309 00
James Symington.....	3,475 90
E. W. Barstow & Son...	* 3,216 95

Class No. 5. Oak and hard wood :

James Symington.....	490 65
Watson & Pittinger.....	620 00
Joseph W. Duryee.....	508 50
Trickey & Jewett	* 385 00

Class No. 12. Steel :

William A. Wheeler.....	410 00
George H. Creed.....	414 00
D. Babcock & Co.....	441 00
E. W. Barstow & Son...	* 390 00

Class No. 6. White pine, spruce, juniper and cypress:

James Symington.....	6,193 50
S. P. Brown & Son.....	9,343 00
Watson & Pittinger.....	5,682 00
Joseph W. Duryee.....	* 5,044 25
J. Bigler & Co.....	6,073 00
Trickey & Jewett.....	6,204 00

Class No. 14. Files :

William A. Wheeler.....	125 45
Smyth & Pennington...	120 00
George H. Creed.....	* 117 20
D. Babcock & Co.....	139 20
Hyatt & Spencer	126 44
Pollard, Sabin & Co....	157 84

Class No. 7. Lime, hair, and plaster :

William A. Wheeler.....	256 00
D. Babcock & Co.....	* 201 00

Class No. 15. Paints, oils, and glass :

William A. Wheeler.....	3,463 09
George H. Creed.....	* 2,523 60
D. Babcock & Co.....	2,599 21
Hyatt & Spencer	2,575 14
S. P. Brown	2,636 35
Platt & Boyd.....	† 228 00

Class No. 8. Cement :

William A. Wheeler.....	440 00
D. Babcock & Co.....	† 440 00

Class No. 16. Ship chandlery :

William A. Wheeler.....	4,946 82
George H. Creed.....	* 3,258 86
D. Babcock & Co.....	3,938 24
Hyatt & Spencer.....	3,754 68

Class No. 17. Hardware :

William A. Wheeler.....	3,524 93
George H. Creed.....	* 2,849 20
D. Babcock & Co.....	2,970 08

* Accepted.

† Informal.

; Decided by lot.

Hyatt & Spencer	\$3,028 61	George H. Creed.....	* \$184 80
Class No. 18. Stationery :		D. Babcock & Co.....	189 76
William A. Wheeler.....	1,618 75	Class No. 25. Iron work, pip-	
E. Devoe & Co.....	1,667 11	ing, &c. :	
Dempsey & O'Toole.....	* 1,476 66	William A. Wheeler.....	1,107 10
Class No. 20. Hay and straw :		George H. Creed.....	711 00
William A. Wheeler.....	4,116 00	D. Babcock & Co.....	821 50
George H. Creed.....	2,920 00	Hyatt & Spencer	* 706 45
James Symington.....	2,668 00	Class No. 26. Augers :	
William M. Shipman.....	3,897 60	William A. Wheeler.....	258 79
Beall & Shoemaker.....	* 2,272 00	George H. Creed.....	260 00
Class No. 21. Provender :		D. Babcock & Co.....	228 03
William A. Wheeler.....	2,862 00	Hyatt & Spencer	* 203 57
George H. Creed.....	2,550 00	Pollard, Sabin & C.o...	276 25
James Symington.....	* 2,392 50	Class No. 31. Copper and com-	
William M. Shipman.....	2,700 00	position nails :	
Beall & Shoemaker.....	2,940 00	William A. Wheeler.....	945 00
William Porter & Sons..	3,420 00	George H. Creed.....	* 832 00
Class No. 23. Belting, pack-		D. Babcock & Co.....	883 00
ing, and hose :		Hyatt & Spencer	865 50
William A. Wheeler.....	3,587 50	James Symington.....	908 50
George H. Creed.....	3,441 50	E. W. Barstow & Son...	848 00
D. Babcock & Co.....	3,061 50	Class No. 32. Machinery and	
James Symington.....	* 2,800 38	tools :	
William A. Torrey.....	3,240 75	William A. Wheeler.....	1,651 75
Class No. 24. Sperm and lubri-		George H. Creed.....	* 993 75
cating oils :		D. Babcock & Co.....	1,608 81
William A. Wheeler.....	215 60	Hyatt & Spencer	1,602 10

Offers for supplies for the navy yard at Philadelphia, Pennsylvania, under advertisement dated September 1, 1870.

Class No 18. Stationery :		Class No 21. Provender :	
William A. Wheeler.....	\$2,087 68	William A. Wheeler.....	\$1,482 00
Dempsey & O'Toole.....	* 1,666 33	Thomas Carstairs.....	1,442 00
E. Devoe & Co.....	2,047 67	Beall & Shoemaker.....	1,406 25
Moss & Green	1,753 85	James Symington.....	* 1,188 40
Ferdinand Foster.....	1,855 34	George H. Creed.....	1,231 50
Class No. 20. Hay and straw :		John Sowney.....	1,336 25
William A. Wheeler.....	1,275 00	Paul J. Field.....	1,296 50
Thomas Carstairs.....	1,015 00	William Porter & Sons..	1,599 00
Beall & Shoemaker.....	826 50	Class No. 1. Clothing: †	
George H. Creed.....	918 00	Jacob Reed.....	3,357 50
Paul J. Field.....	* 800 80	James McShano.....	* 3,062 50
		William A. Wheeler.....	3,307 00

Offers for supplies for the Naval Asylum at Philadelphia, Pennsylvania, under advertisement dated September 1, 1870.

Class No. 2. Hats, boots, shoes, &c. :		G. & A. Scheidt.....	* 9,534 75
William A. Wheeler.....	* 1,187 50	William A. Wheeler.....	9,625 00
Class No. 3. Provisions :		Class No. 4. Groceries :	
Thomas Strickland.....	9,947 66	Anderson & Dunlap.....	* 6,778 67
		Crippen & Maddock.....	7,029 25

* Accepted.

† Heading for offers for Naval Asylum omitted.

N. W. Burchell.....	\$6,980 59	Class No. 11. Lumber :	
George H. Creed.....	11,343 70	Watson & Pittinger.*	\$813 00
William A. Wheeler....	16,730 00	Thomas & Son.....	*412 07
Class No. 5. Dry goods:		William A. Wheeler....	432 85
Crippen & Maddock...	1,654 25	Class No. 12. Fire-wood :	
Thomas Carstairs.....	975 50	Paul J. Field.....	83 00
George Milliken.....	*896 50	Crippen & Maddock...	120 00
William A. Wheeler....	1,023 00	Thomas & Son.....	80 00
Class No. 6. Bread, &c.:		J. B. Shannon.....	68 00
John McIlwain.....	1,624 75	Thomas Carstairs.....	84 00
William A. Wheeler....	*1,430 00	John S. Lowry & Sons..	*60 00
Class No. 7. Tobacco :		William A. Wheeler....	80 00
Crippen & Maddock...	*862 50	Class No. 13. Provender :	
J. B. Shannon.....	1,020 00	Paul J. Field.....	*275 00
Thomas Carstairs.....	997 50	Crippen & Maddock...	436 00
William A. Wheeler....	990 00	Thomas Carstairs.....	304 50
Class No. 8. Coal :		Beall & Shoemaker....	315 00
Crippen & Maddock...	3,362 50	William A. Wheeler....	294 00
William K. Clampper...	*2,079 00	Class No. 14. Miscellaneous:	
John S. Lowry & Sons..	2,275 00	Crippen & Maddock...	1,191 30
William A. Wheeler....	2,835 00	J. B. Shannon.....	*721 94
Class No. 9. Paints, oils, and glass:		Thomas Carstairs.....	858 25
Eli S. Shorter.....	115 55	William A. Wheeler....	796 75
Crippen & Maddock...	247 50	Class No. 15. Hardware :	
Eli S. Shorter.....	114 50	Paul J. Field.....	318 85
J. B. Shannon.....	126 00	J. B. Shannon.....	284 35
George H. Creed.....	160 50	Hyatt & Spencer.....	*251 75
Hyatt & Spencer.....	*108 72	William A. Wheeler....	281 02
Platt & Boyd.....	150 00	Class No. 16. Stationery :	
William A. Wheeler....	109 00	Crippen & Maddock...	431 00
		Dempsey & O'Toole...	227 12
		E. Devoe & Co.....	*208 75
		William A. Wheeler....	209 00

Offers for supplies for the navy yard at Washington, D. C., under advertisement dated September 1, 1870.

Class No. 1. Bricks :		J. Bigler & Co.....	\$875 00
George H. Plant.....	\$1,200 00	James Symington.....	910 00
D. Babcock & Co.....	1,300 00	S. P. Brown & Son.....	975 00
William A. Wheeler....	*990 00	Class No. 5. Oak and hard wood :	
A. & T. A. Richards....	1,050 00	Watson & Pittinger...	1,750 00
S. P. Brown & Son.....	1,150 00	Joseph W. Duryee.....	*1,436 00
Smith & Robinson....	1,019 00	S. P. Brown & Son.....	1,552 00
Class No. 2. Stone :		Class No. 6. White pine, spruce, juniper, and cypress:	
D. Babcock & Co.....	*2,950 00	Watson & Pittinger....	2,885 00
S. P. Brown & Son.....	3,750 00	T. Edward Clark.....	3,084 50
Class No. 4. Yellow pine lumber:		Joseph W. Duryee.....	3,354 00
Watson & Pittinger....	1,050 00	J. Bigler & Co.....	3,070 00
T. Edward Clark.....	\$ 875 00	James Symington.....	3,954 00
R. J. & W. Neely & Co.	1,250 00	S. P. Brown & Son.....	*2,675 00
Joseph W. Duryee.....	925 00		

* Accepted.

† Informal.

‡ Fleitious.

§ By lot.

Class No. 7. Lime, hair, and plaster:

S. D. Castleman.....	\$475 00
William Guinand.....	†350 00
D. Babcock & Co.....	*470 00
William A. Wheeler....	‡30 00
S. P. Brown & Son.....	532 00

Class No. 8½. Drain pipe:

William Shute & Co....	†345 00
R. G. Campbell.....	*411 00
D. Babcock & Co.....	498 00
William A. Wheeler....	570 00

Class No. 11. Iron, iron nails, and spikes:

D. Babcock & Co.....	1,230 00
William A. Wheeler....	1,768 00
James Symington.....	1,235 00
George H. Creed.....	*1,150 50

Class No. 13. Pig-iron:

D. Babcock & Co.....	2,981 25
William A. Wheeler....	3,375 00
George H. Creed.....	3,075 00
S. P. Brown & Son....	3,037 50

Class No. 15. Paints, oils, and glass:

T. Edward Clark.....	4,319 85
George Rynal, jr.....	4,526 92
D. Babcock & Co.....	4,744 64
Platt & Boyd.....	†523 75
Hyatt & Spencer.....	*3,984 11
William A. Wheeler....	4,715 75
George H. Creed.....	4,032 00
Shanahan & Walther...	4,282 10

Class No. 16. Ship chandlery:

D. Babcock & Co.....	611 95
Hyatt & Spencer.....	746 15
William A. Wheeler....	1,014 70
George H. Creed.....	*601 10

Class No. 17. Hardware:

D. Babcock & Co.....	2,603 86
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Hyatt & Spencer.....	\$2,326 05
William A. Wheeler....	2,792 90
George H. Creed.....	*2,155 74

Class No. 18. Stationery:

Dempsey & O'Toole....	*1,614 50
E. Devoe & Co.....	1,835 23
William A. Wheeler....	1,847 60

Class No. 20. Hay and straw:

T. Edward Clark.....	980 00
John T. Campbell.....	970 00
R. C. Hewett.....	940 00
P. W. Dorsey.....	*833 40
William A. Wheeler....	1,666 00
Beall & Shoemaker....	910 00
George H. Creed.....	1,224 00

Class No. 21. Provender:

T. Edward Clark.....	1,360 00
John T. Campbell.....	†1,132 50
R. C. Hewett.....	1,222 50
P. W. Dorsey.....	*1,179 75
William A. Wheeler....	2,025 00
James Symington.....	1,230 00
Beall & Shoemaker....	1,370 00
George H. Creed.....	1,422 50
William Porter & Sons..	2,237 50

Class No. 23. Belting, packing, and hose:

D. Babcock & Co.....	*662 80
William A. Wheeler....	987 00
James Symington.....	815 00
George H. Creed.....	667 00

Class No. 25. Iron work, piping, &c:

Walmouth & Scudder...*	310 80
R. G. Campbell.....	522 65
D. Babcock & Co.....	396 10
Hyatt & Spencer.....	399 44
William A. Wheeler....	464 80
George H. Creed.....	313 40

Class No. 32. Machinery and tools:

D. Babcock & Co.....	925 00
William A. Wheeler....	†295 00

Offers for supplies for the navy yard at Norfolk, Virginia, under advertisement dated September 1, 1870.

Class No. 4. Yellow pine lumber:

Watson & Pittinger....	\$740 00
A. A. McCullough.....	*470 50
R. J. & W. Neely & Co..	525 00
D. C. Crowell.....	475 50
J. L. Fentress.....	‡32 50

Class No. 5. Oak and hard wood:

Watson & Pittinger....	114 00
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A. A. McCullough.....	*\$93 00
R. J. & W. Neely & Co..	99 50
D. C. Crowell.....	103 00

Class No. 6. White pine, spruce, juniper, and cypress:

Watson & Pittinger....	490 00
A. A. McCullough.....	*407 00
James Symington.....	453 50
R. J. & W. Neely & Co..	411 00

* Accepted.

† Informal.

; No contract made for this class.

D. C. Crowell	\$665 00	George H. Creed	\$691 35
Class No. 7. Lime, hair, and plaster:		Taylor, Martin & Co	808 92
A. A. McCullough	780 00	Class No. 18. Stationery:	
S. D. Castleman	80 00	William A. Wheeler.....	485 55
William A. Wheeler.....	137 50	Dempsey & O'Toole.....	* 434 84
D. Babcock & Co.....	97 50	E. Devoe & Co.....	450 63
Peters Brothers.....	* 77 00	Class No. 20. Hay and straw:	
R. J. & W. Neely & Co..	112 50	A. A. McCullough	† 750 00
Class No. 8. Cement:		William Schroeder.....	960 00
A. A. McCullough	104 00	James Symington.....	1,020 00
D. O. Saylor, pres'd't, &c.	* 86 00	Beall & Shoemaker.....	750 00
S. D. Castleman	110 00	William A. Wheeler.....	1,500 00
William A. Wheeler.....	190 00	Peters Brothers.....	870 00
D. Babcock & Co.....	100 00	R. J. & W. Neely & Co..	940 80
Peters Brothers.....	120 00	George H. Creed.....	1,080 00
R. J. & W. Neely & Co..	124 00	Taylor, Martin & Co....	840 00
Class No. 11. Iron, iron nails, and spikes:		Class No. 21. Provender:	
William A. Wheeler.....	597 00	A. A. McCullough	2,037 35
D. Babcock & Co.....	462 50	William Schroeder.....	2,010 25
George H. Creed.....	* 435 00	James Symington.....	2,101 20
Taylor, Martin & Co....	435 25	Beall & Shoemaker.....	1,959 00
Class No. 14. Files:		William A. Wheeler.....	3,658 25
Pollard, Sabin & Co....	61 80	Peters Brothers.....	2,129 90
Hyatt & Spencer.....	* 48 98	R. J. & W. Neely & Co..	* 1,825 00
Smyth & Pennington...	† 44 70	George H. Creed.....	2,221 75
William A. Wheeler.....	64 17	Taylor, Martin & Co....	2,567 50
D. Babcock & Co.....	65 52	Class No. 23. Belting, packing, and hose:	
J. P. Moore	62 78	William A. Wheeler.....	362 50
George H. Creed.....	52 90	D. Babcock & Co.....	330 30
Taylor, Martin & Co....	69 05	George H. Creed.....	* 117 00
Class No. 15. Paints, oils, and glass:		Taylor, Martin & Co....	337 00
Hyatt & Spencer.....	560 25	Class No. 24. Sperm and lubricating oils:	
Platt & Boyd.....	† 104 00	William A. Wheeler.....	75 60
S. P. Brown & Son.....	* 469 20	D. Babcock & Co.....	75 60
William A. Wheeler.....	723 85	George H. Creed.....	† 67 20
D. Babcock & Co.....	674 10	Class No. 25. Iron work, piping, &c:	
George H. Creed.....	567 00	Hyatt & Spencer.....	110 00
Class No. 16. Ship chandlery:		William A. Wheeler.....	83 00
Hyatt & Spencer.....	* 553 73	D. Babcock & Co.....	* 69 25
William A. Wheeler.....	566 23	J. P. Moore	72 25
D. Babcock & Co.....	694 79	George H. Creed.....	74 00
George H. Creed.....	583 05	Taylor, Martin & Co....	90 00
Taylor, Martin & Co....	574 80	Class No. 32. Machinery and tools:	
Class No. 17. Hardware:		Hyatt & Spencer.....	95 43
Hyatt & Spencer.....	* 645 06	William A. Wheeler.....	120 50
William A. Wheeler.....	770 52	D. Babcock & Co.....	* 87 10
D. Babcock & Co.....	710 55	George H. Creed.....	130 50
J. P. Moore	691 85	Taylor, Martin & Co....	128 00

Offers for supplies for the navy yard at Pensacola, Florida, under advertisement dated September 1, 1870.

Class No. 15. Paints, oils, and glass:		George H. Creed	\$192 50
James D. Kenney	* * \$178 50	D. Babcock & Co.....	187 50
		William A. Wheeler.....	212 50

* Accepted.

† Informal.

; Decided by lot.

Class No. 16. Ship chandlery :

James D. Kenney	* \$104 50
George H. Creed	122 10
D. Babcock & Co.	104 75
William A. Wheeler	142 12

Class No. 17. Hardware :

James D. Kenney	348 60
P. McAuley	381 00
George H. Creed	*259 50
D. Babcock & Co.	328 85
William A. Wheeler	427 10

Class No. 18. Stationery :

Dempsey & O'Toole	*249 25
William A. Wheeler	366 20
William Richter	284 80

Class No. 20. Hay and straw :

James D. Kenney	* 547 50
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T. C. Quayle	\$600 00
George H. Creed	585 00
D. Babcock & Co.	720 00
William A. Wheeler	900 00

Class No. 21. Provender :

James D. Kenney	680 00
T. C. Quayle	600 00
James Symington	*539 50
George H. Creed	597 50
D. Babcock & Co.	617 50
William A. Wheeler	577 50

Class No. 24. Sperm and lubricating oils :

James D. Kenney	*275 00
George H. Creed	310 00
D. Babcock & Co.	350 00
William A. Wheeler	400 00

Offers for supplies for the navy yard at Mare Island, California, under advertisement dated August 23, 1870.

Class No. 1. Bricks :

George W. Lee	\$6,975 00
Charles Murphy	*4,375 00
A. Powell	5,500 00

Charles Murphy	\$1,378 75
A. Powell	1,285 00

Class No. 3. Oregon pine timber :

George W. Lee	3,454 00
E. J. De la Montague	2,880 00
Meigs & Gawley	*2,505 00
N. Page	3,950 00

Class No. 8. Cement :

George W. Lee	1,500 00
A. Powell	*740 00

Class No. 4. Oregon pine lumber :

George W. Lee	1,696 60
J. E. De la Montague	1,496 00
Meigs & Gawley	*1,312 40
N. Page	1,700 00

Class No. 9. Gravel and sand :

George W. Lee	285 00
Charles Murphy	187 25
A. Powell	*172 50

Class No. 5. Oak and hard wood :

George W. Lee	1,264 50
J. E. De la Montague	*1,125 00
N. Page	1,400 00

Class No. 11. Iron, iron spikes, and nails :

Rockwell, Coye & Co. ...	†1,405 93
Linforth, Kellogg & Co. ...	*1,454 00

Class No. 6. White pine and red wood :

George W. Lee	2,312 50
A. Powell	*1,855 00
J. E. De la Montague	2,020 00
N. Page	1,887 50
J. W. Avery	†962 50

Class No. 12. Steel :

Linforth, Kellogg & Co. ...	*538 00
Russell & Erwin Manufacturing Co.	558 00

Class No. 7. Lime, hair, and plaster :

George W. Lee	*1,255 00
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Class No. 14. Files :

Rockwell, Coye & Co. ...	220 20
Linforth, Kellogg & Co. ...	206 75
Russell & Erwin Manufacturing Co.	217 17
Marsh, Pillsbury & Co. ...	*180 59
Hawley & Co	215 61

Class No. 15. Paints, oils, and glass :

Whittier, Fuller & Co. ...	*6,547 80
Sullivan, Kelly & Co. ...	6,739 40

Class No. 16. Ship chandlery :

J. D. Farwell & Co. ...	*2,804 20
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* Accepted.

† Informal.

Class No. 17. Hardware :

Rockwell, Coye & Co...	\$1,539 52
Linforth, Kellogg & Co.	1,712 92
Marsh & Pillsbury.....	1,626 39
Hawley & Co.....	*1,609 02

Class No. 18. Stationery :

J. G. Hodge & Co.....	*427 25
A. L. Baueroff.....	545 22
Le Count & Mansur	658 95

Class No. 25. Iron work, piping, &c. :

Linforth, Kellogg & Co.	*\$666 00
Marsh, Pillsbury & Co..	691 25

Class No. 30. Bituminous coal :

A. Powell.....	980 00
Haste & Kirk.....	*875 00

* Accepted.

BUREAU OF YARDS AND DOCKS, *October 25, 1870.*

No. 7.

BUREAU OF CONSTRUCTION AND REPAIR.

NAVY DEPARTMENT,

Bureau Construction and Repair, October 25, 1870.

SIR: In compliance with your instructions, I respectfully inclose the estimates of appropriations necessary for the purposes of this Bureau for the fiscal year ending June 30, 1872, as shown in the accompanying tables, marked A, B, and C, amounting in all to \$3,925,000, being \$922,500 less than the sum appropriated for the present fiscal year. This estimate has been limited under your instructions to the mere amount for which the ordinary repairs can be made, embracing no new work of any kind nor additional materials, and should any extraordinary repairs become necessary, this sum will not be sufficient.

If the six screw steamers on the stocks are to be completed, it will require the additional sum of about \$2,300,000; and if the old ship of the line, Virginia, which now incumbers one of the best ship-houses, be completed as a receiving ship or other similar purpose, the further sum of \$350,000 will be necessary. This vessel was commenced in 1818. The New Orleans, ship of the line, on the stocks at Sackett Harbor, was commenced in 1815, and is altogether rotten and worthless. Besides these six screw steamers of the second class, and the two old ships of the line, there are on the stocks four iron-clad wooden vessels, designed for two turrets and four 15-inch guns to each vessel.

No work has been done to any of these vessels on the stocks during the past year, further than was necessary for their preservation. Some of them are in ship-houses and others under temporary roofs or sheds.

In addition to these vessels the Navy afloat consists of 52 screw steamers, 27 monitor iron-clad vessels, 20 light-draught monitors, 12 side-wheel steamers, 22 sailing vessels, and 35 store-ships and tugs.

The force in the navy yards has been employed in repairing old vessels that could not be dispensed with, as well as on many of the vessels built during the war. These last-named vessels, though built of the best material that could be obtained at the time, are rapidly decaying, and their repairs are becoming more extensive and costly. Their first cruises being in warm climates hastened the deterioration of the unseasoned timber.

The vessels in ordinary require much care for their preservation, and with all the precautions that can be taken to preserve them from the weather, they require constant calking, carpenter work, painting, &c.,

which after a time is not sufficient, and further repairs must be made, and it is essential they should be done without delay, so that the evil may not progress and render, a little later, more difficult and expensive repairs necessary. The expense is thus constantly increasing with the old vessels when there are no new ones with which to maintain the squadrons, and in many cases these vessels are so far opened in the examinations as to make rebuilding or abandonment absolutely necessary. These repairs have sometimes been but little short of the cost of a new vessel. There is a limit in cost beyond which, in time of peace, no vessel should be rebuilt; but in time of war it is different, for then the object is to have the greatest number of vessels afloat, and two vessels can be rebuilt at the cost of labor and materials for a new one.

It is suggested as advisable to launch the screw steamers now on the stocks, which from the character of the materials of which they are built cannot last as the older ships have done, and although the timber is better preserved when worked into the ship than the rough timber in the piles, there is, with such timber as these vessels are built of, a rapid depreciation. Other vessels should be commenced to take their place, of such character as it may be thought the Navy now needs. It is not prudent to postpone their construction and remain disarmed under the hope of obtaining, at a future day, something better; changes are slow in the construction and design of ships, and there is little fear of an enemy adopting improvements that cannot be applied to a vessel in process of construction. It requires too much time to build a ship-of-war to wait a declaration of war to commence building the ships that will be necessary.

The existence of a navy likewise depends upon its supply of materials being maintained, and it is in time of profound peace that this can be most economically done. With competent and honest persons in its employment, the Government should obtain them on better terms than private parties can do.

There are no conveniences at the navy yards for the construction of heavy iron-clad vessels, which should be of iron, for, if of wood, they will be more costly in the end, with the great risk of being found unfit for use when most needed, of which there are several instances. Vessels of such great weight can only have the necessary strength when built of iron; with all the appliances requisite for the construction of such a vessel, the building of a single one will require from three to four years.

Our harbors will not allow our vessels to have the draught of water which other nations have given to sea-going vessels of this kind, and it will require much careful consideration to determine the character of the vessels that should be adopted, as the draught of water is a vital principle in the construction of a sea-going vessel.

It is earnestly recommended that measures be taken to increase the facilities in the navy yards for the building of wooden ships. As far as relates to this Bureau, these are not greater than years ago, while in all the other departments of the service, shops and tools of all kinds have been more liberally provided.

The improvements referred to in the report of November 1866 are as necessary now as then.

I am, sir, with great respect, your obedient servant,

JOHN LENTHALL,
Chief of Bureau.

HON. GEORGE M. ROBESON,
Secretary of the Navy.

A.—Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Construction and Repair.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
SALARIES.		
For salary of chief clerk, per act of July 5, 1862, 12 Stat. at L., p. 511, sec. 3...	\$1,800 00	
For salary of draughtsman, per act of March 2, 1867, 14 Stat. at L., page 450, sec. 1.	1,800 00	
For salary of one clerk of class four, per act of July 23, 1867, 14 Stat. at L., p. 207, sec. 8.	1,800 00	
For salary of two clerks of class three, per act of July 23, 1867, 14 Stat. at L., p. 207, sec. 8.	3,200 00	
For salary of two clerks of class two, per act of July 23 1867, 14 Stat. at L., p. 207, sec. 8.	2,800 00	
For salary of one messenger, per acts July 5, 1862, 12 Stat. at L., p. 511, sec. 3; March 3, 1869, 15 Stat at L., p. 287, sec. 1.	840 00	
For salary of one laborer, (same acts).....	720 00	
	12,960 00	\$16,460 00
CONTINGENT EXPENSES.		
Stationery and miscellaneous items.....	800 00	800 00
<p>[NOTE.—The difference between the amount appropriated for salaries for the fiscal year ending June 30, 1871, and the sum required for the fiscal year ending June 30, 1872, arises from the omission of the salary of the chief of the bureau.]</p>		

B.—Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Construction and Repair.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
CIVIL ESTABLISHMENT.		
At the navy yard, Portsmouth :		
Clerk of storehouses.....	\$1,500 00	
Inspector of timber, draughtsman, clerk to naval constructor and time clerk, and superintendent of floating dock, at \$1,400 each.....	7,000 00	
	8,500 00	
At the navy yard, Boston :		
Clerk to naval constructor, inspector of timber, and time clerk, at \$1,500 each..	4,500 00	
Draughtsman to naval constructor.....	1,400 00	
Second clerk to naval constructor and clerk of storehouses, at \$1,200 each....	2,400 00	
	8,300 00	
At the navy yard, New York :		
Draughtsman to naval constructor.....	1,400 00	
Clerk to naval constructor, inspector of timber, and time clerk, at \$1,500 each..	4,500 00	
Second clerk to naval constructor and clerk of storehouses, at \$1,200 each....	2,400 00	
	8,300 00	
At the navy yard, Philadelphia :		
Clerk of storehouses.....	1,500 00	
Inspector of timber, draughtsman for naval constructor, clerk to naval constructor, time clerk, and superintendent of floating dock, at \$1,400 each.....	7,000 00	
	8,500 00	
At the navy yard, Washington :		
Clerk of storehouses.....	1,400 00	
Inspector of timber, clerk to naval constructor, and time clerk, at \$1,200 each..	3,600 00	
	5,000 00	

B.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Construction and Repair—Continued.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
At the navy yard, Norfolk :		
Draughtsman to naval constructor and clerk of storehouses, at \$1,400 each.....	\$3,800 00	
Time clerk.....	1,200 00	
	4,000 00	
At the navy yard, Pensacola :		
Clerk of storehouses.....	1,200 00	
	1,200 00	
At the navy yard, Mare Island :		
Draughtsman to naval constructor.....	1,400 00	
Inspector of timber, clerk of storehouses, clerk to naval constructor, superintendent of floating dock, and time clerk, at \$1,500 each.....	7,500 00	
	8,900 00	
	52,700 00	\$66,700 00

[NOTE.—The difference between the amount appropriated for the fiscal year ending June 30, 1871, and the sum required for the fiscal year ending June 30, 1872, arises from the omission of the salary of assistant naval constructors.]

C.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Construction and Repair.*

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
CONSTRUCTION AND REPAIR OF VESSELS.		
For the preservation of vessels on the stocks and in ordinary ; purchase of materials and stores of all kinds ; labor in navy yards and on foreign stations ; preservation of material, purchase of tools, wear, tear, and repair of vessels afloat, and general maintenance of the Navy ; incidental expenses, advertising, and foreign postages.	\$3,925,000	\$4,830,000

List of Vessels on which work has been done under the cognizance of the Bureau of Construction and Repair, during the year ending September 30, 1870.

California.	Kewaydin.	Terror.
Benicia.	Klamath.	Saco.
Pawnee.	Nina.	Quinnebaug.
Wyoming.	Omaha.	Galena.
Monongahela.	Pawnee.	Tallapoosa.
Narragansett.	Plymouth.	Frolic.
Plymouth.	Roanoke.	Mercury.
Frolic.	Relief.	Perriwinkle.
Tallapoosa.	Rockett.	Snow Drop.
Speedwell.	Severn.	Standish.
Brooklyn.	Swatara.	Jean Sands.
Port Fire.	Shawmut.	May Flower.

List of vessels on which work has been done, &c.—Continued.

Emerald.	Susquehanna.	Speedwell.
Vandalia.	Supply.	Triana.
Alaska.	Saratoga.	Pilgrim.
Blue Light.	Speedwell.	St. Mary's.
Cohasset.	Tennessee.	Saranac.
Colorado.	Tallapoosa.	Ossipee.
Congress.	Vermont.	Pensacola.
Connecticut.	Wachusett.	Lackawana.
Iowa.	Yantic.	Saginaw.
Lancaster.	Antietam.	Dacotah.
Leyden.	Congress.	Monadnock.
Miantonomoh.	Brooklyn.	Camanche.
Nantasket.	Chattanooga.	Independence.
Niagara.	Powhatan.	Mohongo.
Ohio.	Miantonomoh.	Mohican.
Oregon.	Atlanta.	Cyane.
Palos.	Juniata.	Jamestown.
Pennsylvania.	Omaha.	Resaca.
Richmond.	Iroquois.	Vanderbilt.
Sabine.	Potomac.	Monterey.
Shawnee.	Pinta.	Lincoln.
Shenandoah.	Sorrel.	Manhattan.
Supply.	Pilgrim.	St. Louis.
Tallapoosa.	Glance.	Algoma.
Terror.	Passaic.	Niobe.
Ticonderoga.	Canonicus.	Puritan.
Virginia.	Shamokin.	Nahant.
Wabash.	Kansas.	Passaic.
Wassuc.	Nipsic.	Canonicus.
Worcester.	Phlox.	Modoc.
Albany.	Tallapoosa.	Yazoo.
America.	Fortune.	Minnetonka.
Alaska.	Mercury.	Cohoes.
Bonicia.	Nina.	Chattanooga.
Colorado.	Perriwinkle.	Pilgrim.
Canandaigua.	Primrose.	Napa.
Clinton.	Rescue.	Suncook.
Catalpa.	Triana.	Jason.
Dictator.	Hero.	Catskill.
Frolic.	Mahopac.	Lehigh.
Guerriere.	Montauk.	Koka.
Guard.	America.	Narruckett.
Gettysburg.	Lancaster.	Ajax.
Hartford.	Severn.	Chickasaw.
Leyden.	Brooklyn.	Etlah.
Minnesota.	New Hampshire.	Winnebago.
Miantonomoh.	Constellation.	Iris.
Monongahela.	Pawnee.	Umpqua.
Maria.	St. Lawrence.	Wyandott.
Nantasket.	Macedonian.	Yuma.
Nipsic.	Dictator.	

Vessels whose names appear more than once have been repaired at different yards.

In addition to the repairs of vessels, expenditures have been incurred to tools and shops.

BUREAU OF CONSTRUCTION AND REPAIR.

Offers to furnish material for the Navy, under the advertisement of the Bureau of Construction and Repair of July 14, 1870, at the navy yard, Kittery, Maine.

Class No. 8. Yellow pine beams:		George T. Wallace.....	\$7,993 50
		William White.....	8,526 40
		Watson & Pittinger.....	8,526 40
		S. P. Brown & Son.....	8,739 56
		James Bigler & Co.....	10,338 26
Triekey & Jewett.....	86,288 22		
James Synnington.....	16,048 40		
James D. Leary.....	16,075 06		
William M. Shakespear..	7,886 92		

* Accepted.

† Bid rejected; the party not being a regular dealer in the class.

Class No. 13. White pine plank, boards:

S. P. Brown & Son.....	*\$5,345 00
James Bigler & Co.....	5,609 75
Trickey & Jewett.....	5,755 00
Samuel Adams & Co....	6,225 00
George A. Hammond....	5,885 00
Watson & Pittinger....	7,825 00
James D. Leary.....	8,925 00
Joseph W. Duryee.....	6,825 00
James Symington.....	8,920 00

Class No. 15. White ash, elm, beech:

Trickey & Jewett.....	*700 00
George A. Hammond....	812 00
Samuel Adams & Co....	840 00
Watson & Pittinger....	1,120 00
James Bigler & Co.....	711 00
James D. Leary.....	1,036 00
Joseph W. Duryee.....	798 00
James Symington.....	1,029 50
S. P. Brown & Son.....	896 00

Class No. 16. White ash oars:

David Babcock & Co....	*240 00
George T. Vaughan....	296 25
George A. Hammond....	300 00
Frederick A. Southmayd.	249 00
Samuel Adams & Co....	296 25
Watson & Pittinger....	600 00
James D. Leary.....	294 00
James Symington.....	292 50
S. P. Brown & Son.....	750 00

Class No. 17. Hickory:

S. P. Brown & Son.....	*187 50
Trickey & Jewett.....	600 00
Watson & Pittinger....	680 00
George A. Hammond....	1,350 00

Class No. 18. Black walnut, mahogany, &c:

Trickey & Jewett.....	*467 50
George A. Hammond....	649 00
Frederick A. Southmayd.	599 50
Samuel Adams & Co....	535 00
Watson & Pittinger....	1,100 00
James Bigler & Co.....	627 50
James D. Leary.....	533 50
Joseph W. Duryee.....	550 00
James Symington.....	530 00
S. P. Brown & Son.....	759 00

Class No. 22. Cypress cedar:

George A. Hammond....	*406 00
R. J., Wm. & John. R. Neely.....	560 00
Watson & Pittinger....	518 00
James Bigler & Co.....	411 25
Trickey & Jewett.....	420 00
James Symington.....	511 00

Class No. 32. Wrought iron, round and square:

George H. Creed.....	*\$1,033 13
David Babcock & Co....	1,410 00
William A. Wheeler.....	1,282 50

Class No. 33. Wrought iron, flat:

George H. Creed.....	*709 00
David Babcock & Co....	891 00
William A. Wheeler.....	1,123 50

Class No. 35. Steel:

George H. Creed.....	*143 50
David Babcock & Co....	158 92
William A. Wheeler.....	143 80

Class No. 39. Nails, iron, cut:

Hyatt & Spencer.....	*285 78
David Babcock & Co....	305 40
George H. Creed.....	312 06
William A. Wheeler.....	328 96

Class No. 44. Tin:

David Babcock & Co....	*205 85
George H. Creed.....	235 00
William A. Wheeler.....	210 00

Class No. 48. Locks, hinges, bolts, of brass and iron:

George H. Creed.....	*75 00
Stephen H. Mills & Co..	100 00
Hyatt & Spencer.....	97 00
David Babcock & Co....	103 00
William A. Wheeler.....	90 00

Class No. 49. Screws, of brass and iron:

George H. Creed.....	*422 22
Stephen H. Mills & Co..	680 60
Hyatt & Spencer.....	466 16
David Babcock & Co....	504 20
William A. Wheeler.....	514 10

Class No. 50. Files:

Hyatt & Spencer.....	*113 75
Stephen H. Mills & Co..	196 50
George H. Creed.....	114 80
William A. Wheeler.....	124 10

Class No. 51. Augers:

Hyatt & Spencer.....	*444 25
Adams & Cline.....	487 25
Stephen H. Mill & Co...	809 00
David Babcock & Co....	518 50
George H. Creed.....	482 50
William A. Wheeler.....	476 25

* Accepted.

Class No. 53. Tools for use in yard and shops:

William A. Wheeler.....	*\$2,667 50
Hyatt & Spencer	2,698 52
David Babcock & Co.....	4,103 10

Class No. 54. Hardware:

George H. Creed	*107 00
Stephen H. Mills & Co ..	300 00
Hyatt & Spencer	121 00
David Babcock & Co.....	123 70
William A. Wheeler.....	114 00

Class 56. White lead:

George H. Creed	*2,090 00
Stephen H. Mills & Co ..	2,680 00
S. P. Brown & Son.....	2,700 00
David Babcock & Co.....	2,350 00
William A. Wheeler.....	2,350 00

Class No 58. Colored paints:

George H. Creed	*183 90
Stephen H. Mills & Co ..	281 00
S. P. Brown & Son.....	263 30
David Babcock & Co.....	201 75
William A. Wheeler.....	198 75

Class No. 60. Varnish, spirits of turpentine:

George H. Creed.....	*779 00
Stephen H. Mills & Co..	992 00
James Symington.....	832 00
S. P. Brown & Son.....	979 60
David Babcock & Co.....	924 00
William A. Wheeler.....	798 00

Class No. 63. Sperm and lard oil:

Judd Linseed and Sperm Oil Co.....	*400 00
S. P. Brown & Son.....	485 00
David Babcock & Co.....	445 00
George H. Creed.....	445 00
William A. Wheeler.....	425 00

Opened in presence of—

JOHN LENTHALL, *Chief of Bureau.*
H. A. GOLDSBOROUGH, *Chief Clerk.*
B. T. HANLEY, *Clerk.*

NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., August 15, 1870.

Class No. 68. Glass:

George H. Creed	*\$326 00
Hyatt & Spencer.....	366 00
James Symington.....	344 60
S. P. Brown & Son.....	424 00
David Babcock & Co.....	411 00
William A. Wheeler.....	482 00

Class No. 69. Brushes:

George H. Creed.....	*287 60
Hyatt & Spencer	392 77
David Babcock & Co.....	335 40
William A. Wheeler.....	471 30

Class No. 71. Stationery:

E. Devoc & Co.....	*227 41
Dempsey & O'Toole.....	351 14
William A. Wheeler.....	297 10

Class No. 73. Ship chandlery:

David Babcock & Co.....	*177 99
Stephen H. Mills & Co..	265 50
George H. Creed	189 15
William A. Wheeler.....	199 55

Class No. 74. Acids:

George H. Creed.....	*150 00
David Babcock & Co.....	161 25
William A. Wheeler.....	180 00

Class No. 78. Leather:

Clapp, Evans & Co.....	*327 50
A. M. Stewart.....	329 17
David Babcock & Co.....	367 50
George H. Creed	345 00
William A. Wheeler.....	412 50

Class No. 88. Charcoal:

William A. Wheeler.....	*677 50
Job Thompson.....	684 50
George H. Creed	900 00

Offers to furnish materials for the Navy, under the advertisement of the Bureau of Construction and Repair of July 14, 1870, at the navy yard, Charlestown, Massachusetts.

Class No. 7. Yellow pine logs:

William Haskins & Son.	*\$6,840 00
William White.....	9,500 00
Watson & Pittinger.....	8,360 00
James Bigler & Co.....	7,552 50
George T. Wallace.....	10,640 00

James D. Leary.....	\$8,113 00
William M. Shakespear..	11,210 00
Joseph W. Duryee.....	8,170 00
Trickey & Jewett.....	8,070 00
James Symington.....	8,111 10
S. P. Brown & Sen.....	9,310 00

* Accepted.

Class No. 13. White pine plank, boards :

James Bigler & Co.....	*\$3,375 00
George A. Hammond.....	3,700 00
Watson & Pittinger.....	4,050 00
James D. Leary.....	4,760 00
Joseph W. Duryce.....	3,575 00
Trickey & Jewett.....	3,775 00
James Symington.....	4,752 50
S. P. Brown & Son.....	3,725 00

Class No. 15. White ash, elm, beech :

Trickey & Jewett.....	*1,590 00
George A. Hammond.....	2,079 00
Watson & Pittinger.....	2,475 00
James Bigler & Co.....	1,680 00
James D. Leary.....	2,226 00
Joseph W. Duryce.....	1,947 00
James Symington.....	2,220 00
S. P. Brown & Son.....	2,112 00

Class No. 16. White ash oars :

David Babcock & Co.....	*768 75
George T. Vaughan.....	1,062 81
Frederick A. Southmayd..	794 37
Watson & Pittinger.....	1,640 00
James D. Leary.....	994 25
James Symington.....	993 22½
S. P. Brown & Son.....	2,562 50

Class No. 18. Black walnut, mahogany, &c. :

Trickey & Jewett.....	*850 00
George A. Hammond.....	1,180 00
Frederick A. Southmayd..	1,090 00
Watson & Pittinger.....	1,200 00
James Bigler & Co.....	1,147 50
James D. Leary.....	940 00
Joseph W. Duryce.....	1,000 00
James Symington.....	937 50
S. P. Brown & Son.....	1,330 00

Class No. 22. Cypress, cedar :

Trickey & Jewett.....	*1,000 00
R. J., William & John R. Neely.....	1,580 00
George A. Hammond.....	1,190 00
Frederick A. Southmayd..	1,120 00
Watson & Pittinger.....	1,300 00
James Bigler & Co.....	1,098 75
James D. Leary.....	1,460 00
James Symington.....	1,452 50
S. P. Brown & Son.....	1,260 00

Class No. 24. White oak staves and headings :

David Babcock & Co....	*180 00
S. P. Brown & Son.....	200 00
Watson & Pittinger.....	800 00

Class No. 25. Lignumvite :

David Babcock & Co....	*189 00
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Watson & Pittinger.....	\$400 00
Trickey & Jewett.....	240 00

Class No. 32. Wrought iron, round and square :

George H. Creed.....	*160 00
David Babcock & Co....	215 00
William A. Wheeler.....	280 60

Class No. 33. Wrought iron, flat :

George H. Creed.....	*1,021 25
David Babcock & Co....	1,320 00
William A. Wheeler.....	1 525 00

Class No. 34. Plate iron :

George H. Creed.....	*290 00
David Babcock & Co....	380 00
William A. Wheeler.....	330 00

Class No. 35. Steel :

George H. Creed.....	*606 20
David Babcock & Co....	741 00
William A. Wheeler.....	624 00

Class No. 37. Iron spikes :

George H. Creed.....	*1,313 75
Stephen H. Mills & Co..	1,825 00
Hyatt & Spencer.....	1,516 25
David Babcock & Co....	1,490 00
William A. Wheeler.....	1,437 50

Class No. 38. Nails, iron, wrought :

Hyatt & Spencer.....	*377 00
David Babcock & Co....	526 00
George H. Creed.....	396 00
William A. Wheeler.....	522 00

Class No. 39. Nails, iron, cut :

George H. Creed.....	*71 40
Stephen H. Mills & Co..	124 00
Hyatt & Spencer.....	86 15
David Babcock & Co....	73 70
William A. Wheeler.....	76 20

Class No. 42. Lead, pipe, sheet :

George H. Creed.....	*170 00
Stephen H. Mills & Co..	190 00
David Babcock & Co....	176 00
William A. Wheeler.....	190 00

Class No. 43. Zinc :

George H. Creed.....	*2,880 00
A. Harnickell.....	3,500 00
Stephen H. Mills & Co..	3,780 00
James D. Leary.....	3,400 00
James Symington.....	3,392 00
David Babcock & Co....	3,300 00
William A. Wheeler.....	3,200 00

* Accepted.

Class No. 44. Tin:

George H. Creed.....	*\$250 00
Stephen H. Mills & Co.	322 00
David Babcock & Co ..	305 30
William A. Wheeler ...	285 00

Class No. 48. Locks, hinges, bolts of brass and iron:

George H. Creed.....	*325 50
Hyatt & Spencer.....	411 63
David Babcock & Co ..	555 65
William A. Wheeler ...	431 85

Class No. 49. Screws of brass and iron:

George H. Creed.....	*632 94
Stephen H. Mills & Co.	963 65
Hyatt & Spencer.....	801 91
David Babcock & Co ..	825 89
William A. Wheeler ...	848 09

Class No. 50. Files:

George H. Creed.....	*985 39
Adams & Cline.....	1,603 78
Hyatt & Spencer.....	1,085 00
William A. Wheeler ...	1,033 69

Class No. 51. Augers:

Adams & Cline.....	*484 09
Stephen H. Mills & Co.	635 00
Hyatt & Spencer.....	510 60
David Babcock & Co ..	579 70
George H. Creed.....	500 60
William A. Wheeler ...	515 40

Class No. 52. Tools for ships' stores:

George H. Creed.....	*675 85
Hyatt & Spencer.....	831 52
David Babcock & Co ..	1,329 88
William A. Wheeler ...	716 75

Class No. 53. Tools for use in yard and shops:

William A. Wheeler ...	*319 25
Hyatt & Spencer.....	375 39
David Babcock & Co ..	411 70
George H. Creed.....	326 95

Class No. 54. Hardware:

Hyatt & Spencer.....	*834 98
David Babcock & Co ..	889 54
George H. Creed.....	868 50
William A. Wheeler ...	842 55

Class No. 56. White lead:

George H. Creed.....	*1,090 00
Stephen H. Mills & Co.	1,245 00
James Symington.....	1,194 00
S. P. Brown & Son.....	1,350 00

David Babcock & Co ..	\$1,175 00
William A. Wheeler ...	1,150 00
Howe & French	1,200 00

Class No. 57. Zinc paints:

Stephen H. Mills & Co.	*78 00
Howe & French	125 00
James Symington.....	87 40
S. P. Brown & Son	115 00
David Babcock & Co ..	80 00
George H. Creed.....	95 00
William A. Wheeler ...	90 00

Class No. 58. Colored paints:

George H. Creed.....	*312 75
Howe & French	799 20
Stephen H. Mills & Co.	517 50
James Symington.....	365 75
S. P. Brown & Son	983 50
David Babcock & Co ..	430 75
William A. Wheeler ...	434 75

Class No. 59. Linseed oil:

Judd Linseed and Sperm Oil Company	*4,500 00
Howe & French	5,500 00
Stephen H. Mills & Co.	5,750 00
S. P. Brown & Son	5,000 00
David Babcock & Co ..	4,700 00
George H. Creed.....	4,595 00
William A. Wheeler ...	4,950 00

Class No. 60. Varnish, spirits of turpentine:

S. P. Brown & Son.....	*535 00
Howe & French	875 00
Stephen H. Mills & Co.	722 00
David Babcock & Co ..	761 00
George H. Creed.....	600 00
William A. Wheeler ...	587 00

Class No. 63. Sperm and lard oil:

Judd Linseed and Sperm Oil Company.....	*745 00
S. P. Brown & Son.....	1,150 00
David Babcock & Co ..	800 00
George H. Creed.....	800 00
William A. Wheeler ...	825 00

Class No. 64. Tallow, soap:

Stephen H. Mills & Co.	*27 00
Hyatt & Spencer.....	31 50
David Babcock & Co ..	31 50
George H. Creed.....	28 50
William A. Wheeler ...	36 00

Class No. 68. Glass:

George H. Creed.....	*187 00
Stephen H. Mills & Co.	327 00
Hyatt & Spencer.....	238 00
James Symington.....	207 00

* Accepted.

S. P. Brown & Son.....	\$248 00	Stephen H. Mills & Co.	\$200 00
David Babcock & Co ..	215 00	George H. Creed.....	155 00
William A. Wheeler....	301 00	William A. Wheeler....	170 00
Class No. 69. Brushes :		Class No. 75. Rosin, pitch, &c.:	
David Babcock & Co ..	*898 09	Stephen H. Mills & Co.	*149 00
Murphy, Leavins & Co.	1,157 72	George H. Creed.....	275 00
Hyatt & Spencer	1,060 31 ³ / ₄	David Babcock & Co ..	150 00
George H. Creed.....	943 80	William A. Wheeler....	150 00
William A. Wheeler....	1,069 77	Class No. 77. Leather, belt- ing, packing :	
Class No. 70. Dry goods :		James Symington.....	*1,709 50
George H. Creed.....	*379 70	Clapp, Evans & Co	2,093 25
Hyatt & Spencer	419 00	David Babcock & Co ..	2,117 75
David Babcock & Co ..	507 95	George H. Creed.....	1,833 00
William A. Wheeler....	408 65	William A. Wheeler....	1,775 75
Class No. 71. Stationery :		Class No. 78. Leather, pump, rigging, lacing :	
E. Devoe & Co	*325 22	George H. Creed.....	*265 75
Dempsey & O'Toole....	413 63	A. M. Stewart	390 00
William A. Wheeler....	427 55	Clapp, Evans & Co	349 25
Class No. 73. Ship chandlery :		Stephen H. Mills & Co.	418 50
George H. Creed	*195 00	David Babcock & Co ..	347 50
Stephen H. Mills & Co.	390 00	William A. Wheeler....	357 50
Hyatt & Spencer	253 00	Class No. 88. Charcoal :	
David Babcock & Co ..	234 00	William A. Wheeler....	*855 00
William A. Wheeler....	265 00	Stephen H. Mills & Co.	1,500 00
Class No. 74. Acids:		George H. Creed.....	1,020 00
David Babcock & Co ..	*130 00	Opened in presence of—	
Howe & French	160 00	JOHN LENTHALL, <i>Chief of Bureau.</i>	

H. A. GOLDSBOROUGH, *Chief Clerk.*
B. T. HANLEY, *Clerk.*

NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., August 15, 1870.

Offers to furnish materials for the Navy, under the advertisement of the Bureau of Construction and Repair of July 14, 1870, at the navy yard, Brooklyn, New York.

Class No. 1. White oak logs :		Watson & Pittinger	\$2,200 00
Trickey & Jewett.....	*89,800 00	James Bigler & Co.....	7,950 00
James Symington.....	49,676 00	George T. Wallace	9,800 00
James D. Leary.....	49,680 00	James D. Leary	8,340 00
Thomas McKeel	10,600 00	William M. Shakespear ..	11,000 00
Joshua L. Fentress.....	11,400 00	Joseph W. Duryce	8,500 00
William White	11,600 00	James Symington	8,330 00
Watson & Pittinger	12,800 00	S. P. Brown & Son.....	8,800 00
James Bigler & Co.....	10,400 00	Class No. 9. Yellow pine mast timber :	
George T. Wallace	11,000 00	Trickey & Jewett	*760 50
William M. Shakespear .	11,200 00	William White	1,267 50
S. P. Brown & Son.....	12,400 00	Watson & Pittinger	1,622 40
Class No. 7. Yellow pine logs :		James Bigler & Co.....	1,470 30
Trickey & Jewett.....	*7,400 00	George T. Wallace	963 30
Joshua L. Fentress.....	9,300 00	James D. Leary.....	983 58
William N. Camp.....	9,350 00	William M. Shakespear .	1,267 50
William White	9,600 00	James Symington.....	978 51

* Accepted. † Bid rejected; the party not being a regular dealer in the class.

S. P. Brown & Son.....	\$1,267 50	Class No. 25. Lignumvitae :	
Class No. 13. White pine plank, boards :		David Babcock & Co ...	*\$008 00
S. P. Brown & Son.....	*6,350 00	Trickey & Jewett.....	945 00
Frederick A. Southmayd.	7,860 00	Watson & Pittinger	1,250 00
Watson & Pittinger	6,660 00	Class No. 32. Wrought iron, round and square :	
James Bigler & Co.....	6,546 25	George H. Creed	*7,272 50
James D. Leary.....	8,710 00	David Babcock & Co ...	9,791 25
Joseph W. Duryee	6,500 00	William A. Wheeler	9,175 00
Trickey & Jewett	7,300 00	Class No. 33. Wrought iron, flat :	
James Symington.....	8,705 00	George H. Creed	*1,621 50
David Babcock & Co ...	8,025 00	David Babcock & Co....	1,785 00
Class No. 15. White ash, elm, beech :		William A. Wheeler.....	1,775 00
James Bigler & Co.....	*2,021 00	Class No. 34. Iron plate :	
Frederick A. Southmayd.	2,107 00	George H. Creed.....	*1,261 80
Watson & Pittinger.....	2,580 00	David Babcock & Co ...	1,365 21
James D. Leary	2,534 00	William A. Wheeler.....	1,494 00
Joseph W. Duryee	2,107 00	Class No. 37. Iron spikes :	
Trickey & Jewett	2,064 00	George H. Creed.....	*605 00
James Symington.....	2,531 50	Stephen H. Mills & Co..	672 00
S. P. Brown & Son	2,634 00	Hyatt & Spencer	706 25
Class No. 16. White ash oars :		David Babcock & Co....	702 50
Frederick A. Southmayd. ...	*690 00	William A. Wheeler.....	710 00
Watson & Pittinger	1,600 00	Class No. 39. Nails, iron cut :	
James D. Leary.....	970 00	George H. Creed	*153 95
James Symington.....	968 00	Pollard, Sabine & Co ...	158 45
S. P. Brown & Son.....	2,500 00	Stephen H. Mills & Co ..	257 00
David Babcock & Co ...	700 00	Hyatt & Spencer	174 65
Class No. 17. Hickory :		David Babcock & Co ...	168 15
S. P. Brown & Son.....	*112 50	William A. Wheeler.....	174 50
Frederick A. Southmayd.	385 00	Class No. 42. Lead, pipe, sheet :	
Watson & Pittinger.....	445 00	George H. Creed.....	*444 50
Trickey & Jewett.....	450 00	Stephen H. Mills & Co..	460 90
David Babcock & Co....	685 00	David Babcock & Co ...	467 50
Class No. 18. Black walnut, mahogany, &c. :		William A. Wheeler.....	495 00
Trickey & Jewett	*1,200 00	Class No. 43. Zinc :	
Frederick A. Southmayd.	1,269 00	George H. Creed	*1,440 00
Watson & Pittinger.....	1,350 00	A. Harnickell.....	1,700 00
James Bigler & Co	1,410 00	Stephen H. Mills & Co..	1,760 00
James D. Leary.....	1,332 00	James D. Leary.....	1,698 00
Joseph W. Duryee	1,305 00	James Symington.....	1,696 00
James Symington.....	1,327 00	David Babcock & Co ...	1,625 00
S. P. Brown & Son.....	1,880 00	William A. Wheeler.....	1,600 00
Class No. 23. Black spruce :		Class No. 44. Tin :	
Trickey & Jewett	*1,202 00	David Babcock & Co....	*644 02
Joseph Wescott & Son ..	2,011 00	Stephen H. Mills & Co..	646 00
Watson & Pittinger.....	3,314 00	George H. Creed.....	657 00
James Bigler & Co.....	2,159 00	William A. Wheeler.....	659 00
James D. Leary.....	1,808 00	Class No. 45. Locks, hinges bolts of brass and iron :	
S. P. Brown & Son.....	3,234 00	George H. Creed.....	*1,158 60
David Babcock & Co ...	2,849 00		
Class No. 24. White oak staves and headings :			
David Babcock & Co....	*700 00		
Watson & Pittinger	875 00		

* Accepted.

Stephen H. Mills & Co..	\$1,232 00
Hyatt & Spencer	1,243 52
David Babcock & Co....	1,189 04
William A. Wheeler.....	1 358 60
Class No. 49. Screws of brass and iron:	
George H. Creed.....	*482 40
Pollard, Sabine & Co ...	1,689 96
Stephen H. Mills & Co..	571 00
Hyatt & Spencer	542 98
David Babcock & Co....	592 10
William A. Wheeler.....	541 81
Class No. 50. Files:	
Hyatt & Spencer.....	*506 96
Pollard, Sabine & Co ...	758 62
Stephen H. Mills & Co..	710 85
George H. Creed.....	511 84
William A. Wheeler.....	550 90
Class No. 51. Augers:	
Hyatt & Spencer	*632 53½
Pollard, Sabine & Co ...	859 01
Stephen H. Mills & Co..	766 91½
David Babcock & Co....	694 84½
George H. Creed.....	646 46½
William A. Wheeler.....	635 07
Class 52. Tools for ships' stores:	
George H. Creed	*54 00
Hyatt & Spencer	62 88
David Babcock & Co....	96 00
William A. Wheeler.....	69 00
Class No. 53. Tools for use in yard and shops:	
George H. Creed	*747 86
Hyatt & Spencer	2,120 70
David Babcock & Co....	2,432 33
William A. Wheeler.....	1,790 57
Class No. 54. Hardware:	
George H. Creed	*1,128 25
Hyatt & Spencer	1,163 44
David Babcock & Co....	1,585 69
William A. Wheeler.....	1,383 80
Class No. 56. White lead:	
George H. Creed	*1,980 00
Stephen H. Mills & Co..	2,370 00
James Symington.....	2,388 00
S. P. Brown & Son.....	2,400 00
David Babcock & Co ...	2,325 00
William A. Wheeler.....	2,200 00
Class No. 57. Zinc paints:	
Stephen H. Mills & Co..	*556 00
James Symington.....	698 40
S. P. Brown & Son.....	920 00
David Babcock & Co....	636 00
George H. Creed	680 00
William A. Wheeler.....	600 00

* Accepted.

Class No. 58. Colored paints:	
George H. Creed	*\$1,401 05
Stephen H. Mills & Co..	1,910 00
S. P. Brown & Son.....	2,788 50
David Babcock & Co....	1,736 07
William A. Wheeler.....	1,820 95
Class No. 59. Linseed oil:	
Judd Linseed and Sperm Oil Company	*6,230 00
Stephen H. Mills & Co..	7,630 00
S. P. Brown & Son.....	6,790 00
David Babcock & Co....	6,580 00
George H. Creed.....	6,335 00
William A. Wheeler.....	7,280 00
Class No. 60. Varnish, spirits of turpentine:	
George H. Creed.....	*825 00
Stephen H. Mills & Co..	936 00
James Symington.....	876 00
S. P. Brown & Son.....	942 00
David Babcock & Co....	855 75
William A. Wheeler.....	930 00
Class No. 63. Sperm and lard oil:	
George H. Creed	*1,450 00
Judd Linseed and Sperm Oil Co.....	1,490 00
Stephen H. Mills & Co..	2,240 00
S. P. Brown & Son.....	1,970 00
David Babcock & Co....	1,490 00
William A. Wheeler.....	1,700 00
Class No. 64. Tallow, soap:	
Stephen H. Mills & Co..	*1256 00
George H. Creed	1256 00
David Babcock & Co....	266 00
William A. Wheeler.....	284 00
Class No. 68. Glass:	
George H. Creed.....	*931 50
Stephen H. Mills & Co..	1,653 00
Hyatt & Spencer.....	1,174 75
James Symington.....	1,172 00
S. P. Brown & Son.....	1,107 00
David Babcock & Co....	1,184 50
William A. Wheeler.....	1,447 00
Class No. 69. Brushes:	
George H. Creed	*677 00
Stephen H. Mills & Co..	849 75
Hyatt & Spencer.....	796 45
David Babcock & Co....	839 30
William A. Wheeler.....	1,098 70
Class No. 70. Dry goods:	
George H. Creed	*963 50
Stephen H. Mills & Co..	1,304 00
Hyatt & Spencer.....	1,254 08

† Decided by lot.

David Babcock & Co.	\$1,487 05 ¹	George H. Creed	\$380 00
William A. Wheeler	1,094 75	William A. Wheeler	305 00
Class No. 71. Stationery:		Class No. 77. Belting, pack- ing:	
E. Devoe & Co	*337 42	James Symington	*299 00
Dempsey & O'Toole	371 25	Clapp, Evans & Co	401 00
William A. Wheeler	374 06	Van Riper Manu- factur- ing Company	386 50
Class No. 73. Ship chandlery:		Stephen H. Mills & Co	422 50
George H. Creed	*572 40 ¹	David Babcock & Co	323 50
Stephen H. Mills & Co	873 70	George H. Creed	334 00
Hyatt & Spencer	608 34	William A. Wheeler	303 00
David Babcock & Co	725 50	Class No. 80. Junk:	
William A. Wheeler	981 90	George H. Creed	*2,460 00
Class No. 74. Acids:		David Babcock & Co	2,665 00
David Babcock & Co	*240 00	William A. Wheeler	3,500 00
Stephen H. Mills & Co	276 00	Class No. 88. Charcoal:	
George H. Creed	287 00	William A. Wheeler	*530 00
William A. Wheeler	279 60	Stephen H. Mills & Co	1,035 00
Class No. 75. Rosin, pitch, &c.:		David Babcock & Co	626 00
Stephen H. Mills & Co	*303 00	George H. Creed	695 00
David Babcock & Co	307 00		

Opened in presence of—

JOHN LENTHALL, *Chief of Bureau*,
H. A. GOLDSBOROUGH, *Chief Clerk*,
B. T. HANLEY, *Clerk*.

NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., August 15, 1870.

Offers to furnish materials for the Navy, under the advertisement of the Bureau of Construction and Repair of July 14, 1870, at the navy yard, Philadelphia, Pennsylvania.

Class No. 4. White oak plank:		Class No. 9. Yellow pine mast timber:	
Sheldrake & Fleming	*\$7,990 95	George T. Wallace	*\$5,513 40
William H. Pearson	9,928 15	William H. Pearson	7,555 40
William White	14,471 00	William White	8,065 90
I. L. Shoemaker	8,759 80	Watson & Pittinger	12,252 00
Watson & Pittinger	9,018 00	James Bigler & Co	14,600 30
James Bigler & Co	9,143 25	James D. Leary	9,903 70
James D. Leary	8,015 00	William M. Shakespear	9,086 90
William M. Shakespear	8,016 00	James Symington	9,852 65
James Symington	8,010 00	S. P. Brown & Son	12,252 00
S. P. Brown & Son	12,559 00	Class No. 13. White pine plank, boards:	
Class No. 7. Yellow pine logs:		Watson & Pittinger	*799 60
Watson & Pittinger	*4,100 00	R. J. William & John R. Neely	926 50
James Symington	64,099 00	Sheldrake & Fleming	806 65
James D. Leary	64,100 00	William H. Pearson	918 00
R. J. William & John R. Neely	4,800 00	I. L. Shoemaker	805 80
William H. Pearson	4,400 00	James Bigler & Co	833 00
James Bigler & Co	4,250 00	James D. Leary	1,088 60
George T. Wallace	5,000 00	James Symington	1,086 25
William M. Shakespear	5,260 00	S. P. Brown & Son	918 00
Joseph W. Duryce	4,500 00		
S. P. Brown & Son	4,800 00		

* Accepted. † Bid rejected, the party not being a regular dealer in the class.

Class No. 15. White ash, elm, beech:

James Bigler & Co.....	*\$1,665 00
R. J., William, & John R. Neely	2,142 00
Edward McGlade.....	2 210 00
William H. Pearson.....	1,836 00
I. L. Shoemaker.....	2,461 60
Elias Pohl.....	2,380 00
Watson & Pittinger.....	2,040 00
James D. Leary.....	2,005 00
Joseph W. Duryee.....	1,836 00
James Symington.....	2,003 50
S. P. Brown & Son.....	2,142 00

Class No. 13. Black walnut, mahogany, &c.:

Joseph W. Duryee.....	*3,045 00
R. J., William, & John R. Neely	3,345 00
Johnson & Dobson.....	3,940 00
I. L. Shoemaker.....	4,475 00
Elias Pohl.....	4,900 00
Frederick A. Southmayd.....	3,090 00
Watson & Pittinger.....	3,150 00
James Bigler & Co.....	3,423 00
James D. Leary.....	3,110 00
James Symington.....	3,105 00
S. P. Brown & Son.....	4,510 00

Class No. 32. Wrought iron, round, and square:

George H. Creed.....	*1,447 50
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Opened in presence of—
 JOHN LENTHALL, *Chief of Bureau*,
 H. A. GOLDSBOROUGH, *Chief Clerk*,
 B. T. HANLEY, *Clerk*.

NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR,
 Washington, D. C., August 15, 1870.

John S. Lee & Co.....	\$1,575 00
Paul J. Field.....	1,575 00
David Babcock & Co....	1,575 00
William A. Wheeler.....	2,180 00

Class No. 33. Wrought iron, flat:

George H. Creed.....	*942 50
John S. Lee & Co.....	1,035 00
Paul J. Field.....	1,035 00
David Babcock & Co....	1,007 50
William A. Wheeler.....	1,380 00

Class No. 48. Locks, hinges, bolts, of brass and iron:

George H. Creed.....	*814 50
John S. Lee & Co.....	1,540 50
J. B. Shannon.....	1,135 25
Paul J. Field.....	1,295 00
Stephen H. Mills & Co..	1,059 00
Hyatt & Spencer.....	1,008 75
David Babcock & Co....	997 25
William A. Wheeler.....	1,220 25
John Bradford.....	11,510 00

Class No. 71. Stationery:

William A. Wheeler.....	*255 #1
Dempsey & O'Toole.....	295 05
E. Devoe & Co.....	258 #6

Offers to furnish materials for the Navy, under the advertisement of the Bureau of Construction and Repair of July 14, 1870, at the navy yard, Washington, District of Columbia.

Class No. 1. White oak logs:

William M. Shakespear..	\$4,800 00
Francis A. Fenwick.....	9,000 00
William White.....	5,400 00
Watson & Pittinger.....	6,800 00
James Bigler & Co.....	5,800 00
George T. Wallace.....	5,300 00
James D. Leary.....	4,940 00
James Symington.....	4,938 00
S. P. Brown & Son.....	5,300 00

Class No. 3. White oak curved timber:

George T. Wallace.....	*412 50
James Symington.....	†271 33
James D. Leary.....	†271 70
William White.....	440 00
Watson & Pittinger.....	687 50
James Bigler & Co.....	825 00
William M. Shakespear..	434 50
S. P. Brown & Son.....	511 50

Class No. 7. Yellow pine logs:

James Bigler & Co.....	*\$1,987 50
William N. Camp.....	2,237 50
William White.....	2,250 00
Watson & Pittinger.....	2,050 00
George T. Wallace.....	2,200 00
James D. Leary.....	2,100 00
William M. Shakespear..	2,650 00
Joseph W. Duryee.....	2,250 00
James Symington.....	2,075 00
S. P. Brown & Son.....	2,150 00

Class No. 11. White pine logs:

James Bigler & Co.....	*840 00
Watson & Pittinger.....	980 00
James D. Leary.....	920 00
Joseph W. Duryee.....	900 00
James Symington.....	910 00
S. P. Brown & Son.....	1,060 00

* Accepted.

† Received too late.

‡ Bid rejected, the party not being a regular dealer in the class.

Class No. 12. White pine mast timber:		David Babcock & Co.	\$1,680 00
		William A. Wheeler.	1,784 00
S. P. Brown & Son.	*8548 00	Class No. 33. Wrought iron, flat:	
James D. Leary.	4348 00	George H. Creed.	*220 25
Watson & Pittinger.	770 00	David Babcock & Co.	275 00
James Bigler & Co.	580 00	William A. Wheeler.	339 50
Class No. 13. White pine plank, boards:		Class No. 34. Iron plate:	
S. P. Brown & Son.	*5,304 00	George H. Creed.	*166 00
T. Edward Clark & Co.	6,403 00	David Babcock & Co.	215 00
R. J., William, & John R. Neely.	6,244 00	William A. Wheeler.	210 00
Watson & Pittinger.	6,043 00	Class No. 35. Steel:	
James Bigler & Co.	5,989 00	George H. Creed.	*88 11½
James D. Leary.	8,111 00	David Babcock & Co.	109 20
Joseph W. Duryee.	6,107 00	William A. Wheeler.	104 00
James Symington.	8,105 00	Class No. 37. Iron spikes:	
Class No. 17. Hickory:		George H. Creed.	*232 50
S. P. Brown & Son.	*135 00	Hyatt & Spencer.	258 75
Francis A. Fenwick.	262 50	David Babcock & Co.	256 25
Frederick A. Southmayd.	684 00	William A. Wheeler.	250 00
Watson & Pittinger.	330 00	Class No. 39. Nails, iron cut:	
James D. Leary.	810 00	George H. Creed.	*81 00
Class No. 18. Black walnut, &c.:		Stephen H. Mills & Co.	92 70
Joseph W. Duryee.	*300 00	Hyatt & Spencer.	85 50
James Symington.	†279 00	David Babcock & Co.	88 50
James D. Leary.	†281 00	William A. Wheeler.	108 00
Francis A. Fenwick.	375 00	Class No. 42. Lead pipe:	
T. Edward Clark & Co.	420 00	George H. Creed.	*161 00
Frederick A. Southmayd.	330 00	Stephen H. Mills & Co.	198 00
Watson & Pittinger.	450 00	David Babcock & Co.	176 50
S. P. Brown & Son.	357 00	William A. Wheeler.	200 00
Class No. 20. Locust treenails:		Class No. 44. Tin:	
S. P. Brown & Son.	*130 00	George H. Creed.	*140 00
Watson & Pittinger.	215 00	Stephen H. Mills & Co.	240 00
Class No. 22. Cypress, cedar:		David Babcock & Co.	224 00
Watson & Pittinger.	*150 00	William A. Wheeler.	248 00
R. J., William, & John R. Neely.	170 00	Class No. 45. Solder:	
George T. Wallace.	160 00	George H. Creed.	*36 00
S. P. Brown & Son.	160 00	David Babcock & Co.	42 00
Class No. 23. Black spruce:		William A. Wheeler.	60 00
Joseph Westcott & Son.	*363 00	Class No. 48. Locks, hinges, bolts of brass and iron:	
Watson & Pittinger.	522 00	George H. Creed.	*118 40
S. P. Brown & Son.	406 00	Hyatt & Spencer.	153 85
David Babcock & Co.	462 00	David Babcock & Co.	157 70
Class No. 30. Ingot copper:		William A. Wheeler.	165 30
George H. Creed.	*39,758 00	Class No. 49. Screws, of brass and iron:	
A. Harnickell.	41,980 00	George H. Creed.	*154 50
David Babcock & Co.	40,394 00		
Class No. 32. Wrought iron, round and square:			
George H. Creed.	*1,256 50		

* Accepted.

† Bid rejected, the party not being a regular dealer in the class.

Stephen H. Mills & Co..	\$228 40	Class No. 63. Sperm and lard oil:	
Hyatt & Spencer.....	197 80		
David Babcock & Co....	218 45		
William A. Wheeler.....	335 00	William A. Wheeler.....	*\$797 50
Class No. 50. Files:		Judd Linseed and Sperm Oil Co.....	850 00
George H. Creed.....	*341 27	Stephen H. Mills & Co..	1,074 00
Hyatt & Spencer.....	371 82	S. P. Brown & Son	985 00
William A. Wheeler.....	386 20	David Babcock & Co....	1,045 00
Class No. 51. Augers:		George H. Creed.....	825 00
Hyatt & Spencer.....	*77 94	Class No. 64. Tallow, soap:	
Stephen H. Mills & Co..	112 25	Stephen H. Mills & Co..	*419 50
David Babcock & Co....	90 67	George H. Creed.....	419 50
George H. Creed.....	83 00	Hyatt & Spencer.....	37 50
William A. Wheeler.....	85 50	David Babcock & Co....	21 00
Class No. 53. Tools for ships' stores:		William A. Wheeler.....	22 50
William A. Wheeler.....	*545 50	Class No. 68. Glass:	
Hyatt & Spencer.....	603 58	S. P. Brown & Son.....	*604 40
David Babcock & Co....	738 32	Hyatt & Spencer	1,027 00
George H. Creed.....	548 50	James Symington.....	937 00
Class No. 54. Hardware:		David Babcock & Co....	884 80
George H. Creed	*668 03	George H. Creed.....	661 00
Hyatt & Spencer.....	787 30	William A. Wheeler.....	892 00
David Babcock & Co....	786 00	Class No. 69. Brushes:	
William A. Wheeler.....	694 55	George H. Creed.....	*79 25
Class No. 57. Zinc paints:		Stephen H. Mills & Co..	152 00
George H. Creed.....	*210 00	Hyatt & Spencer	99 25
Stephen H. Mills & Co..	356 00	David Babcock & Co....	112 00
S. P. Brown & Son.....	460 00	William A. Wheeler.....	135 60
David Babcock & Co....	330 00	Class No. 70. Dry goods:	
William A. Wheeler.....	340 00	Hyatt & Spencer.....	*78 00
Class No. 58. Colored paints:		Stephen H. Mills & Co..	67 50
George H. Creed.....	*649 00	David Babcock & Co....	55 50
Stephen H. Mills & Co..	757 00	George H. Creed.....	80 50
S. P. Brown & Son.....	767 75	William A. Wheeler.....	78 25
David Babcock & Co....	770 25	Class No. 71. Stationery:	
William A. Wheeler.....	1,031 00	E. Devoe & Co.....	*150 06½
Class No. 59. Linseed oil:		Dempsey & O'Toole.....	180 10
George H. Creed.....	*460 00	William A. Wheeler.....	164 37
Judd Linseed and Sperm Oil Co.....	465 00	Class No. 73. Ship chandlery:	
Stephen H. Mills & Co..	600 00	George H. Creed.....	*251 50
S. P. Brown & Son.....	495 00	Hyatt & Spencer	307 91
David Babcock & Co....	500 00	David Babcock & Co....	355 15
William A. Wheeler.....	525 00	William A. Wheeler.....	296 75
Class No. 60. Varnish, spirits of turpentine:		Class No. 74. Acids:	
William A. Wheeler.....	*28 50	David Babcock & Co....	*8 25
Stephen H. Mills & Co..	41 25	Stephen H. Mills & Co..	10 50
S. P. Brown & Son.....	45 00	George H. Creed.....	30 00
David Babcock & Co....	30 75	William A. Wheeler.....	15 00
George H. Creed.....	36 75	Class No. 77. Belting, packing:	
* Accepted.		James Symington.....	*300 70
		Clapp, Evans & Co.....	510 85
		† Decided by lot.	

Van Riper Manufacturing Co.....	\$511 75	Stephen H. Mills & Co..	\$236 20
Stephen H. Mills & Co..	615 56	David Babcock & Co....	188 80
David Babcock & Co....	475 52	William A. Wheeler.....	574 00
George H. Creed.....	440 15	Class No. 88. Charcoal:	
William A. Wheeler.....	455 00	William T. Clarke.....	*805 00
Class No. 78. Leather, pump, rigging, lacing:		S. P. Brown & Son.....	822 50
George H. Creed.....	*160 90	George H. Creed.....	910 00
A. M. Stewart.....	196 50	William A. Wheeler.....	1,260 00
		John B. Turton.....	980 00

Opened in presence of—

JOHN LENTHALL, *Chief of Bureau.*
H. A. GOLDSBOROUGH, *Chief Clerk.*
B. T. HANLEY, *Clerk.*

NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., August 15, 1870.

Offers to furnish material for the Navy under the advertisement of the Bureau of Construction and Repair of July 14, 1870, at the navy yard, Norfolk, Virginia.

Class No. 1. White oak logs:		A. A. McCullough.....	\$88 00
George T. Wallace.....	*\$8,000 00	Watson & Pittinger....	96 00
R. J., William & John R. Neely.....	8,700 00	Joseph W. Duryee.....	80 00
Joshua L. Fentress.....	8,750 00	Class No. 22. Cypress, cedar:	
Watson & Pittinger.....	12,000 00	A. A. McCullough.....	*250 00
James Bigler & Co.....	11,600 00	R. J., William, & John R. Neely.....	395 00
James D. Leary.....	9,480 00	Watson & Pittinger.....	275 00
William M. Shakespear..	9,400 00	George T. Wallace.....	350 00
James Symington.....	9,478 00	S. P. Brown & Son.....	365 00
S. P. Brown & Son.....	8,400 00	Class No. 25. Lignumvite:	
Class No. 13. White pine plank, boards:		David Babcock & Co..	*190 00
Watson & Pittinger.....	*5,712 00	R. J., William, & John R. Neely.....	300 00
R. J., William, & John R. Neely.....	5,867 00	A. A. McCullough.....	320 00
A. A. McCullough.....	6,459 00	Watson & Pittinger....	300 00
James Bigler & Co.....	5,865 00	S. P. Brown & Son.....	1,000 00
James D. Leary.....	8,038 00	Class No. 32. Wrought iron, round and square:	
William M. Shakespear..	7,140 00	Taylor, Martin & Co..	*981 12
Joseph W. Duryee.....	5,828 00	David Babcock & Co..	1,232 00
James Symington.....	8,021 50	George H. Creed.....	1,215 20
S. P. Brown & Son.....	5,720 00	William A. Wheeler....	1,344 00
Class No. 15. White ash, elm, beech:		Class No. 33. Wrought iron, flat:	
Joshua L. Fentress.....	*220 50	Taylor, Martin & Co..	*2,516 00
R. J., William, & John R. Neely.....	348 00	David Babcock & Co..	3,927 50
A. A. McCullough.....	315 00	George H. Creed.....	2,752 50
Watson & Pittinger.....	360 00	William A. Wheeler....	3,925 00
Joseph W. Duryee.....	315 00	Class No. 39. Nails, iron, cut:	
S. P. Brown & Son.....	315 00	George H. Creed.....	*68 80
Class No. 18. Black walnut, mahogany:		Taylor, Martin & Co..	70 00
S. P. Brown & Son.....	*60 00	Stephen H. Mills & Co..	225 00
R. J., William, & John R. Neely.....	117 60	Hyatt & Spencer.....	71 50

* Accepted.

David Babcock & Co...	\$74 00	S. P. Brown & Son,	\$138 00
William A. Wheeler....	78 00	David Babcock & Co...	106 50
Class No. 42. Lead pipe:		George H. Creed.....	120 00
George H. Creed	*178 00	Class No. 58. Colored paints:	
Taylor, Martin & Co...	198 00	George H. Creed	*156 00
Stephen H. Mills & Co.	220 00	Stephen H. Mills & Co..	210 00
David Babcock & Co...	185 00	S. P. Brown & Son.....	186 00
William A. Wheeler....	200 00	David Babcock & Co...	190 50
Class No. 44. Tin:		William A. Wheeler....	162 00
Stephen H. Mills & Co.	*220 00	Class No. 59. Linseed oil:	
Taylor, Martin & Co...	300 00	Judd Linseed and Sperm	
David Babcock & Co...	250 00	Oil Co.	*282 00
George H. Creed.....	225 00	Stephen H. Mills & Co.	366 00
William A. Wheeler....	247 50	S. P. Brown & Son.....	300 00
Class No. 48. Locks, hinges,		David Babcock & Co...	315 00
bolts of brass and iron:		George H. Creed	283 50
George H. Creed	*274 00	William A. Wheeler....	330 00
Taylor, Martin & Co...	391 25	Class No. 60. Varnish, spirits	
Stephen H. Mills & Co.	365 00	of turpentine:	
Hyatt & Spencer.....	298 20	James Symington.....	*194 20
David Babcock & Co...	329 50	Stephen H. Mills & Co.	255 00
William A. Wheeler....	304 50	S. P. Brown & Son.....	277 50
Class No. 49. Screws, of brass		David Babcock & Co...	220 00
and iron:		George H. Creed	199 50
George H. Creed.....	*153 10	William A. Wheeler....	215 00
Taylor, Martin & Co...	176 00	Class No. 63. Sperm and lard	
Stephen H. Mills & Co.	215 00	oil:	
Hyatt & Spencer	178 00	Judd Linseed and Sperm	
David Babcock & Co...	201 80	Oil Co.	*975 00
William A. Wheeler....	191 00	Stephen H. Mills & Co.	1,416 00
Class No. 50. Files:		David Babcock & Co...	1,180 00
George H. Creed.....	*221 70	George H. Creed	1,080 00
Taylor, Martin & Co...	312 95	William A. Wheeler....	1,030 00
Stephen H. Mills & Co.	348 25	Class No. 64. Tallow, soap:	
Hyatt & Spencer.....	232 30	David Babcock & Co...	*92 00
William A. Wheeler....	250 80	Taylor, Martin & Co...	102 25
Class No. 53. Tools for use in		Stephen H. Mills & Co..	92 40
yard and shops:		George H. Creed	93 50
Taylor, Martin & Co...	*162 50	William A. Wheeler....	94 50
Hyatt & Spencer.....	210 40	Class No. 69. Brushes:	
David Babcock & Co...	189 50	Hyatt & Spencer.....	*15 23
George H. Creed	194 60	Taylor, Martin & Co...	32 00
William A. Wheeler....	211 75	Stephen H. Mills & Co.	50 00
Class No. 54. Hardware:		George H. Creed.....	20 25
Taylor, Martin & Co...	*167 52	William A. Wheeler....	16 00
Stephen H. Mills & Co..	437 00	Class No. 70. Dry goods:	
Hyatt & Spencer.....	192 53	Hyatt & Spencer.....	*52 82
David Babcock & Co...	309 28	Taylor, Martin & Co...	156 50
George H. Creed.....	236 35	Stephen H. Mills & Co..	165 00
William A. Wheeler....	233 14	David Babcock & Co...	79 00
Class No. 57. Zinc paints:		George H. Creed	138 80
William A. Wheeler....	*102 00	William A. Wheeler....	69 00
Stephen H. Mills & Co.	118 80	Class No. 71. Stationery:	
		E. Devoc & Co.....	*155 52

Dempsey & O'Toole....	\$167 91	Van Riper Manufactur- ing Co.....	\$138 00
William A. Wheeler....	185 62	Taylor, Martin & Co...	141 00
Class No. 73. Ship chandlery :		Stephen H. Mills & Co..	170 00
Hyatt & Spencer.....	*214 90	David Babcock & Co...	154 00
Taylor, Martin & Co...	360 00	George H. Creed	116 50
David Babcock & Co...	353 00	William A. Wheeler....	132 50
George H. Creed	247 00	Class No. 78. Leather, pump, rigging, lacing :	
William A. Wheeler....	270 50	A. M. Stewart.....	*35 00
Class No. 77. Belting, pack- ing :		Taylor, Martin & Co...	40 00
James Symington.....	*109 50	Stephen H. Mills & Co..	42 50
Clapp, Evans & Co	131 50	David Babcock & Co...	47 50
Opened in presence of—		George H. Creed	60 00
JOHN LENTHALL, <i>Chief of Bureau.</i>		William A. Wheeler....	50 00
H. A. GOLDSBOROUGH, <i>Chief Clerk.</i>			
B. T. HAXLEY, <i>Clerk.</i>			

NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., August 15, 1870.

Offers to furnish materials for the Navy under the advertisement of the Bureau of Construction and Repair of July 14, 1870, at the navy yard, Mare Island, California.

Class No. 15. White ash, elm, beech :		Class No. 35. Steel :	
Charles L. Dingley.....	*\$850 00	William A. Wheeler.....	*\$1,437 00
A. Powell.....	1,940 00	David Babcock & Co....	1,837 00
S. P. Brown & Son.....	4,000 00	George H. Creed.....	1,750 50
Watson & Pittfingcr....	2,187 50	Linforth, Kellogg & Co..	1,590 00
J. E. De la Montagnie...	1,900 00	Marsh, Pillsbury & Co..	1,480 00
Class No. 18. Black walnut, mahogany, &c.:		Class No. 38. Nails, iron wrought :	
Charles L. Dingley.....	*800 00	Linforth, Kellogg & Co..	*117 00
A. Powell.....	1,800 00	William A. Wheeler.....	325 00
S. P. Brown & Son.....	2,000 00	David Babcock & Co....	294 00
James Symington.....	950 00	George H. Creed.....	260 00
Watson & Pittfingcr....	1,520 00	Stephen H. Mills & Co..	455 00
J. E. De la Montagnie...	1,760 00	Class No. 39. Nails, iron cut :	
Class No. 32. Wrought iron, round and square :		David Babcock & Co....	*632 10
George H. Creed.....	*5,600 00	William A. Wheeler.....	709 50
William A. Wheeler.....	6,560 00	George H. Creed.....	700 75
David Babcock & Co....	5,840 00	Linforth, Kellogg & Co..	693 30
Linforth, Kellogg & Co..	5,740 00	Stephen H. Mills & Co..	1,949 00
Class No. 33. Wrought iron, flat :		Marsh, Pillsbury & Co..	633 52
Linforth, Kellogg & Co..	*3,059 00	Class No. 42. Lead, pipe, sheet :	
William A. Wheeler.....	3,496 00	Linforth, Kellogg & Co..	*1260 00
David Babcock & Co....	3,134 75	David Babcock & Co....	1260 00
George H. Creed.....	3,180 00	William A. Wheeler.....	300 00
Class No. 34. Iron plate :		George H. Creed.....	300 00
David Babcock & Co....	*906 50	Stephen H. Mills & Co..	480 00
William A. Wheeler.....	1,590 00	Class No. 43. Zinc :	
George H. Creed.....	1,060 00	William A. Wheeler.....	*4,650 00
Linforth, Kellogg & Co..	1,060 00	A. Harmickell.....	5,130 00
	* Accepted.	David Babcock & Co....	4,850 00
		George H. Creed.....	6,220 00
		Linforth, Kellogg & Co..	6,900 00
			† Decided by lot.

James Symington.....	\$4,850 00	William A. Wheeler.....	\$1,500 00
James D. Leary.....	4,855 00	David Babcock & Co....	1,337 50
Class No. 44. Tin:		George H. Creed.....	2,000 00
David Babcock & Co....	*97 20	James Symington.....	1,294 00
William A. Wheeler.....	108 00	Stephen H. Mills & Co..	2,000 00
George H. Creed.....	198 00	Class No. 57. Zinc:	
Linforth, Kellogg & Co..	132 00	James Symington.....	*292 20
Stephen H. Mills & Co..	200 40	William A. Wheeler.....	300 00
Class No. 48. Locks, hinges, bolts, of brass and iron:		David Babcock & Co....	307 50
David Babcock & Co....	*1,523 25	George H. Creed.....	450 00
William A. Wheeler.....	1,759 45	Stephen H. Mills & Co..	570 00
George H. Creed.....	1,899 00	Whittier, Fuller & Co..	300 00
Linforth, Kellogg & Co..	1,643 25	Class No. 58. Colored paints:	
Marsh, Pillsbury & Co..	1,801 00	Whittier, Fuller & Co..	*13 70
Murdock Campbell.....	1,691 00	William A. Wheeler.....	17 75
Class No. 49. Screws, of brass and iron:		David Babcock & Co....	16 90
William A. Wheeler.....	*1,190 25	George H. Creed.....	60 00
David Babcock & Co....	1,222 44	Class No. 60. Varnish, spirits of turpentine:	
George H. Creed.....	1,344 20	William A. Wheeler.....	*250 00
Linforth, Kellogg & Co..	1,337 78	David Babcock & Co....	450 00
Stephen H. Mills & Co..	2,557 00	George H. Creed.....	300 00
Marsh, Pillsbury & Co..	1,250 61	James Symington.....	285 00
Class No. 50. Files:		Stephen H. Mills & Co..	425 00
Linforth, Kellogg & Co..	*346 60	Whittier, Fuller & Co..	325 00
William A. Wheeler.....	392 10	Class No. 64. Tallow, soap:	
George H. Creed.....	606 00	Linforth, Kellogg & Co..	*37 50
Marsh, Pillsbury & Co..	394 07	William A. Wheeler.....	62 50
Murdock Campbell.....	574 10	David Babcock & Co....	44 00
Class No. 51. Augers:		George H. Creed.....	40 00
David Babcock & Co....	*188 60	Stephen H. Mills & Co..	80 00
William A. Wheeler.....	189 00	Class No. 68. Glass:	
George H. Creed.....	351 00	Whittier, Fuller & Co..	*95 00
Linforth, Kellogg & Co..	231 00	William A. Wheeler.....	170 00
Stephen H. Mills & Co..	402 00	David Babcock & Co....	170 00
Marsh, Pillsbury & Co..	200 75	George H. Creed.....	135 00
Murdock Campbell.....	220 10	Stephen H. Mills & Co..	378 00
Class No. 53. Tools for use in yard and shops:		Class No. 69. Brushes:	
William A. Wheeler.....	*153 50	Whittier, Fuller & Co..	*46 50
David Babcock & Co....	302 98	William A. Wheeler.....	58 00
George H. Creed.....	353 00	George H. Creed.....	83 00
Linforth, Kellogg & Co..	257 50	Stephen H. Mills & Co..	108 00
Marsh, Pillsbury & Co..	333 25	Class No. 70. Dry goods:	
Class No. 54. Hardware:		David Babcock & Co....	*162 00
Linforth, Kellogg & Co..	*477 50	William A. Wheeler.....	224 50
William A. Wheeler.....	1,264 10	George H. Creed.....	893 25
David Babcock & Co....	493 52	Linforth, Kellogg & Co..	234 00
George H. Creed.....	1,121 00	Stephen H. Mills & Co..	858 50
Stephen H. Mills & Co..	5,964 00	Class No. 71. Stationery:	
Marsh, Pillsbury & Co..	527 70	John G. Hodge & Co....	*275 26
Class No. 56. White lead:		William A. Wheeler.....	645 95
Whittier, Fuller & Co....	*1,200 00	Class No. 73. Ship chandlery:	
		Linforth, Kellogg & Co..	*158 50

* Accepted.

William A. Wheeler.....	\$222 00
David Babcock & Co.....	206 50
George H. Creed.....	234 50
Stephen H. Mills & Co..	562 50
J. D. Farwell & Co.....	242 50

Class No. 74. Acids :

William A. Wheeler.....	*1,050 00
David Babcock & Co.....	2,380 00
George H. Creed.....	2,400 00
Linforth, Kellogg & Co..	1,300 00
Stephen H. Mills & Co..	1,330 00

Class No. 77. Belting, packing :

M. M. Cook & Son	*284 00
William A. Wheeler.....	353 50
David Babcock & Co.....	355 50
George H. Creed.....	750 00

* Accepted.

Opened in presence of—

JOHN LENTHALL, *Chief of Bureau.*H. A. GOLDSBOROUGH, *Chief Clerk.*B. T. HANLEY, *Clerk.*NAVY DEPARTMENT, BUREAU OF CONSTRUCTION AND REPAIR,
Washington, D. C., August 15, 1870.

No. 8.

BUREAU OF MEDICINE AND SURGERY.

NAVY DEPARTMENT,
Bureau of Medicine and Surgery, October 25, 1870.

SIR: In compliance with your instructions of the 11th instant, I have the honor to submit the following report, together with estimates of the amount required for the Bureau of Medicine and Surgery for the fiscal year ending June 30, 1870.

I also submit tabular statements of sick, &c., compiled from the reports of sick from the different naval stations within the United States, and from vessels on home and foreign service, for the year ending December 31, 1869.

Statement of sick, compiled from reports of sick from the naval stations in the United States, and from vessels in commission on home and foreign stations for the year ending December 31, 1869.

	Remaining sick December 31, 1869.	Admitted in 1869.	Discharged in 1869.	Died in 1869.	Total treated in 1869.	Remaining sick December 31, 1869.	Percentage of deaths to whole number of cases treated.
HOSPITALS.							
Chelsea, Massachusetts	19	124	102	14	143	19	.....
New York	78	346	301	21	424	62	.....
Philadelphia	21	222	182	17	243	32	.....
Annapolis, Maryland	15	594	599	1	609	9	.....
Washington, District of Columbia	18	117	113	6	135	15	.....
Norfolk, Virginia	23	118	119	4	144	11	.....
Pensacola, Florida	15	29	91	4	104	8	.....
Total	189	1,610	1,507	67	1,799	162	.0330

Linforth, Kellogg & Co..	\$312 50
James Symington.....	290 50
Van Riper Manufacturing Co	293 00
Marsh, Pillsbury & Co..	312 50

Class No. 83. Charcoal :

George H. Creed	*120 00
William A. Wheeler.....	450 00
Linforth, Kellogg & Co..	330 00
A. Powell.....	450 00

Class No. 89. Wood :

Linforth, Kellogg & Co..	*1720 00
A. Powell.....	1720 00
William A. Wheeler.....	2,400 00

† Decided by lot.

Statement of sick, compiled from reports of sick from the naval stations, &c—Continued.

	Remaining sick December 31, 1868.	Admitted in 1869.	Discharged in 1869.	Died in 1869.	Total treated in 1869.	Remaining sick December 31, 1869.	Percentage of deaths to whole number of cases treated.	
NAVY YARDS, ETC.								
Portsmouth, New Hampshire.....	3	197	195	.....	200	5	.....
Boston, Massachusetts.....	.....	145	144	.....	145	.....	.....
New York.....	5	182	186	.....	177	1	.....
Philadelphia.....	.....	264	263	.....	264	.....	.....
Washington, District of Columbia.....	.....	379	378	.....	377	.....	.....
Norfolk, Virginia.....	5	331	326	.....	336	10	.....
Mound City, Illinois.....	.....	60	58	.....	62	.....	.....
Mare Island, California.....	.....	162	166	.....	190	.....	.....
League Island, Pennsylvania.....	.....	52	50	.....	52	.....	.....
Pensacola, Florida.....	.....	178	172	.....	178	.....	.....
Naval Observatory.....	7	143	129	.....	150	19	.....
Total.....	59	2,117	2,087	11	2,176	78	.0050	
	Average number on board during the year 1869.	Remaining sick December 31, 1868.	Admitted in 1869.	Discharged in 1869.	Died in 1869.	Total treated in 1869.	Remaining sick December 31, 1869.	Percentage of deaths to whole number of cases treated.
RECEIVING SHIPS.								
Portsmouth, New Hampshire.....	72	1	41	39	42	2
Boston, Massachusetts.....	195	4	156	151	169	7
New York.....	520	56	287	338	343	3
Philadelphia, Pennsylvania.....	194	169	163	169	6
Norfolk, Virginia.....	130	5	114	115	119	1
Mare Island, California.....	151	2	60	58	62	3
Total.....	1,262	68	827	864	6	895	22	.0060

Summary of vessels in commission.

Average number on board during the year 1869.....	12,201
Remaining sick December 31, 1868.....	201
Admitted in 1869.....	7,124
Discharged in 1869.....	7,997
Died in 1869.....	64
Total treated in 1869.....	8,325
Remaining sick December 31, 1869.....	204
Percentage of cases to number of persons on board.....	0.60
Percentage of deaths to number of persons on board.....	0.005
Percentage of deaths to number of cases treated.....	0.007

RECAPITULATION.

	Aggregate number of officers and men on board vessels in 1869.	Remaining sick December 31, 1868.	Admitted in 1869.	Discharged in 1869.	Died in 1869.	Total treated in 1869.	Remaining sick December 31, 1869.	Proportion of cases to number of persons on board.	Proportion of deaths to number of persons on board.	Percentage of deaths to number of persons treated.
Hospitals.....		189	1,610	1,507	67	1,799	162			.0330
Navy yards, &c.....		59	2,117	2,087	11	2,176	78			.0050
Receiving ships.....	1,262	68	827	864	6	895	22	.70	.004	.0069
Vessels in commission at sea.....	12,201	201	8,124	7,997	61	8,325	264	.60	.005	.007
Total.....	13,463	517	12,678	12,455	148	13,195	526	.094	.010	.011

At the close of the year 1868 there remained under treatment 517 cases; during the year 1869 there occurred 12,678 cases of disease, injury, &c., making a total of 13,195 cases treated during the year, of which number 148 died, 12,455 were returned to duty or discharged the service, leaving 526 cases under treatment at the end of the year 1869.

The average strength of the Navy (officers, seamen, marines, engineer service, and Coast Survey included,) for the year 1869, as nearly as can be ascertained, was about 13,463.

The proportion of cases admitted to the whole number of persons in the service was about .094, or each person was on the sick list .94 times during the year. The proportion of deaths to the whole number in the service was .010, and the percentage of deaths to the whole number of cases is .011, or less than two per cent.

The total number of deaths from all causes reported at the Navy Department from October 1, 1869, to September 30, 1870, is 221.

Summary of prevalent forms of disease on home and foreign service for the year ending December 31, 1869.

Squadrons.	Aggregate number of men.	Febrile diseases.		Diseases of digestive system.		Diseases of respiratory system.		Diseases of circulatory system.		Diseases of brain and nervous system.		Diseases of cutaneous and cellular system.		Diseases of fibrous, osseous, and muscular system.		Diseases of serous and absorbent system.		Diseases of genito-urinary organs.		Malignant diseases.		Diseases of the eye and ear.		Wounds and injuries.		Total.	
		Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.	Cases treated.	Deaths.
North Atlantic.....	2,792	484	10	343	.....	201	3	41	.....	71	1	217	.....	136	.....	9	.....	155	.....	35	.....	41	.....	287	.....	2,020	14
South Atlantic.....	1,547	210	2	217	2	113	5	14	.....	43	2	110	.....	86	.....	3	.....	67	.....	6	.....	18	.....	217	2	1,104	13
European.....	2,279	133	1	244	3	242	4	14	.....	43	1	136	.....	164	1	2	.....	154	.....	17	.....	30	.....	278	1	1,457	11
Pacific.....	1,749	126	3	121	2	100	5	7	1	34	.....	140	.....	92	.....	.....	.....	135	.....	9	.....	16	.....	156	.....	936	11
Asiatic.....	1,989	203	1	340	.....	193	3	17	2	71	2	201	.....	158	.....	2	.....	441	.....	26	.....	26	.....	244	1	1,922	9
Special service.....	359	28	.....	52	.....	18	.....	3	.....	10	.....	18	.....	15	.....	.....	.....	21	.....	1	.....	6	.....	22	1	194	1
School and practice ships.....	1,437	101	5	105	.....	65	.....	2	.....	23	.....	81	.....	52	.....	1	.....	46	.....	9	.....	10	.....	110	.....	611	5
Coast survey.....	49	15	.....	26	.....	9	.....	.....	.....	.....	.....	9	.....	4	.....	.....	.....	9	.....	.....	.....	.....	.....	3	.....	81	.....
Total.....	12,201	1,300	22	1,448	7	941	20	104	3	295	6	912	.....	707	1	17	.....	1,028	.....	103	.....	147	.....	1,323	5	8,325	64

INSANE OF THE NAVY.

On the 30th of September, 1869, there remained under treatment in the Government Asylum for the Insane near this city, 4 officers, 5 seamen, 4 landsmen, 1 coal-heaver, 1 first-class boy, 3 marines, 4 beneficiaries, and one late seaman; total.....	23
During the year ending September 30, 1870, there were admitted 1 seaman, 1 extra seaman, 3 landsmen, 2 late first-class boys, and 6 marines; total.....	13
Total number under treatment during the year.....	36
The discharges in the course of the year were, by improvement, 1 officer and 1 marine.....	2
By recovery, 1 landsman and 2 marines.....	3
By request of relatives, 1 late first-class boy.....	1
By death, 2 landsmen, 2 beneficiaries.....	4
Total	10
Leaving in the institution on the 30th September, 1870, 3 officers, 6 seamen, 1 extra seaman, 4 landsmen, 1 coal-heaver, 1 first-class boy, 1 late first-class boy, 6 marines, 2 beneficiaries, and 1 late seaman; total.....	26

NAVAL HOSPITAL FUND.

The condition of this fund is represented as follows:	
Balance on hand October 1, 1869.....	\$428, 825 25
Transferred to the fund by the Fourth Auditor in settlement of accounts, &c., from October 1, 1869, to October 1, 1870.....	61, 695 15
Transferred to the fund on account of supplies from the Naval Laboratory to vessels and navy yards, from October 1, 1869, to October 1, 1870.....	39, 278 34
Total.....	529, 798 74
Deduct amount, expended from October 1, 1869 to October 1, 1870.....	262, 775 92
Balance on hand October 1, 1870.....	267, 022 82

NAVAL HOSPITALS.

Portsmouth, New Hampshire.—The sick quarters at this place continue to answer the wants of the sick on this station.

Chelsea, Massachusetts.—During the year nothing beyond the necessary current repairs has been done to this hospital.

For the necessary repairs of all kinds for the fiscal year ending June 30, 1872, there will be required \$4,600.

New York.—During the year the exterior of this establishment has been thoroughly painted; the portico and balcony of small-pox hospital and walls of coal-house have been repaired, and a suitable inclosure, consisting of a granite base and iron railing, has been erected around the cemetery grounds.

For the necessary repairs of all kinds to this hospital and its appurtenances there will be required \$2,500.

Philadelphia, Pennsylvania.—In addition to the current repairs a portion of the walls and floors of this hospital has been repaired and painted.

For the necessary repairs of all kinds there will be required \$3,500.

Annapolis, Maryland.—For furnishing this hospital, when completed, and for grading, fencing, &c., there will be required \$10,000.

Washington, District of Columbia.—During the year a new floor has been laid in the dining hall and pantry, and the porches and roof of main building of this hospital have been repainted, and the fence surrounding the hospital has been thoroughly repaired.

There will be required for repairs of all kinds during the fiscal year ending June 30, 1872, \$2,000.

Norfolk, Virginia.—There will be required for the necessary repairs to this hospital and its appurtenances during the next fiscal year, \$3,600.

Pensacola, Florida.—For keeping in repair the temporary buildings used for hospital purposes on this station there will be required \$1,000.

Mare Island, California.—For laying off and grading the grounds attached to this hospital, there will be required \$10,300.

NAVAL LABORATORY, NEW YORK. •

For the current repairs to this establishment and its appurtenances, and for the purchase and repair of machinery, apparatus, instruments, &c., there will be needed \$2,500.

The difficulty in officering the naval medical corps, to which I had the honor of referring in the last annual report of the Bureau, still continues. There are now forty-nine vacancies. The character of the applications for admission being such that only thirteen have been found fit to pass the very moderate examination of the naval examining board; and, unhappily, the necessities of the service have compelled the lowering of that standard in cases of temporary appointments.

The scope of examination comprises only a fair academic and the essential branches of a medical education, anatomy, physiology, principles and practice of surgery, principles and practice of medicine, materia medica, chemistry, and medical jurisprudence.

Many of the failures arise from glaring defects of primary education. The great want of professional knowledge may be attributed to popular ignorance as to what the scope of a medical education really is, that ignorance being fostered and pandered to by loose and irresponsible medical schools.

The report of the committee upon medical education, made to the American Medical Association in 1860 and 1865, says:

Now very few, indeed, of the attendants in our medical colleges have received more than a mere English education, such as that which the ordinary school of the district communicates. In such not only are the rudiments of Latin not taught, but the really more useful branches of logic and intellectual philosophy are completely ignored. Hence, not only has the youth not acquired the elements of thought and reflection, but, what is more to be regretted, he has not learned how to think.

The examinations of our military medical boards during the war have brought out this deficiency into very prominent light. Nothing is more common in written examinations of candidates, than to meet with glaring transgressions of orthography and syntax, of sentences incomplete, evincing ideas not only expressed in barbarous English and at defiance with all rules of grammar, but even the ideas themselves are so vague and confused as to have little meaning and less point.

The periodical examinations by the Army and Navy boards of graduates fresh from nearly all the colleges, whose broad seal and the sign manual of whose professors they

bring upon their diplomas, demonstrate incontestibly that few, very few of the candidates, less than fifty per cent., are adjudged worthy and well qualified to enter the medical staff, and be intrusted with the care of the health and lives of the soldiers and sailors enlisted in the public service. We learn from the reply of the Acting Surgeon General at the time, to the first committee on medical education, that "the most striking causes of failure on the part of the candidates are insufficient preparatory education; a hurried course of professional pupilage; want of proficiency in practical anatomy, in pathology, and in clinical medicine."

Nothing daunted, the rejected graduates of the colleges forthwith introduce themselves into practice all over the land, without any other or better qualifications than those which this able and independent board of examiners had declared to be insufficient for the Army and Navy.

In addition to the professional branches required for admission into the United States Navy, botany is considered essential for admission, as a medical officer, into that of Great Britain, and also the candidate is required, before examination, to present evidence that he is legally qualified to practice medicine and surgery under the regulations of an act of Parliament; that subsequently to the age of eighteen he has actually attended a recognized hospital for eighteen months, in which the average number of patients is not less than one hundred; that he has been engaged in actual dissection for twelve months, and that he has performed the principal, capital, and minor operations on the dead body, under a qualified teacher.

Were these requirements made by the United States Navy, the probability is that, under present circumstances, there would be no successful applicant for admission, and it is a subject of national humiliation that we are compelled to accept a lower standard than that of the British navy, especially when it needs only reasonable and just inducements to enable us to bring our standard to the highest point, and officer the medical corps creditably.

The absolute necessity for the official use of medical knowledge is found in all organizations, voluntary, commercial, financial, municipal, and State, in the regulations of insurance, police, sanitary, and quarantine interests; and especially is this knowledge requisite in military and naval institutions, for which qualifications are required not needed in civil professional life.

The field of observation brought under the eye of the naval medical officer, even in the ordinary routine of duty, has a variety and scope extended over the surface of the earth, and he should be one of scientific attainments, fitting him to profit by so large and valuable an opportunity, and also be competent to give both his professional and scientific aid to those national expeditions of explorations, such as the Government is now sending to the Isthmus of Tehauntepec. To put into so wide a field labor incompetent to cultivate it, is an extravagant waste of even the small inducements now offered to enter it. If the naval service has any use for medical knowledge, it should be the best attainable, and to fill the corps by lowering the standard to the level of cheap and humble attainments is an extravagant and fatal policy.

The art of dentistry is one requiring, in addition to general scientific knowledge, a mechanical skill and dexterity only to be acquired by constant practice and undivided attention; hence it, as is well known, has become a specialty almost outside of the profession of medicine. Considering the great suffering and the irrecoverable injuries which arise from neglect of, or badly treated teeth, especially during the ages embraced by the period of pupilage at the Naval Academy injury, often diminishing future usefulness and efficiency, it is respectfully suggested that an experienced and skillful dentist be added to the permanent officers of that institution.

NAVAL HOSPITAL SYSTEM.

As a measure of admissible economy, I would respectfully recommend an inquiry into the propriety of condensing our naval hospital system. At present we have on the Atlantic seaboard, from Portsmouth, New Hampshire, to Pensacola, Florida, eight hospitals, with aggregate accommodations for 1,300 patients. During the war the largest occupation of these permanent hospitals amounted to 1,022 patients, more than half this number being in the hospitals at Norfolk and New York. The same permanent force has to be retained at the five large hospitals, whether the patients are few or many, the dispensary, store-rooms, kitchen, laundry, engine-room, wards, and grounds requiring constantly their appropriate attendants. If properly placed geographically, it may be found that the number of these buildings may be diminished, meeting the increased number of patients in each by an appropriate supply of medical officers. Whatever may be the result of such an inquiry, the expediency of changing the location of the hospitals at Philadelphia, Pennsylvania, and Brooklyn, New York, is very apparent. Pressed upon by the growth of the cities in which they are situated, the isolation which is desirable for such establishments has been lost, and their sites have become of great value. The sale of these lands would justify the erection of proper hospital accommodations at points easily accessible by water, and presenting the moral and sanitary advantages of being removed from immediate proximity to cities.

NAVAL PENSIONS.

The present condition of the pension laws, is such as to hold the vague promise of a hope of such relief to the families of those who die in the naval service, while virtually, under the ruling of the Commissioner of Pensions, and the wording of the law, a pension is an impossible provision, except in a few accidental cases. It is one of the incidents of this Bureau to receive the appeals of widows and orphans, in the confident expectation that their claim to pension will be admitted under the evidence that he upon whom they depended died as the result of injuries received in the line of duty. Such has been the sufficient evidence in the past. But now, this Bureau has the painful duty of informing the applicants that the law, or its construction, refuses them the pension pittance, and there are cases now known to this Bureau in which families are in a state of starvation whose heads died eminently in the line of duty.

Under the following section relative to naval pensions, the Commissioner looks upon it as his duty to refuse pensions to all whose names are not borne on the books of a ship:

That no person shall be entitled to a pension by reason of wounds received, or disease contracted, in the service of the United States, subsequently to the passage of this act, unless the person who was wounded or contracted disease was in the line of duty; and, if in the military service, was at the time actually in the field, or on the march, or at some post, fort, or garrison; or if in the naval service, was at the time borne on the books of some ship, or other vessel of the United States, at sea, or in harbor, actually in commission, or was on his way, by direction of competent authority, to the United States, or to some other vessel or naval station. (Sec. 2, act approved July 27, 1868.)

As the wording of this section is at variance with its spirit, the presumption is that it is an accidental error. For it seems an inconsistency to give a pension for a death resulting from injuries received while under orders to a station, and to deny it to a death caused by disease or injury while in the performance of duty at a station.

Whatever changes or reforms may be made in the pension laws, it is respectfully suggested that the law should accurately define what entitles to a pension without leaving the decision to any individual; otherwise pensions may be arbitrarily assigned under various influences from those of the broad and liberal principles of the late Attorney General Richard Rush, as set forth in the following words:

Such are the changes and uncertainties of the military life, such oftentimes its trials, as well as its hazards, that the seeds of disease, which finally prostrate the constitution, may have been hidden as they were sown, and thus be in danger of not being recognized as first causes of disability in a meritorious claim put forth for the bounty of the act. It would not, I think, be going too far to say, that in every case where an officer or private loses his health while in the service, to such a degree as to be disabled from performing his duty any more, he is contemplated, *prima facie*, as an object of this charitable relief from the legislature. I feel more doubtful in fixing, by any undeviating standard, what is meant by being in the line of his duty. Upon this point, I should presume, however, that every officer in full commission, and not on furlough, must be considered in the line of his duty, although, at the moment, no particular or active employment is devolved upon him. The same of a soldier who is kept in pay, for it is presupposed of both the one and the other that they are at all times prepared for duty; and it is surely of indispensable obligation upon them to keep themselves detached from other pursuits, so as to be ready at a moment to answer any call emanating from those who may be authorized to command them. The officer who, by reason of marches in damp or cold weather, or who, from being in a garrison exposed to marshy exhalations, finds, even at some interval, his constitution broken down by rheumatism, or enfeebled by the constant recurrence of fevers, is surely as just an object of this humane stipend at the hands of the Government as he who may have had his arm shattered by a bullet.

Those who do not sympathize in the above liberal views may sometimes overlook the well-established claims of justice and humanity.

Very respectfully, your obedient servant,

WM. M. WOOD,
Chief of Bureau.

Hon. GEORGE M. ROBESON,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1870, by the Bureau of Medicine and Surgery.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
A.—SALARIES.		
One clerk of class four, per act of July 23, 1866, 14 Stat. at L., p. 298, sec. 8	\$1,800 00	
One clerk of class three, per act of July 23, 1866, 14 Stat. at L., p. 298, sec. 8	1,600 00	
One messenger, per act of July 15, 1862, 12 Stat. at L., p. 511, sec. 3, and per act of March 3, 1869, 15 Stat. at L., p. 287, sec. 1	800 00	
One laborer, per act of July 15, 1862, 12 Stat. at L., p. 511, sec. 3, and per act of March 3, 1869, 15 Stat. at L., p. 287, sec. 1	720 00	
	4,920 00	\$8,160 00
B.—CONTINGENT EXPENSES.		
Stationery and miscellaneous items, appropriated July 12, 1870	600 00	400 00
	5,560 00	8,560 00
C.—SURGEONS' NECESSARIES AND APPLIANCES.		
Support of the medical department of vessels in commission, navy yards, naval stations, Marine Corps, and Coast Survey, per act of July 15, 1870	50,000 00	51,000 00

Estimates of appropriations required, &c.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
D.—CONTINGENT.		
Freight on medical stores; transportation of insane patients to Government Hospital for the Insane; advertising; telegraphing; purchase of books; expenses attending the naval medical board of examiners; purchase and repair of hospital wagons, harness, &c.; purchase and feed of horses, cows, &c., for hospitals; purchase of trees, seeds, garden tools, &c., for hospital grounds, &c., per act of July 15, 1870.	\$30,000 00	\$30,000 00
E.—REPAIRS AND IMPROVEMENTS OF HOSPITALS.		
Repairs to naval laboratory, naval hospitals, and appendages, including roads, wharves, outhouses, sidewalks, fences, gardens, farms, steam-heating apparatus, and for grading and laying off the grounds of two new hospitals, &c., per act of July 15, 1870.	40,000 00	40,000 00
F.—CIVIL ESTABLISHMENT.		
At the hospital, Chelsea, Massachusetts:		
2 apothecaries, 1 at \$750; 1 at \$180	1,230 00	
1 matron, \$360; 1 chief cook, \$240	600 00	
1 cook, \$168; 1 engineer, \$600	768 00	
2 firemen, at \$360 each; 1 gardener, \$300	1,020 00	
2 laborers, at \$240 each; 3 washers, at \$168 each	984 00	
1 farmer, \$180; 1 messenger, \$240	420 00	
3 nurses, at \$240 each; 1 gate-keeper, \$300	1,020 00	
4 watchmen, at \$360 each	1,440 00	
	7,782 00	
At the hospital, New York:		
2 apothecaries, at \$750 each; 1 carpenter, \$720	2,220 00	
1 matron, \$420; 1 chief cook, \$300; 2 cooks, at \$160 each	1,040 00	
1 engineer, \$720; 3 firemen, at \$360 each; 1 gardener, \$180	2,280 00	
4 laborers, at \$240 each; 4 laundresses, at \$144 each	1,536 00	
1 messenger, \$240; 4 nurses, at \$240 each; 1 porter, \$360	1,560 00	
1 painter and glazier, \$480; 1 porter, \$240	720 00	
1 watchman, \$120; 1 messman, \$240; 1 assistant messman, \$180	540 00	
2 watchmen, at \$300 each; 1 ambulance driver, \$360	960 00	
1 laundryman	180 00	
	11,336 00	
At the hospital, Philadelphia, Pennsylvania:		
2 apothecaries; 1 at \$750 and 1 at \$480	1,230 00	
1 engineer, \$600; 1 carpenter, \$480; 1 matron, \$240	1,320 00	
1 watchman, \$120; 2 firemen, at \$360 each	1,140 00	
1 messenger, \$240; 2 nurses, at \$240 each; 1 chief cook, \$240	960 00	
1 cook, \$168; 1 mess-room attendant, \$240	408 00	
3 laborers, at \$240 each; 4 washers, at \$168 each	1,344 00	
1 gardener, \$300; 1 stable-keeper and driver, \$240	540 00	
	6,990 00	
At the hospital, Annapolis, Maryland:		
2 apothecaries, at \$750 each; 3 nurses, at \$180 each	2,040 00	
2 cooks, at \$168 each; 1 messenger, \$240	576 00	
1 watchman, \$360; 2 washers, at \$144 each	648 00	
2 laborers, at \$144 each; 1 engineer, \$600	888 00	
1 fireman	360 00	
	4,512 00	
At the hospital, Washington, District of Columbia:		
2 apothecaries; 1 at \$750 and 1 at \$480	1,230 00	
3 nurses, at \$240 each; 2 cooks, at \$168 each	1,056 00	
2 laborers, at \$144 each; 3 washers, at \$144 each	720 00	
1 watchman, \$120; 1 watchman, \$300	420 00	
1 engineer, \$480; 2 firemen, at \$360 each	1,200 00	
1 messenger	144 00	
	5,070 00	

Estimates of appropriations required, &c.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
At the hospital, Norfolk, Virginia:		
2 apothecaries: 1 at \$750 and 1 at \$480	\$1,230 00	
1 engineer, \$720; 1 chief cook, \$300	1,020 00	
1 assistant cook, \$240; 2 messroom attendants, at \$168 each	576 00	
1 nurse, \$240; 3 assistant nurses, at \$168 each	744 00	
2 laundresses, at \$144 each; 3 laborers, at \$192 each	864 00	
4 boatmen, at \$168 each; 1 watchman, \$300	972 00	
	5,406 00	
At the hospital, Pensacola, Florida:		
2 apothecaries: 1 at \$750 and 1 at \$480	1,230 00	
4 nurses, at \$264 each; 4 assistant nurses, at \$216 each	1,920 00	
1 cook, \$240; 1 assistant cook, \$216	456 00	
1 watchman, \$216; 1 messenger, \$144	360 00	
2 messroom attendants, at \$168 each	336 00	
2 washers, at \$180 each; 3 laborers, at \$144 each	792 00	
	5,094 00	
At the hospital, Mare Island, California:		
1 apothecary, \$1,000; 1 chief cook, \$540	1,540 00	
1 cook, \$480; 4 nurses and 4 washers, at \$180 each	4,320 00	
1 watchman and 2 laborers, at \$360 each	1,080 00	
2 messroom attendants, at \$216 each	432 00	
1 engineer, \$1,000; 1 fireman, \$560	1,560 00	
	8,872 00	
At the naval laboratory, New York:		
1 manufacturer, \$800; 1 assistant manufacturer, \$300	1,100 00	
1 packer, \$800; 3 assistant packers, at \$300 each	1,700 00	
1 engineer, \$800; 1 fireman, \$350	1,150 00	
1 clerk, \$800; 1 shipping porter, \$500; 1 porter, \$350	1,650 00	
	5,600 00	
At the navy yard, Portsmouth, New Hampshire:		
1 apothecary, \$750; 1 nurse, \$180	930 00	
1 laborer and 1 cook, at \$180 each	360 00	
	1,290 00	
At the navy yard, Boston, Massachusetts:		
1 apothecary, \$750; 1 laborer, at \$2 per diem, \$730	1,480 00	
At the navy yard, New York:		
One apothecary, \$750; one laborer, at \$2 per diem, \$730	1,480 00	
At the navy yard, Philadelphia, Pennsylvania:		
One apothecary, \$750; one laborer, at \$2 per diem, \$730	1,480 00	
At the navy yard, Washington, District of Columbia:		
One apothecary, \$750; one laborer, at \$2 per diem, \$730	1,480 00	
At the navy yard, Norfolk, Virginia:		
One apothecary, \$750; one laborer, at \$2 per diem, \$730	1,480 00	
At the naval station, Mound City, Illinois:		
One apothecary, \$750; one laborer, at \$2 per diem, \$730	1,480 00	
	70,832 00	\$50,000 00

* Per act July 15, 1870. Amount asked for "civil establishment," reduced in the aggregate to \$60,832.

NOTE.—The amount appropriated for civil establishment for the current fiscal year is found to be inadequate to properly conduct the hospitals, and the Bureau therefore submits an estimate for such employes and attendants as are deemed *actually necessary* for the comfort of the sick in the hospitals, and for the proper protection of those establishments. It will be observed that this estimate is made from the actual pay required for the compensation of the employes in each hospital.

RECAPITULATION.

Salaries, &c.	\$5,560 00
Surgeons' necessaries and appliances.	50,000 00
Contingent	30,000 00
Repairs and improvements of hospitals	40,000 00
Civil establishment.....	60,832 00
	186,392 00

No. 9.

BUREAU OF PROVISIONS AND CLOTHING.

BUREAU OF PROVISIONS AND CLOTHING,
October 25, 1870.

SIR: I have the honor to submit, in accordance with instructions, estimates marked A, B, C, D, E, and F, schedules marked G and H, and statement marked I, for the fiscal year ending June 30, 1872.

I am also under the necessity of submitting additional estimates marked K and L, for provisions and for clothing for the fiscal year ending June 30, 1871.

In the estimates for the year ending June 30, 1871, for provisions, the sum of \$1,000,000, which it was estimated would remain unexpended on the 1st July, 1870, and applicable to the year 1871, was deducted from the amount required for provisions for that year, and no estimate was made for clothing, as the balance which it was estimated would remain unexpended under that appropriation would be sufficient for the fiscal year ending June 30, 1871; and this would have been the case but for the act of Congress approved July 12, 1870. This act (section 5) provides "that all balances of appropriations contained in the annual appropriation bills and made specifically for the service of any fiscal year, and remaining unexpended at the expiration of such fiscal year, shall only be applied to the payment of expenses properly incurred during that year," &c. As this act deprives the Bureau of the use of these balances, it becomes necessary to submit the additional estimates.

I deem it my duty to renew the recommendation for supplying sailors with an outfit of clothing, free of cost to them, on their enlistment in the Navy.

I beg leave, also, to renew the suggestion contained in my report of last year, that the ration of coffee, when issued in the unroasted berry, be one and one-fourth ounces per day.

I am, very respectfully, your obedient servant,
EDWARD T. DUNN,
Chief of Bureau.

HON. GEORGE M. ROBESON,
Secretary of the Navy.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Provisions and Clothing.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
A.—EXPENSES OF THE BUREAU OF PROVISIONS AND CLOTHING.		
For salary of chief clerk, per act July 5, 1862, (12 Stat. at L., p. 511, sec. 3)...	\$1,800 00	
For salary of one clerk of class four, per act July 23, 1866, (14 Stat. at L., p. 208, sec. 8.)	1,800 00	
For salary of two clerks of class three, same act.....	3,200 00	
For salary of two clerks of class two, same act.....	2,800 00	
For salary of three clerks of class one, same act.....	3,600 00	
For salary of one messenger, per acts July 5, 1862, (12 Stat. at L., p. 511, sec. 3): July 12, 1870, (appropriated.)	840 00	
For salary of one laborer, same acts.....	720 00	
	14,760 00	\$18,200 00
B.—CONTINGENT EXPENSES OF THE BUREAU.		
For blank books, stationery, and miscellaneous items, per act July 12, 1870.....	800 00	800 00
C.—PROVISIONS FOR THE NAVY.		
For provisions for the officers, seamen, and marines, viz., 8,500 men, 900 commissioned officers, and 1,200 marine officers and privates.....	1,460,000 00	
For the purchase of water for ships.....	40,000 00	781,050 00
	1,500,000 00	781,050 00
D.—CLOTHING FOR THE NAVY.		
For the purchase of clothing and clothing material, (submitted).....	250,000 00	Nothing.
E.—CIVIL ESTABLISHMENT, BUREAU OF PROVISIONS AND CLOTHING, AT THE SEVERAL NAVY YARDS.		
At navy yard, Boston, one writer to paymaster.....	\$1,017 25	
At navy yard, Boston, one writer to inspector of provisions and clothing.....	1,017 25	
At navy yard, New York, assistant inspector of provisions and clothing.....	1,878 00	
At navy yard, New York, one writer to inspector of provisions and clothing..	1,017 25	
At navy yard, New York, two writers to paymaster, each \$1,017 25.....	2,034 50	
At navy yard, New York, assistant superintendent of mills.....	969 00	
At navy yard, Philadelphia, one writer to paymaster.....	1,017 25	
At navy yard, Philadelphia, one writer to inspector of provisions and clothing	1,017 25	
At navy yard, Washington, one writer to paymaster.....	1,017 25	
At navy yard, Norfolk, one writer to paymaster.....	1,017 25	
At navy yard, Mare Island, one writer to paymaster.....	1,017 25	
At navy yard, Mare Island, one writer to inspector of provisions and clothing	1,295 59	
	14,285 00	\$14,285 00
F.—CONTINGENT EXPENSES OF THE NAVY, UNDER BUREAU OF PROVISIONS AND CLOTHING.		
For freight and transportation, to foreign and home stations; for candles; for fuel; for interior alterations and fixtures in inspection buildings; for tools, and repairing same, at eight inspections; for special watchmen, in eight inspections; for books and blanks; for stationery; for telegrams, postages, and express charges; for tolls, ferriages, and car tickets; for ice; and for incidental labor, not chargeable to other appropriations.	75,000 00	75,000 00

Estimates of appropriations required to supply deficiencies in the appropriations for the service of the fiscal year ending June 30, 1871, by the Bureau of Provisions and Clothing.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each dollar-tailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
K.—PROVISIONS.		
Provisions for the Navy, (submitted).....	\$1,000,000 00	\$781,050 00
<p>[NOTE.—The estimate for provisions for the fiscal year ending June 30, 1871, was made on an estimated balance on hand, June 30, 1870, of \$1,000,000, applicable to the expenses, under this head, of the year ending June 30, 1871; but by the act of Congress of July 12, 1870, the expenditure of all balances on hand June 30, 1870, is prohibited, except for the payment of expenses incurred during that year, which leaves the appropriation \$1,000,000 short of the estimate.]</p>		
L.—CLOTHING.		
Clothing for the Navy, (submitted).....	250,000 00	Nothing.
<p>[NOTE.—No estimate was made for clothing for the fiscal year ending June 30, 1871, because of an estimated balance on hand June 30, 1870, sufficient for the wants of the year; the use of which balance, however, except for the payment of expenses of the year ending June 30, 1870, is prohibited by the act of Congress of July 12, 1870, which left nothing to cover the expenses for clothing for the year ending June 30, 1871.]</p>		

G.—Schedule of proposals for mattresses received under advertisement dated November 2, 1869.

Name.	Residence.	Price per mattress.				Aggregate prices.	
		For Boston.		For New York.			For Philadelphia.
		1,000 with covers.	700 with covers.	2,800 with-out covers.	1,500 with covers.		
G. A. Sammet.....	Boston.....	\$7 45	\$7 45	\$6 50	\$7 45	\$12,040	
F. H. Smith.....	New York.....	5 87	5 88	5 02	5 88	32,862	
J. Holman & Co.....	Boston.....	6 63	6 63	5 63	6 63	36,920	
A. L. Haskell & Son.....	Boston.....	6 38	6 38	5 28	6 38	35,200	
W. H. Pearson.....	Philadelphia.....	7 28	7 28	6 10	7 28	10,376	
Degraaf & Cochran.....	New York.....	6 54	6 44	5 24	6 54	35,530	
E. Drew.....	Brooklyn.....	6 41	6 36	5 31	6 41	35,429	
J. H. Hallett & Son.....	Boston.....	6 90	6 90	6 00	6 90	38,880	
Doremus & Nixon.....	New York.....	7 15	7 15	6 10	7 15	39,960	
William Mathews.....	New York.....	.....	.....	.....	.....	34,620
Schenck & Rynn.....	New York.....	7 16	7 16	5 99	7 16	39,684	
T. Thompson & Sons.....	Philadelphia.....	.....	.....	.....	8 45	.....
J. H. Howard.....	New York.....	6 55	6 33	5 53	6 55	36,290	
S. P. Kittle.....	New York.....	.....	.....	.....	.....	36,497

Bid accepted.

Schedule of proposals for clothing received under advertisement dated January 20, 1870.

Name.	Residence.	10,000 blue cloth caps.	10,000 white linen frocks.	10,000 blue flannel overshirts.
Hawley, Folsom & Martin.....	Boston.....	.....	.....	\$2.69
William Wolf.....	Boston.....	\$0.9775	.....	.....
Horstman Brothers & Co.....	Philadelphia.....	1.55	.....	.....
William Mathews.....	New York.....	.97	\$1.57	2.47
D. W. Noe.....	New York.....	1.225	1.58	2.40

Bid informal.

Bid accepted.

Schedule of proposals for clothing received under advertisement dated May 2, 1870.

Name.	Residence.	10,000 pairs bleached canvas duck trousers.
William Mathews *	New York	Price per pair, \$1 74

* Bid accepted.

H.—Schedule of proposals for fresh beef and vegetables received during the fiscal year ending June 30, 1870.

Name	Date of advertisement.	Where to be delivered.	Beef, per pound.	Vegetables, per pound.
Nathan Baum	Oct. 28, 1869	Norfolk, Va.	\$0.1275	\$0.035
Kimberly Brothers *	Oct. 28, 1869	Norfolk, Va.	.1194	.0394
J. G. Carroll	Dec. 3, 1869	Washington, D. C.	.10	.03
J. T. Varnell *	Dec. 3, 1869	Washington, D. C.	.10	.03
L. S. Boraef *	Jan. 27, 1870	Philadelphia, Pa.	.16	.05
J. Stokell & Co *	Mar. 8, 1870	Portsmouth, N. H.	.095	.015
H. L. Garrett	Mar. 8, 1870	Portsmouth, N. H.	.12625	.0175
J. J. Lyons	Mar. 25, 1870	New York, N. Y.	.11	.02
Evans & Co.	Mar. 25, 1870	New York, N. Y.	.145	.0425
Patrick Morrison	Mar. 25, 1870	New York, N. Y.	.11	.02
George Buddle *	Mar. 25, 1870	New York, N. Y.	.1099	.0199
N. Bourdy	Mar. 25, 1870	New York, N. Y.	.132	.033
L. & J. Hanley	Mar. 25, 1870	New York, N. Y.	.1169	.0234
E. A. Gary *	May 5, 1870	Boston, Mass.	.085	.0125
H. P. Stevens	May 5, 1870	Boston, Mass.	.11625	.025
G. H. Spaulding	May 5, 1870	Boston, Mass.	.1175	.015
Cyrus Flanders	May 5, 1870	Boston, Mass.	.09	.015

* Bid accepted.

I.—Statement of contracts made by the Bureau of Provisions and Clothing, for and in behalf of the Navy Department, during the fiscal year ending June 30, 1870.

Name.	Date.	Articles contracted for.	Price.	Where to be delivered.
L. S. Boraef	July 9, 1869	50,000 lbs. fresh beef.	\$0.14 per lb.	Philadelphia, Pa.
L. S. Boraef	July 9, 1869	50,000 lbs. fresh vegetables.	.04 per lb.	Philadelphia, Pa.
Kimberly Brothers	Nov. 15, 1869	50,000 lbs. fresh beef.	.1194 per lb.	Norfolk, Va.
Kimberly Brothers	Nov. 15, 1869	50,000 lbs. fresh vegetables.	.0394 per lb.	Norfolk, Va.
Francis H. Smith	Dec. 11, 1869	6,000 mattresses.	32,862.00	Boston, New York, and Philadelphia.
J. T. Varnell	Dec. 27, 1869	25,000 lbs. fresh beef.	.10 per lb.	Washington, D. C.
J. T. Varnell	Dec. 27, 1869	25,000 lbs. fresh vegetables.	.03 per lb.	Washington, D. C.
L. S. Boraef	Feb. 11, 1870	50,000 lbs. fresh beef.	.16 per lb.	Philadelphia, Pa.
L. S. Boraef	Feb. 11, 1870	50,000 lbs. fresh vegetables.	.05 per lb.	Philadelphia, Pa.
William Mathews	Mar. 12, 1870	10,000 white linen frocks.	1.57 each.	Boston, New York, and Philadelphia.
William Mathews	Mar. 12, 1870	10,000 blue flannel overshirts.	2.47 each.	Boston, New York, and Philadelphia.
William Mathews	Mar. 12, 1870	10,000 blue cloth caps.	.97 each.	Boston, New York, and Philadelphia.
J. Stokell & Co.	Mar. 21, 1870	25,000 lbs. fresh beef.	.095 per lb.	Portsmouth, N. H.
J. Stokell & Co.	Mar. 21, 1870	25,000 lbs. fresh vegetables.	.015 per lb.	Portsmouth, N. H.
George Buddle	April 8, 1870	200,000 lbs. fresh beef.	.1099 per lb.	New York, N. Y.
George Buddle	April 8, 1870	200,000 lbs. fresh vegetables.	.0199 per lb.	New York, N. Y.
E. A. Gary	May 18, 1870	50,000 lbs. fresh beef.	.085 per lb.	Boston, Mass.
E. A. Gary	May 18, 1870	50,000 lbs. fresh vegetables.	.00125 pr. lb.	Boston, Mass.
William Mathews	June 2, 1870	10,000 pairs canvas duck trousers.	1.74 per pair.	Boston, New York, and Philadelphia.

No. 10.

BUREAU OF STEAM ENGINEERING.

NAVY DEPARTMENT,
Bureau of Steam Engineering, October 24, 1870.

SIR: In obedience to your order of the 11th instant, I have the honor to submit the annual statement of the operations of this Bureau, together with the estimates for maintaining the steam machinery of the vessels of the Navy afloat; and for the preservation, repair, and refitting of those needed for service; also, for the civil establishment in the navy yards, and for materials and stores.

These estimates are the lowest for which the necessary operations of the Bureau can be performed, just sufficient to maintain the steam machinery in repair according to the present strength of the fleets. They do not include any provision for the repair of vessels not expected to be put in commission, for placing the machinery in the ten vessels on the stocks, or for extraordinary contingencies.

An inspection of the accompanying list will show the number and names of vessels having their machinery under repairs, awaiting repairs, and those to have the machinery erected in them. It will be observed that these vessels constitute a considerable portion of the effective force of the Navy.

It is submitted that in their present condition they are entirely useless, and that there should be as little delay as possible in fitting them for any emergency. If it be decided to do so, an additional appropriation of \$450,000 above the estimate submitted will be required.

List of vessels under repairs, awaiting repairs, awaiting machinery, and on the stocks.

UNDER REPAIRS.

Screw steamers.—Minnesota, (1st rate;) California, (2d rate;) Pensacola, (2d rate;) Canandaigua, (3d rate;) Iroquois, (3d rate;) Lackawanna, (3d rate;) Ticonderoga, (3d rate;) Wachusett, (3d rate;) Wyoming, (3d rate;) Shawmut, (4th rate.)

Paddle-wheel steamers.—Powhatan, (2d rate;) Saginaw, (4th rate.)

Iron-clad.—Mimtonomah, (3d rate.)

AWAITING REPAIRS.

Screw steamers.—Wabash, (1st rate;) Albany, (2d rate;) Florida, (2d rate;) Hartford, (2d rate;) Iowa, (2d rate;) Niagara, (2d rate;) Kearsarge, (3d rate.)

Paddle-wheel steamer.—Gettysburg, (4th rate.)

Iron-clads.—Roanoke, (2d rate;) Camanche, (4th rate;) Catskill, (4th rate;) Jason, (4th rate;) Lehigh, (4th rate;) Montauk, (4th rate;) Nahant, (4th rate;) Nantucket, (4th rate;) Passaic, (4th rate.)

AWAITING MACHINERY.

Screw steamers.—Monongahela, (3d rate;) Omaha, (3d rate;) Dacotah, (4th rate;) Quinnebaug, (4th rate.)

Paddle-wheel steamer.—Susquehanna, (2d rate.)

Iron-clad.—Puritan, (3d rate.)

ON THE STOCKS.

Screw steamers.—Antietam, (2d rate;) Connecticut, (2d rate;) Illinois, (2d rate;) Java, (2d rate;) New York, (2d rate;) Pennsylvania, (2d rate.)

Iron-clads.—Colossus, (2d rate;) Massachusetts, (2d rate;) Nebraska, (2d rate;) Oregon, (2d rate.)

Since my last annual report, the repairs, alterations, &c., to the machinery of the following-named vessels have been completed, viz:

1st rate.—Colorado.

2d rates.—Brooklyn ; Congress ; Guerrière ; Saranac ; Tennessee ; Worcester.

3d rates.—Alaska ; Benicia ; Ossipee ; Plymouth , Shenandoah.

4th rates.—Kansas ; Nantasket ; Narragansett ; Nipsic ; Saco ; Swatara ; Tallapoosa ; Yantic.

Iron-clads.—3d rate, Terror ; 4th rates, Ajax, Manhattan, Wyandotte.

The machinery has been removed from the Pawnee, Galena, Penobscot, and Susquehanna ; and is being removed from the Dacotah, Quinnebaug, and Monongahela. The first three named vessels have been condemned ; but the Susquehanna, a side-wheel steamer, is, by order of the Department, to be converted into a screw steamer, and it is proposed to substitute a pair of the 60 by 36 inch engines, now in store—with their accompanying boilers—for the machinery removed. The machinery of the Quinnebaug consisted of two pair of engines driving twin screws, and was constructed by Messrs. Jackson and Watkins, of London, England ; the maximum speed of the vessel being about 7 knots per hour. This machinery will be replaced by one pair of engines 36 inches in diameter of cylinder by 48 inches stroke of piston, constructed at the Washington navy yard for a vessel not yet built. Neither the engines nor the boilers selected to replace those removed are such as would be designed for the vessel ; the boilers have been selected from the large number stored in the yards ; the Bureau being under the necessity of making available the materials on hand.

The engines known as the “60 by 36 inch,” constructed for the five screw sloops on the stocks, are stored in the navy yards ; so, also, is the machinery constructed for the four iron-clads on the stocks. Some of the boilers built to accompany these several sets of machinery have been used for other vessels requiring new boilers wherever they could be put in to advantage ; and it is proposed to use those which remain for other vessels that may have their boilers condemned. The engines delivered in an unfinished condition by contractors can only be adapted to the same uses as old material, and it is proposed to make it available as such.

By order of the Department nearly all vessels prepared for sea, and having four-bladed screw propellers, have had them removed and two-bladed screws fitted in their stead with the view of increasing the efficiency of the vessels under sail. The results obtained from trial trips in smooth water, thus far, show that neither has an appreciable advantage in speed or economy over the other, but the vibration at the stern of the vessel is considerably greater with the two-bladed than with the four-bladed screws ; while in heavy weather the four-bladed screw has a decided advantage due to its greater propelling area.

The foundry building in the Mare Island navy yard, completed some time ago, still remains unoccupied for want of funds to purchase machinery and appliances and to equip it therewith. The building measures 332 feet in length by 70 feet in width, is substantially built, and costs about \$150,000. It is greatly needed, but is useless until equipped. An estimate for the purpose is submitted.

The machine-shop building in the Brooklyn navy yard is rapidly advancing toward completion. No new machinery or tools will be required for it, but all the machines and appliances in the old shop will have to be removed, refitted, and arranged in the new building, and the old building converted into an engineers' storehouse, a pressing need at that yard. An estimate is submitted for the purpose.

There are four pairs of unfinished marine engines designed for screw sloops ; two pairs of which were ordered in 1864 to be constructed

in the Charlestown navy yard, and two pairs in the Brooklyn navy yard. There is also one pair of engines of smaller dimensions in the yard at Kittery, Maine. The former are of the type employed in the Alaska, Benicia, and Plymouth, and have 50 by 42 inch cylinders; the latter is from the drawings from which the machinery in the Nantasket was made, and contains 36 by 36 inch cylinders. As these engines are of the classes most likely to be required, and as a large amount has already been expended in their construction, it is recommended that they be completed.

The usual yearly contracts for supplies for the engineer departments of the different navy yards were not made during the present fiscal year. The expenditure has been restricted wherever it was possible; and, with exceptional necessary purchases, the surplus at some yards has been shipped to others where it was needed. But these supplies remaining from previous years will soon become exhausted; and, as it is necessary always to retain a stock of stores and materials on hand, it is proposed to make purchases during the next fiscal year.

The estimates for the year will be found in the accompanying papers marked A and B.

Very respectfully, your obedient servant,

J. W. KING,
Chief of Bureau.

Hon. GEORGE M. ROBESON,
Secretary of the Navy.

A.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Steam Engineering.*

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
SALARIES.		
For salary of chief clerk, per act July 5, 1862, (12 Stat. at L., p. 511, sec. 3)	\$1,800 00	
For salary of draughtsman, per act March 2, 1867, (14 Stat. at L., p. 450, sec. 1)	1,800 00	
For salary of one clerk of class two, per act March 2, 1867, (14 Stat. at L., p. 450, sec. 1.)	1,400 00	
For salary of one assistant draughtsman, per act July 5, 1862, (12 Stat. at L., p. 511, sec. 3.)	1,200 00	
For salary of one messenger, per act July 5, 1862, (12 Stat. at L., p. 511, sec. 3; March 3, 1869, 15 Stat. at L., p. 287, sec. 1.)	840 00	
For salary of one laborer, per same acts	720 00	
	7,760 00	\$11,260 00
[NOTE.—The difference between the estimate for 1871-'72, and the appropriations for 1870-'71, is caused by the amount usually estimated for salary of the Chief of Bureau being omitted.]		
CONTINGENT.		
Stationery and miscellaneous items	800 00	800 00

B.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Bureau of Steam Engineering.*

Detailed objects of expenditure and explanations.	Estimated amount which will be re- quired for each detailed object of expenditure.	Amount appropri- ated for the cur- rent fiscal year ending June 30, 1871.
STEAM MACHINERY.		
Repairs and preservation of machinery and boilers, for labor in navy yards, coal, material, stores, transportation, &c.	\$1,640,000 00	
For removing machinery and tools from old to new machine shop, for converting old machine shop into a storehouse, and repairs to yard machinery, Brooklyn navy yard.	75,000 00	
	1,715,000 00	\$1,000,000 00
CIVIL ESTABLISHMENT.		
At the navy yard, Portsmouth, New Hampshire:		
Draughtsman, at \$1,600; clerk to chief engineer, and store clerk, at \$1,400, each; and time clerk, at \$1,200.	5,600 00	
At the navy yard, Boston, Massachusetts:		
Draughtsman, at \$1,600; clerk to chief engineer, and store clerk, at \$1,400, each; and time clerk, at \$1,200.	5,600 00	
At the navy yard, Brooklyn, New York:		
Draughtsman, at \$1,600; clerk to chief engineer, and store clerk, at \$1,400, each; and time clerk, at \$1,200.	5,600 00	
At the navy yard, Philadelphia, Pennsylvania:		
Draughtsman, at \$1,600; clerk to chief engineer, and store clerk, at \$1,400, each; and time clerk, at \$1,200.	5,600 00	
At the navy yard, Washington, D. C.:		
Draughtsman, at \$1,600; clerk to chief engineer, and store clerk, at \$1,400, each; and time clerk, at \$1,200.	5,600 00	
At the navy yard, Norfolk, Virginia:		
Draughtsman, at \$1,600; clerk to chief engineer, and store clerk, at \$1,400, each; and time clerk, at \$1,200.	5,600 00	
At the navy yard, Pensacola, Florida:		
Clerk of storehouses, at \$1,200	1,200 00	
At the navy yard, Mare Island, California:		
Draughtsman, at \$1,600; clerk to chief engineer, and store clerk, at \$1,400, each; and time clerk, at \$1,200.	5,600 00	
	40,400 00	40,400 00

No. 11.

MARINE CORPS.

HEADQUARTERS MARINE CORPS,
Washington, October 24, 1870.

SIR: I have the honor to report to the Department that during the past year the marines at the principal naval stations have been inspected at different periods by the adjutant and inspector of the corps, and by myself, and on both occasions were found in a high state of efficiency and discipline, and their quarters, with the public property under their charge, in most admirable order.

From the commanding officers of the several marine stations, as well as those commanding guards on board of vessels in commission, I have received assurances that the various duties assigned them have been performed in a very satisfactory manner to the naval officers in command; and that the men of their respective commands were kept in efficient order and discipline.

The troops at the several stations on shore have recently been armed with the breech-loading rifled musket, which has greatly increased their efficiency as a military body, and left nothing to be desired in their equipment or organization.

There has been no change worthy of mention in the duties or distribution of the corps since my last report.

From the "general return" herewith transmitted, it will be seen that about one-half of the enlisted men are on board ship, and the remainder distributed at ten stations on shore, so as to best meet the requirements of the service.

I feel it my duty to again call the attention of the Department to the inadequate number of men at the principal naval stations at the north. The great extent of the several yards, and their immense amount of public property to be guarded, require a larger number of sentinels than it is possible to furnish with the limited number of men now in service. This deficiency in the number of men necessitates the employment of a large number of irresponsible watchmen at all the navy yards, at a very heavy increase of expense, without any corresponding benefit to the Government. It would seem to me to be a matter of great economy to dispense with a large portion of these watchmen, and employ marines at a much less compensation, and who could perform the duties of watchmen as well as the civilians; while as soldiers they would be always in readiness for the performance of any duty requiring the services of well-disciplined troops.

The act of 25th July, 1861, now in force, authorizes the employment of 2,500 privates, but under the late administration the Department directed the number to be reduced to 2,000. To increase the corps to its legal strength by the enlistment of this additional 500 privates I think highly desirable at this time, as I would then be enabled to keep two full companies of effective men at each of the principal stations, where their services are so much in demand, and where, if occasion should require, as it did during the present year, they could aid the civil authorities in preserving the peace, and enforcing the laws. The number of marines at the navy yard, Mare Island, California, should also be increased, so as to enable that station to supply all details for guards of vessels in the Pacific squadrons. There are most excellent barracks at this yard, built with a view to accommodate a large number of men for this purpose, and I think it very desirable to enlist a sufficient number of men in the Pacific States to meet all requirements of that station; thus saving the heavy cost of transportation to and from the Atlantic border.

I would also respectfully renew my recommendation to rebuild the barracks destroyed during the late rebellion at the navy yards at Pensacola and Norfolk. These important naval stations of the South are being gradually restored to their former condition, and I regard it as highly important that barracks to accommodate four or five hundred men should be erected at the Norfolk yard, at as early a day as practicable; and I trust the department may not deem it inconsistent with its views to recommend an appropriation for this object at the coming session of Congress.

By the act approved July 15, 1870, the allowance of five cents per day hitherto granted to all persons in the Navy, in lieu of the spirit ration, has been abolished. The President of the United States, by special order, restored this compensation to the enlisted men of the Navy, by adding the sum to their monthly pay. The pay of marines, however, being established by law, could not be increased by this order, and thus they are the only class on board ship whose compensation has been reduced by the act referred to. They feel this discrimination very sensibly, and naturally regard themselves as much entitled to this gratuity as their brethren of the Navy proper. I mention this subject

with the hope the department may recommend some measure to place them on an equality, so far as this small allowance is concerned.

I am, very respectfully, your obedient servant.

J. ZEILIN,

Brigadier General and Commandant.

Hon. GEORGE M. ROBESON,

Secretary of the Navy.

HEADQUARTERS MARINE CORPS,

Washington, September 27, 1870.

SIR: I respectfully forward to the Department estimates "in triplicate" from the Paymaster's Department United States Marine Corps, for pay and subsistence of officers, pay of non-commissioned officers, musicians, and privates, for the fiscal year ending 30th June, 1872. I also enclose a letter from the paymaster in relation to the estimates.

I have the honor to be, very respectfully, your obedient servant,

J. ZEILIN,

Brigadier General and Commandant.

Hon. GEORGE M. ROBESON,

Secretary of the Navy, Washington, D. C.

HEADQUARTERS MARINE CORPS,

Quartermaster's Office, Washington, October 4, 1870.

SIR: I have the honor to submit in triplicate "estimates of appropriations for the service of the fiscal year ending June 30, 1872, by Quartermaster's Department Marine Corps." These estimates vary from those submitted for fiscal year ending June 30, 1871, as follows:

For provisions, \$9,490 less.

For clothing, \$2,933 less.

For fuel, \$9,095 more, caused by the price of wood being fixed at \$8 instead of \$6 per cord.

Military stores, \$2,000 more. The estimates made for the past two years for this purpose having been reduced by Congress, the supply of military equipments has been so much reduced that the sum now asked for is believed to be absolutely necessary.

Transportation, \$5,000 less, occasioned by mileage to officers being no longer paid by this department.

Repair of barracks: The same amount is asked for, which sum, it is believed, will be required to keep the public property in proper condition.

Contingencies, \$15,000 less. The sum now asked for, is believed to be necessary.

The total of these estimates is less than those for fiscal year ending June 30, 1871, \$14,328.

I am, very respectfully your obedient servant.

W. B. SLACK,

Quartermaster Marine Corps.

Brigadier General J. ZEILIN,

Commandant Marine Corps,

Headquarters Washington, D. C.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Quartermaster's Department Marine Corps.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
PROVISIONS.		
1,300 non-commissioned officers, musicians, and privates, and 33 washerwomen, in all, 1,333; one ration per day, for 365 days, is 486,545 rations; at 26 cents per ration, is.....	\$126,501 70	
Less, for contingencies and vacancies	6,501 70	
	\$120,000 00	\$135,991 70
CLOTHING.		
2,500 non-commissioned officers, musicians, and privates, at \$45 23 per annum; actual cost, per contract, 1870 and 1871, is \$113,075, and 1,200 watch-coats, at \$10 62 each, is \$12,744; in all.....	\$126,819	
Less, for contingencies.....	10,000	
	116,819 00	50,000 00
FUEL.		
4,408 cords of wood, as follows: for one brigadier general, 33 cords; one colonel, 33 cords; two lieutenant colonels, 30 cords; four majors, 118 cords; three staff majors, 88 1/2 cords; two staff captains, 49 1/2 cords; twelve captains, 297 cords; thirty 1st and 2d lieutenants, 495 cords; fourteen hundred non-commissioned officers, musicians, privates, washerwomen, and servants, 2,100 cords; one hospital, at headquarters, 33 cords; five hospitals, at other posts, 52 1/2 cords; one armory, 30 cords; seven mess-rooms, for officers, 21 1/2 cords; sixteen offices, commandant and staff, and commanding officers at posts, 112 cords; eight officers-of-day's' rooms, 28 cords; ten guard-rooms, at barracks and navy yards, 210 cords; three clothing and other supply stores, 15 cords; one-fourth additional on 2,400 cords, quantity supposed to be required in latitude 36° north, from September 1, to April 30, 600 cords; amounting to, in all, 4,408 cords; which, at \$8 per cord is.....	35,264 00	26,169 00
MILITARY STORES.		
Pay of mechanic, repair of arms, purchase of accoutrements, ordnance stores, flags, drums, fifes, and other instruments.	12,000 00	7,000 00
TRANSPORTATION AND RECRUITING.		
Transportation of troops and officers' servants, and for expenses of recruiting..	12,000 00	15,000 00
REPAIR OF BARRACKS.		
Repair of barracks and rent of offices where there are no public buildings	10,000 00	10,000 00
CONTINGENCIES.		
Freight, ferrage, toll, cartage, wharfage, purchase and repair of boats, per diem for constant labor; rent of officers' quarters; burial of deceased marines; printing, stationery, postage, top graphing, apprehension of deserters, oil, gas, candles, repair of gas and water-fixture, water rent, forage, straw, barrack furniture, furniture for officers' quarters and for staff and commanding officers' offices, bedsacks, wrapping-paper, oilcloth, crash, rope, twine, spades, shovels, axes, picks, carpenter's tools; keep of a horse for the messenger; repairs to fire-engines, purchase and repair of engine-hose; purchase of lumber for benches, mess-tables, bunks, &c.; repairs to public carryall; purchase and repair of harness; purchase and repair of hand-carts and wheelbarrows; scavengering; purchase and repair of galleys, cooking-stoves, ranges, &c.; stoves where there are no grates; gravel, &c., for parade-grounds; repair of pumps; brushes, brooms, buckets, paving, and for other purposes.....	40,000 00	50,000 00
	316,903 00	24,160 70

Respectfully submitted,

W. B. SLACK,
Quartermaster Marine Corps.



HEADQUARTERS MARINE CORPS,
Quartermaster's Office, Washington, October 5, 1870.

SIR: I have the honor to submit in triplicate, "estimates for deficiencies required to complete the service of the fiscal years ending June 30, 1869, 1870, and 1871, by Quartermaster's Department Marine Corps."

The deficiency in clothing was caused by act of Congress, requiring all balances of appropriations to be carried into the general treasury. (See estimates submitted for fiscal year ending June 30, 1871.)

The deficiency asked for fuel, was caused by an appropriation of \$10,000 being made for fiscal year ending June 30, 1869, when the amount estimated to be required was \$30,156. The appropriation of \$10,000 was based upon the supposition that at the close of the fiscal year there would be a large unexpended balance, when in reality there was only \$291 12 to be added to the \$10,000 appropriated. And for fiscal year ending June 30, 1870, the estimates were based upon \$6 per cord, when the cost per contracts subsequently made, averaged at least \$7 per cord.

I am, very respectfully, your obedient servant,

W. B. SLACK,
Quartermaster Marine Corps.

Brigadier General J. ZEILIN,
Commanding Marine Corps, Headquarters Washington, D. C.

Estimates for deficiencies required to complete the service of the fiscal years ending June 30, 1869, 1870, and 1871, by Quartermaster's Department, Marine Corps.

Detailed objects of expenditure, and explanations.	Total amount to be appropriated, under each head of appropriation, in addition to the amount previously appropriated.	Amounts previously appropriated for the years for which this deficiency is asked.
CLOTHING.		
2,509 non-commissioned officers, musicians, and privates, at \$16 25 per annum, actual cost per contract 1869-70, is \$115,750, and 1,209 watch-coats, at \$11 71 each, is \$14,052; in all, \$129,752.	\$79,752 00	\$50,000 00
FUEL.		
5,926 cords of wood for officers, non-commissioned officers, musicians, privates, washerwomen, public buildings, &c., at \$6 per cord, is \$30,156; for fiscal year ending June 30, 1869, and 4,437 cords of wood for officers, non-commissioned officers, musicians, privates, washerwomen, public buildings, &c., at \$7 per cord, is \$31,062 50; in all, \$61,218 50.	14,593 50	46,625 00

Respectfully submitted,

W. B. SLACK,
Quartermaster Marine Corps.

HEADQUARTERS MARINE CORPS,
Paymaster's Office, September 26, 1870.

SIR: I inclose to you herewith estimates in triplicate for the pay of officers, non-commissioned officers, musicians, and privates of the United States Marine Corps, for the fiscal year ending June 30, 1872.

I am, very respectfully, yours, &c.,

J. C. CASH,
Paymaster Marine Corps.

Brigadier General JACOB ZEILIN,
Commandant United States Marine Corps, Headquarters.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the Paymaster's Department, United States Marine Corps.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1871.
PAY OF OFFICERS, NON-COMMISSIONED OFFICERS, MUSICIANS, PRIVATES, AND OTHERS OF THE UNITED STATES MARINE CORPS, INCLUDING ALL PAYMENTS TO BE MADE DURING THE FISCAL YEAR		
1 brigadier general, commandant.....	\$5,500 00	
1 colonel.....	4,500 00	
1 colonel, (retired).....	3,375 00	
2 lieutenant colonels.....	8,000 00	
1 lieutenant colonel, (retired).....	3,000 00	
4 majors.....	13,750 00	
3 majors, (retired).....	7,500 00	
1 adjutant and inspector, one paymaster, and one quartermaster.....	10,500 00	
2 assistant quartermasters.....	5,600 00	
20 captains.....	43,200 00	
2 captains, (retired) per act of June 30, 1831, (4 Stat. L., p. 713, sees. 4 and 5).....	3,375 00	
3 first lieutenants, per act of March 2, 1847, (9 Stat. L., p. 155, sec. 3).....	51,000 00	
30 second lieutenants, per act of August 5, 1854, (10 Stat. L., p. 586, sec. 1).....	43,128 00	
2 second lieutenants, (retired), per act of February 21, 1857, (11 Stat. L., p. 163, sec. 1).....	2,100 00	
1 sergeant-major, per act of July 17, 1862, (12 Stat. L., p. 594, sec. 2).....	360 00	
1 quartermaster-sergeant, and one drum-major, per act of June 20, 1864, (13 Stat. L., p. 144, sec. 1).....	576 00	
1 leader of the band, per act of March 3, 1865, (13 Stat. L., p. 487, sec. 1).....	900 00	
50 orderly sergeants, per act of July 28, 1866, (14 Stat. L., p. 334, sec. 13).....	15,600 00	
70 sergeants on first enlistment, per act of July 23, 1866, (14 Stat. L., p. 337, sec. 37).....	16,800 00	
70 sergeants on re-enlistment, per act of March 2, 1867, (14 Stat. L., p. 422, sec. 1).....	18,480 00	
90 corporals on first enlistment, per act of March 2, 1867, (14 Stat. L., p. 517, sec. 7).....	19,440 00	
93 corporals on re-enlistment, per act of July 15, 1870.....	21,600 00	
30 musicians of the band, per Navy regulations of July 8, 1816.....	9,492 00	
96 drummers and fliers.....	18,432 00	
1,500 privates on first enlistment.....	288,000 00	
500 privates on re-enlistment.....	108,000 00	
9 clerks to brigadier general, commandant, adjutant and inspector, paymaster, and quartermaster.....	12,599 64	
1 messenger at headquarters.....	971 28	
1 clerk and one messenger in assistant quartermaster's office, Philadelphia.....	1,576 25	
1 hospital steward at headquarters.....	750 00	
Undrawn clothing.....	25,000 00	
Traveling allowance to officers under orders, unaccompanied by troops.....	5,000 00	
Allowance to officers serving on courts-martial.....	1,000 00	
	769,195 17	
Loss, for vacancies and casualties.....	69,195 17	
	700,000 00	\$731,467 17

J. C. CASH,
Paymaster Marine Corps.

HEADQUARTERS MARINE CORPS,
Paymaster's Office, September 26, 1870.

NOTE.—The total amount of the original estimate exceeds the sum appropriated for the current fiscal year by \$37,638, viz:

- Increase in pay of officers as established by the act approved July 15, 1870, \$31,638.
- Traveling allowance to officers heretofore paid by the quartermaster of the corps, \$5,000.
- Allowance to officers serving on courts-martial, heretofore paid by the quartermaster, \$1,000.
- As reduced it is less than amount appropriated for current year by \$31,197 17.

HEADQUARTERS MARINE CORPS,
Quartermaster's Office, Washington, November 14, 1870.

SIR: I have the honor to transmit herewith schedules of proposals received for the supply of fuel, provisions, and supplies for the Marine Corps, for fiscal year ending June 30, 1871.

I have the honor to be, very respectfully, your obedient servant,
SAMPL A. H. MARKS, *Chief Clerk,*
for Major W. B. Slack, Quartermaster Marine Corps.

Forwarded by J. Zeilin, Brigadier General and Commandant.

Hon. GEO. M. ROBESON,
Secretary of the Navy.

ABSTRACT OF OFFERS RECEIVED FOR FURNISHING FUEL, RATIONS, AND SUPPLIES TO THE UNITED STATES MARINE CORPS, UNDER THE COGNIZANCE OF THE QUARTERMASTER'S DEPARTMENT.

Offers for rations under advertisement dated April 18, 1870.

	Per hundred.		Per hundred.
At Portsmouth, N. H.:		At Washington, D. C.:	
Jno. C. Gilbert.....	\$34 00	Moses Brenner.....	\$20 11
N. F. Mathes.....	*33 10	Browning & Middleton..	20 00
At Charlestown, Mass.:		C. H. White.....	22 75
Geo. H. Spaulding, agent.	27 50	Jno. C. Gilbert.....	*19 97½
Peter Higgins.....	*27 42½	N. F. Mathes.....	31 25
Jno. C. Gilbert.....	28 49	At Pensacola, Flo.:	
N. F. Mathes.....	34 25	Peter Higgins.....	37 47½
At Brooklyn, N. Y.:		Jno. C. Gilbert.....	36 40
Jno. C. Gilbert.....	*23 69	N. F. Mathes.....	*33 40
N. F. Mathes.....	29 90	At Mare Island, Cal.:	
At Philadelphia, Pa.:		Brackett & Keyes.....	35 00
Jno. C. Gilbert.....	23 31	N. F. Mathes.....	35 50
Walter Reckless.....	*19 52½	J. F. Tobin.....	30 00
N. F. Mathes.....	30 00	E. J. Wilson.....	*25 00
Charles W. Meyer.....	19 55	Henry M. Blumenthal..	41 00
At Gosport, Va.:		Williston & Brownlie..	32 00
Kimberly Brothers.....	*25 97	A. Powell.....	44 00

Offers for wood and coal, under advertisement dated May 4, 1870.

	Wood, per cord.		Wood, per cord.
At Portsmouth, N. H.:		At Philadelphia, Pa.:	
N. F. Mathes & Co.....	*\$9 70	P. J. Field.....	\$9 50
George A. Hammond.....	9 90	At Washington, D. C.:	
Russell & Odion.....	12 00	Sarah Otterback.....	7 45
At Charlestown, Mass.:		William Guinand.....	*6 45
S. & E. Knight.....	*10 00	At Gosport, Va.:	
S. M. Smith.....	10 50	E. J. Myers.....	5 95
At Brooklyn, N. Y.:		Peters' Brothers.....	*5 20
Felt & German.....	*9 67	At Pensacola, Fla.:	
A. R. Buss.....	10 35	Hugh Melhatton.....	*5 70
Jno. Leitch.....	9 93	T. C. Quayle.....	7 99
At Philadelphia, Pa.:		At Mare Island, Cal.:	
Jno. A. Convery.....	7 45	A. Powell.....	*1 200
George Wright.....	8 06		
Ballenger & Salter.....	*7 00		

* Successful bidders.

	Coal, per ton.		Coal, per ton.
At Portsmouth, N. H.:		At Philadelphia, Pa.:	
Treadway & Wells.....	*\$7 99	Jno. A. Convery.....	*6 75
N. F. Mathes & Co.....	8 25	J. K. Wright & Son.....	6 75
Russell & Odion.....	8 20	George Wright.....	8 00
William H. Sise.....	9 69	P. J. Field.....	10 90
At Charlestown, Mass.:		At Washington, D. C.:	
Treadway & Wells.....	7 79	Treadway & Wells.....	7 74
S. & E. Knight.....	*7 22	W. H. Barbour & Co.....	*6 00
S. M. Smith.....	8 50	William Guinand.....	6 24
At Brooklyn, N. Y.:		At Gosport, Va.:	
Treadway & Wells.....	6 75	Peters' Brothers.....	*7 30
Felt & German.....	7 27	At Mare Island, Cal.:	
A. R. Bass.....	*5 85	A. M. Ebbetts.....	*19 74
Jno. Leitch.....	7 43	A. Powell.....	30 00
At Philadelphia, Pa.:			
Treadway & Wells.....	5 99		

Offers for supplies under advertisement dated June 7, 1870.

Class, No. 1. Kerseys, &c.:		Wilson & Stellwagen....	\$1,171 00
Charles Barnum.....	*\$41,227 50	T. A. Sloan.....	1,268 00
Peter Higgins.....	42,802 50	Seovill Manufacturing Co..	*1,055 00
F. W. Elder.....	45,523 00	Part of class No. 5. Military equipments:	
Benjamin Bullock's Sons.	41,690 00	Bent & Bush.....	1,787 25
Jno. Dobson.....	42,720 00	Horstmann Bro's & Co...	*927 25
Class No. 2. Flannels, &c.:		Wilson & Stellwagen....	1,019 25
Charles Barnum.....	19,000 00	Tim. A. Sloan.....	1,010 00
William Mathews.....	*17,715 00	Part class No. 6. Cap-pouches:	
Ellington Williamst.....	12,800 00	Horstmann Bro's & Co...	*230 00
F. W. Elder.....	13,650 00	Part class No. 6. Bayonet scabbards:	
Benjamin Bullock's Sons†	14,700 00	Wilson & Stellwager...	*427 50
Class No. 3. Linens, &c.:		Part class No. 6. Knapsacks:	
David Lamb.....	10,610 00	Tim. A. Sloan.....	*2,250 00
Charles Barnum.....	10,610 00	Class No. 7. Making and trim- ming clothing:	
William Mathews.....	*10,175 00	Charles Barnum.....	*19,966 50
F. W. Elder.....	11,370 00	Jacob Reed.....	21,732 50
Class No. 4. Caps, &c.:		Daniel W. Noe.....	27,240 50
Bent & Bush.....	*5,193 00	Hubbard & Miller.....	21,194 00
Horstmann Bro's & Co...	7,610 00		
Wilson & Stellwager....	8,098 00		
Part class No. 5. Buttons:			
Bent & Bush.....	1,070 00		
Horstmann Bro's & Co...	1,124 00		

* Successful bidders.

† Part of class No. 2.

W. B. SLACK,
Quartermaster Marine Corps.

HEADQUARTERS MARINE CORPS,
Quartermaster's Office, Washington, November 14, 1870.

No. 12.

DARIEN EXPEDITION.

PORTLAND, MAINE, *September 12, 1870.*

SIR: I have the honor to submit to the Department the following report of the operations and results of the expedition under my command for the exploration of the Isthmus of Darien.

My instructions were dated the 10th of January, 1870, and the vessels selected were the *Nipsic* and *Guard*, at New York, and the *Nyaek*, of the Pacific squadron, was ordered to report to me at the Gulf of San Miguel. The latter from various causes did not reach her station till April 14, about the closing up of the season, too late to be of any assistance to the land operations, but proceeded to make surveys of the Savanna and Bayamo Rivers. Besides, a company of 60 marines, under Major Houston, was placed at my disposal, hostilities being feared with the natives of Darien.

My instructions required a survey of such portions of the Isthmus of Darien as might be supposed suitable for the construction of a ship-canal.

Our knowledge of the Isthmus, the orology of the interior, and the position of the harbors produce but three routes, and their vicinity, that come within the range of inquiry. The northwestern extremity, called the San Blas route; the central, commonly known as the Darien route, between the noble harbors of Caledonia Bay and the Gulf of San Miguel; and the transit, through the valley of the Tuyra, across the divide in the neighborhood of the Paya or Pucra Rivers. Other portions of the Isthmus do not enter into the problem, because possessed of no harbors. Six months of the year a tremendous sea breaks upon a coast studded with reefs and shoals, and the mountain outline, plainly visible from the Atlantic, proves that nature gives no favorable aid for the construction of the desired canal.

The transit by the way of the Tuyra was out of the question, requiring the main portion of the survey to be carried on from the Pacific, for which no preparations had been made, and to wait for them would have been to lose the season.

The choice lay between the San Blas and Darien routes. The former looked certainly the most encouraging, and the one from which we might expect success; presenting from the sea a greater amount of low ground than any other portion of the Atlantic coast of the Isthmus; in length but twenty-six miles, and its interior free from the mountain Indians, the danger from which had been presented to us in every magnified form. The Darien, therefore, presented the most difficulties, both natural and physical, but I considered it would be best to meet them when our force was vigorous, full of enthusiasm for the work, and excited by its novelty. Accordingly the expedition was ordered to rendezvous at Caledonia Bay, at which the *Guard* arrived February 19, and the *Nipsic* on the 21st, by way of Aspinwall, to which place she had proceeded to communicate with President Correoso, of the State of Panama, and to procure native laborers. His excellency expressed great interest in the objects of the expedition, sent orders to the different alcaldes to aid us in every way they could, and proffered every assistance in his power. He desired that an officer of the government might accompany the expedition, to which I cordially assented. Señor Don Blas Arosemena was appointed to this position.

In addition to the officers of the naval force and marines, there were attached to the expedition two assistants and two sub-assistants, and one draughtsman of the Coast Survey, three telegraphers, two mineralogists, and one photographer.

The Darien route, to which I first proposed to direct our attention, runs from Caledonia Bay to the headwaters of the Sucubti, follows that river to its junction with the Chucunaqua, thence in a westerly direction to the junction of the Lara and Savanna, and down the latter river to the Pacific. It was the path by which Balboa, in 1513, crossed and

made the first discovery of the Pacific; the track of the Buccaneers in most of their incursions upon the Spanish settlements of the Pacific; as well as the spot selected by Patterson to found his colony, and where most of this unfortunate body perished, the remains of their fort on Point Escoces being still visible.

A force of English, American, and French vessels assembled in Caledonia Bay in 1854, for the purpose of exploring this route. But from various disheartening causes nothing came of this expedition but the unfortunate attempt of Lieutenant Strain, in which he became lost in the wilderness, and finally rescued after wandering for three months, and enduring most incredible and heartrending sufferings. Mr. Gisborne, an English engineer, crossed with Indian guides. Dr. Cullen also claims to have crossed and discovered a route for a canal with a divide not over 200 feet. Some attempts had also been made from the Pacific by Captain Prevost and Mons. Boudiol, but neither penetrated much beyond the Chucunaqua, and the English party having suffered a loss from the Indians, quickly retreated.

It will be perceived that though this route had long been known, no reliable data existed of its topography, and though the reports of the above explorers, excepting Cullen, had been in its disfavor, a regular survey became necessary to clear away the doubts from a line prominent from its excellent harbors.

Upon our arrival, while preparations were being made on shore for the commencement of operations, I held several interviews with the Sassardi and Caledonia tribes of Indians—succeeded in establishing a feeling of good will, as also permission to pass through their country, and a promise of guides.

The natural difficulties of surveying are very great. The whole face of the country is covered with a dense primeval growth, through which a path had to be cut with great labor, and in which no idea could be formed of the surroundings till actually met, while the suspicions and ignorance of the Indians prevented us from availing ourselves of any knowledge they possessed. In this case the most expedient as well as the most practical method was to survey up the various water courses, which gave us, of course, the lowest levels, and would direct us to a pass if such existed.

While a party were at work exploring the Washington and Aglaseniqua Rivers, I left the ships with a large force on the morning of February 25, carrying our own provisions for a week, for the purpose of exploring the Aglamate River, of determining the best line to carry forward the survey, of crossing the divide to the Sucubti, of passing down that river as far as our provisions would allow, and of meeting the mountain Indians, with whom I was extremely anxious to have an interview. Opposition from them would have been a serious obstacle in carrying on our work, and it was necessary that I should first see them before they met any of our people, to assure them of our friendliness, to encourage pleasant relations, and, at the same time, under such a display of force as would intimidate them, should they entertain hostile relations. This force returned after an absence of a week, having fully accomplished the objects of the reconnoissance. It penetrated some distance down the Sucubti, and I met the old chief of the Sucubtis, with whom I held probably the first council that ever met in the interior of Darien. The natural suspicion of the Indian prevented me from obtaining much information of the country, but I came to such an understanding with this tribe that subsequently, when our people passed through their territory, no objection or opposition was made to them. From

information gathered on this exploration, and from the other party that had been at work during my absence, I decided to survey up the valley of the Aglaseniqua, being in the most direct line, and thence seeking the lowest divide, to strike across in a west by south course to the Chucunaqua. The surveying party numbered all together about fifty-six men. This included, besides those actually employed in the survey, a dozen Macheteros, an escort of marines, the telegraph party, and cooks. As it was impossible to convey provisions for such a large number, I determined to use donkeys in their transportation. For this purpose I proceeded in the Nipsic to Cartagena to procure them, as also a supply of laborers, those obtained at Aspinwall having mostly proved worthless.

The survey pushed inland for about four miles, when the country became so cut up with rocky ravines as to become entirely impassable either for surveying operations or the transportation of supplies. I ordered it to be recommenced at the forks of the Aglaseniqua, about two and a half miles from the beach, follow up the right fork, selecting the best ground, and push across the divide to the Sucubti. Following these instructions, the survey was carried forward over a very broken and hilly country, across the dividing ridge to the Sucubti, reaching the latter river with the level about March 31, and finding its elevation to be 553 feet. During the operation of leveling, careful observations had been taken with the mercurial barometer at different bench marks, whose heights were accurately determined, and the extreme error of this instrument was never found to exceed 10 feet above or below the true altitude. A standard barometer at the observatory was carefully noted every half hour whenever this instrument was used in the measurement of altitudes.

The very unfavorable result thus far obtained in this survey rendered it unnecessary to continue the laborious process of leveling, unless a careful barometrical reconnoissance should give such results as to render this line practicable with a tunnel of seven miles or less, in which case I intended to carry the level line across to the Pacific.

Assistant Sullivan was detailed to make the survey down the Sucubti, accompanied by Lieutenant Schulze in charge of observations, Ensign Collins, and Mr. Carson, mineralogist, with an escort of forty marines under Major Houston and Lieutenant Goodrell. Their instructions were to proceed to the junction with the Chucunaqua, taking frequent and careful observations with the barometer, which was placed especially in charge of Mr. Carson. They left camp on the 5th of April, equipped with seven days' provisions. They reached the Chucunaqua during the forenoon of the third day after a toilsome march, which was about the time I had allowed them. The junction of the two rivers presenting rather the appearance of a tributary to the Sucubti than the reverse, they were in doubt if they had reached the point I designed, and continued on some fifteen miles further, when they were convinced they were on the Chucunaqua. While on the latter part of their journey, the barometer was broken, which prevented us from having check observations on the return. But as two separate notations were taken each time, the results can be wholly relied on. The mistake in not knowing the junction of the two rivers lost them three days of valuable time, increased the toil and labor of the march, and prevented as careful a survey of the Sucubti as could have been desired. But the main object of the reconnoissance, careful barometrical measurements of different points of the Sucubti, and its junction with the Chucunaqua, was attained. While these surveys were in progress, my attention had been drawn to the vicinity of

the Sassardi River, at the northern extremity of Caledonia Bay, some ten miles distant from the present operations. The country here was broken up into a number of detached hills, none over 600 feet high, and no mountains beyond visible from the sea. All the maps in our possession placed the sources of the Morti, a tributary of the Chucunaqua, within four miles of the Atlantic coast; and supposing them correct, I had good reasons to believe the hills we saw formed the divide, and good hopes of finding a moderate elevation or a mountain pass.

The Nipsic was ordered round to Sassardi Harbor, and a party from her organized to survey this route. Lieutenant Hubbard, Ensigns Moser and Jasper, Assistant Mossman, and Mr. Bowditch, mineralogist, were detailed for this party, and the friendly attitude of the Indians enabled me to dispense with an escort, beyond a small camp guard. This party, not numbering more than twenty-five, were kept supplied from the Nipsic, thirty men going forward every five days with provisions in bags. Though it tasked our resources to the utmost, keeping two large parties in the field widely separated, I was anxious to thoroughly survey this region, in a manner admitting of no doubts, before the rainy season commenced.

The survey of the Sassardi was successfully carried forward, showing a much lower corresponding level than the Darien for about three miles from the beach, passing through a most beautiful and fertile valley. From this point, however, the Sassardi, winding round precipitous hills, and flowing through deep gorges, no longer presented the same favorable appearance, until, some ten miles from the sea, it forked at the foot of a mountain range that proved to be the true divide, though invisible from the sea. After much labor, the level line was carried over the dividing ridge to the Morti, whose elevation at this point was found to be 284 feet. This was a great disappointment, and arose from the fact that the position of the Morti was some six miles in error, and the dividing range was hid from view on the sea by intervening hills. The instruments used on the survey of the Darien were the surveyor's compass, chain, and engineer's level; on the Sassardi and Morti, the gradienter, a very light and convenient instrument, and chain. The courses, as read from the arc of the gradienter, being difficult to plot, a surveyor's compass was afterward combined with the gradienter. The information gathered in these various works, which comprised twenty-two miles of level run, thirty-two miles chained, sixty-nine miles of paced reconnoissance, with barometrical observations, and many miles of road constructed for the transportation of supplies, convinced me of the impracticability of either of these routes; and it would have been a waste of time and labor to continue these surveys beyond this point, the object of the expedition being to settle the availability of certain routes, rather than a general exploration of the Isthmus of Darien.

An interoceanic canal, to embrace all the advantages accruing from the union of the oceans, and to give to commerce a passage without hinderance or delay, should partake of the nature of a strait; and not until the latter is found to be impossible in any location whatsoever, will a canal overcoming the difficulties of transit by locks become a desirable mode of construction. This canal must therefore be an open cut through the Isthmus, or must at certain heights pass through the mountains by a tunnel. I take the general ground that above the altitude of 190 feet tunneling is more economical than open cutting, the dimensions of a tunnel being 70 feet in width and 120 feet in depth; and that no line involving a tunnel over seven miles in length could be

considered practicable from the great expense incurred, placing it beyond the limit of a profitable enterprise. Considering the depth of a canal to be 30 feet, an altitude of 160 feet on the line will represent a cutting of 190 feet in depth, or the point where tunneling rather than open cutting would be resorted to. Let these tests be applied to the Darien and Sassardi and Morti routes.

The various water-courses on the Atlantic had been followed up to their sources with no indications of a pass, did not the elevation of the Sucubti, 553 feet, place any valley or divide under this elevation out of the question. The Sucubti, with its tributaries, the Napsati and Asnati, drain all the region on the Darien line; its bed, therefore, represents the lowest possible profile. The height of the junction of the Sucubti and Chucumaqua was found by careful barometrical observations to be 146 feet. Allowing to all these observations the extreme error, 12 feet, found by experiment, there will be found a distance of ten miles on the Darien route from the elevation of 160 feet on the Atlantic to a corresponding height on the Pacific slope; in other words, a tunnel of this length would be required. In addition, there would be an average cutting of 130 feet for ten miles or more, and the Chucumaqua to be crossed by a costly aqueduct. The route via the Sassardi and Morti presents pretty much the same results.

The junction of the Sucubti and Chucumaqua had been laid down by most explorers at 90 feet. The junction of the latter river and the Morti is from five to seven miles above, and when the true height of the mouth of the Sucubti was found to be 146 feet, the mouth of the Morti, allowing for all errors, could not be less than 160 feet. An inspection of the profile of this line would show a tunnel of not less than eight miles necessary, besides very deep cutting in the valley of the Sassardi. The height of the Morti, by level 284 feet, precludes any hope of a pass under this elevation, which our reconnoissance, independent of this fact, had failed to educe.

No further surveys of these routes were necessary to give proof of their impracticability; and though it would have been a matter of pride to have crossed to the Pacific by one of these lines, the non-arrival of the Nyack would have made it difficult for us to have carried provisions for the return. Such an exploration being no longer necessary to carry out the objects of the expedition, I considered our time and labor could be spent to a better profit in the examination of another route.

The expedition sailed from Caledonia Bay on the 20th, and arrived off the mouth of the Mandinga, Gulf of San Blas, on the 22d of April. The latter is a most magnificent harbor, approached from the sea by several wide and deep passages between the reefs, and affording perfect shelter for countless numbers of vessels.

The San Blas route stretches in a southerly direction across the Isthmus, following the valleys of the Mandinga and Marmoni Rivers to the junction of the latter with the Bayamo or Chepo River, twelve miles from the Pacific, these twelve miles having a depth suitable for ship navigation. It had been partially surveyed by engineers sent out by F. M. Kelley, Esq., of New York, in 1864. They commenced from the Pacific side and leveled up to the sources of the Marmoni; from thence their survey loses its accuracy, using only the aneroid barometer, with no standard at the sea, an instrument that our experience has proved to be very inaccurate in this rugged country. My object was to run our levels from the Atlantic over the divide, and connect with the end of the leveled line of Mr. Kelley. This would give us a line of levels that, following water-courses that flow transversely across the Isthmus, would

give us the lowest possible profile, and settle the question of its usefulness. I had great doubts of being able to accomplish this, for the period of the rainy season had arrived, the severe labor of the past surveys had told upon our force, while the charm of novelty no longer remained to lighten the exertions required to push on through the dense undergrowth of the Atlantic slope.

The principal rivers flowing into the Bay of San Blas are the Mandinga, the Nercalagua, and the Carti. The Mandinga has two mouths, which join about three miles from the sea, and is the largest river on the Atlantic between the Chagres and Atrato. It is a sufficient example of the general inaccuracy of the maps of the Isthmus, to state that in some this river was not laid down at all, and in others very much out of position.

Our main survey was carried up the valley of the Mandinga. The valley of the Nercalagua being more in a direct line, was also leveled up some sixteen miles to its sources. I will not enter into the detail of these surveys; they were carried forward to a successful end in spite of very heavy rains during the month of May, the fall of which was greater than ever known by the older residents of the Isthmus at this season. The lower portion of the bottom land of the Mandinga became one vast swamp, with from two to six feet of water over it. In some places one would sink to the waist in mire. Small streams became rivers, only passable by swimming; our bridges were swept away, and it even happened that at times the rise of water was so rapid as to compel our people to take refuge and pass the night in the trees. Happily the waters would subside very rapidly, enabling us to continue after vexing delays, in which each rise left the country in a worse condition than before. Our animals were useless in such a condition of affairs, and provisions, after being sent forward by boats as far as they could be forced against the swift current of the river, were carried on men's backs over miles of country, whose path led over steep, rocky hillsides, slippery from moisture, through streams and swamps.

The survey crossed the divide on the 7th of June, with an extreme elevation by level of 1,142 feet. The country on the Pacific slope was a complete change—no longer the dense undergrowth of the Atlantic side, but large trees and forests open to sunlight, through which the line could be run with but little cutting, and charming weather.

The objective point, the junction of the Marmón and San José Rivers, the same reached by Mr. Kelley's engineers, was attained. The latter's survey was found to vary but half a mile in position, an excellent verification of its correctness, as it started from the Pacific shore more or less in error, while the initial point of our survey was absolutely established by astronomical observations.

The magnificent harbor of San Blas, the shortness of the route, only twenty-six miles, the general appearance of the interior from the sea, all gave great hopes that we should here find the favored spot for the successful accomplishment of our mission. But the prosecution of the survey, though it showed a more gradual rise to a certain distance than the other routes, developed an altitude that would require tunneling to surmount. The Pacific slope is more gradual in its descent than the Atlantic, and consequently the mountain area on this side is more extended. An inspection of the profile gives us a tunnel of ten miles as necessary to span the intermediate distance between the cut of 190 feet on each side; after this the excavation would not exceed for the remaining sixteen miles an average depth of over 60 feet. A tunnel of ten miles would involve for this line, otherwise so prepossessing, an expenditure too vast to enable me to pronounce upon its practicability.

Upon our arrival on the Isthmus, I placed Commander Lull in charge of all the hydrographic work. Full surveys were made, under his direction, of Caledonia and Mandinga Harbors, and the outlying islands and reefs in the main passage of San Blas.

The Nyack, Lieutenant Commander Eastman, arrived at the Gulf of San Blas on the 14th of April. Though too late to take part in land explorations, Lieutenant Commander Eastman entered with alacrity into the duties assigned him, the surveys of the Savanna and Bayamo Rivers. A depth of twenty feet in each of these rivers at low water could be easily obtained by a small amount of dredging, and though the admiralty chart gives but 6 feet at low water on the Bayamo bar, Lieutenant Commander Eastman discovered a passage with $2\frac{1}{2}$ fathoms, showing that both of these rivers were capable of ship navigation, had the nature of the interior admitted of their usefulness for an interoceanic canal.

In all our surveys the telegraph line had been constructed by the operators in charge with ability and perseverance, and was of the greatest service. By its means the work of each day was plotted on the following, the course of the survey was known, and instructions forwarded. The wire used was very light, weighing 100 pounds to the mile. It was not found adapted to this work, requiring a number of men to transport and construct, and its insulation was frequently destroyed by falling branches. An insulated wire, though its first cost would be much greater, I should recommend in preference, as easily run out on the ground by two persons and insuring at all times a perfect current.

A number of photographic views were obtained, but though the scenery of the country was often grand and picturesque, the density of the foliage and the difficulties of transportation prevented an extended use of photography. The geological formation of the elevated portions of the different surveys were trap, granite, and syenite. Near the coast the substratum is coralline. Numerous veins of pure copper were met with on the Sassordi route, and indications of iron ore were met with in all the mountains.

The health of the expedition has been excellent, and was a surprise to all. There were several cases of fever, but of a mild type, arising from fatigue and exposure rather than climatic causes. All parties in the field were required to wear flannel next to the body, and a tablespoonful of whisky and quinine was served out to each every morning.

The exploration of three routes, and the collection of data sufficient to judge of their practicability, coupled with the fact that we could not reach the ground till the dry season was half over, sufficiently attest the earnestness and energy with which this expedition prosecuted its work.

All the officers and civilians evinced great enthusiasm for the enterprise, patience under hardships, and zeal and thoroughness in the different tasks they were given to execute. To them, and the vigor and ability with which they carried out my instructions, I am indebted for the amount of work performed.

Though unsuccessful in the cherished object of my hopes, the discovery of a line for the union of the two oceans, in the elimination of three routes from the number to be investigated, and the consequent narrowing of the field of research, I feel I have carried out the expectations of the Department, who have honored me with the command of this expedition.

I have the honor to be, sir, very respectfully, your obedient servant,
THOS. O. SELFRIDGE,
Commander United States Navy.

Hon. GEORGE M. ROBESON,
Secretary of the Navy, Washington, D. C.

List of officers and civilians attached to the expedition for the survey of the Isthmus of Darien.

NAVIC.—Commander Thomas O. Selfridge, commanding; Lieutenants S. Hubbard and E. McCormack; Master G. S. Davol; Ensigns J. S. Moser, R. T. Jasper, and N. E. Niles; Passed Assistant Paymaster J. P. Loomis; Passed Assistant Surgeon W. J. Simon; Captain's Clerk, E. S. Casey; First Assistant Engineer W. S. Smith; Second Assistant Engineer L. C. Safford.

GUARD.—Commander E. P. Lull; Lieutenants G. S. Schulze and R. D. Hitchcock; Masters F. Collins and J. G. Eaton; Ensigns A. Elliott and J. M. Hawley; Passed Assistant Paymaster F. Bissell; Assistant Surgeon A. Griffith; Captain of Marines, G. P. Houston; Lieutenants of Marines, M. G. Goodrell and S. K. Allen.

CIVILIANS.—Assistant J. A. Sullivan, United States Coast Survey; Assistant A. T. Mosman, United States Coast Survey; Sub-Assistant H. G. Ogden, United States Coast Survey; Sub-Assistant H. L. Marindin, United States Coast Survey; Draughtsman, L. Karcher, United States Coast Survey; Mineralogists, I. P. Carson and E. W. Bowditch; Chief telegrapher, W. H. Clarke; Assistant telegraphers, Calvin McDowell and A. J. Gustin; * photographer, T. H. O'Sullivan.

No. 13.

DESTRUCTION OF THE PIRATE FORWARD.

No. 22.]

NORTH SQUADRON, PACIFIC FLEET,
UNITED STATES FLAG-SHIP OSSIPEE, (3d rate,)
Mare Island, California, July 12, 1870.

SIR: The steamer *Continental* arrived late last evening from Mazatlan, bringing dispatches from Commander Low, all of which have been transmitted to the Department by to-day's mail. She also brought three of the men wounded in the attack upon the *Forward*, and the remains of Ensign Wainwright.

I telegraphed to you last night, informing you of the *Mohican's* losses, and again this morning that full dispatches were on the way to Washington.

Commander Low informs me that he was to sail from Mazatlan to Panama soon after the 1st of July, which is his last date.

I am, sir, very respectfully, your obedient servant,

WM. ROGERS TAYLOR,
Commodore Commanding.

HON. GEORGE M. ROBESON,
Secretary of the Navy.

No. 23.]

NORTH SQUADRON, PACIFIC FLEET,
UNITED STATES FLAG-SHIP OSSIPEE, (3d rate.)
Mare Island, California, July 12, 1870.

SIR: The dispatches of Commander Low, of the *Mohican*, were read by me but hastily in my desire to send them to the Department at the earliest moment. I believe, however, that they give a full account of all his proceedings, and his reasons for them.

I have required a statement from Assistant Surgeon Gillespie, who came here in charge of the wounded, but it differs in no material respect from the report of Commander Low.

I have just had an interview with Mr. Isaac Sisson, United States consul at Mazatlan, who came here in the steamer *Continental* last

* Discharged for misconduct at Cartagena, South America.

evening. He asserts that the *Forward* was decidedly piratical; that, besides the raid upon Guaymas, she attempted the capture of a *conducta* from some place in the interior, which barely escaped; that she was flying the San Salvador flag, though acting under the orders of the Mexican revolutionist, Vega, who had, however, made no pronunciamiento, nor was any revolution in progress; and that San Salvador was at peace with Mexico.

He further states that Commander Low decided upon his course of action after free conference with Governor Rubi, of the state of Sinaloa, General Darlus, commanding the forces in that state, and himself; and that the attack was made at the request of those Mexican authorities.

He asserts his conviction that it was the intention of the commander of the *Forward* to attack, and capture, if possible, one of the Panama steamers, and perhaps the *Continental*, which runs between Guaymas, Mazatlan, and San Francisco.

Mr. Sisson will start for Washington in a few days, and has promised me that he will call upon you as soon as he shall have presented himself at the State Department.

I am, sir, very respectfully, your obedient servant,
WM. ROGERS TAYLOR,
Commodore Commanding.

HON. GEORGE M. ROBESON,
Secretary of the Navy.

No. 39.]

NORTH SQUADRON, PACIFIC FLEET,
UNITED STATES FLAG-SHIP *OSSIPEE*, (3d rate,)
Mare Island, California, July 15, 1870.

SIR: A rumor was prevalent last week, coming here via Havana and New York, that an encounter of some sort had occurred between the *Mohican* and *Forward*. One account stated that the former was destroyed, but the next day's paper said the latter had been.

All doubts were dispelled, however, on the evening of the 11th instant by the arrival here of the Mazatlan steamer, bringing dispatches from Commander Low to the Secretary, detailing the affair. She also brought three wounded men and one sick, under charge of Assistant Surgeon Gillespie, and the remains of Ensign Wainwright for transportation to the East.

I presume that full accounts have been sent to you by Commander Low. I have received from him an unofficial letter only, giving me some particulars.

Lest, however, his dispatches should fail to reach you, I will now communicate to you the main facts of the affair, as gathered from Commander Low's letter, from the statement of Dr. Gillespie, and from conversations with Mr. Isaac Sisson, United States consul at Mazatlan, who is now here on his way to Washington.

The steamer *Forward*, formerly a gunboat in the British navy, sailed from this port for the coast of Mexico some time ago, ostensibly to be employed in the oyster and fishing trade. Soon after her arrival upon the coast, she was seized by an armed party who professed to be acting under the orders of a Mexican named Placido Vega, who was formerly governor of Sinaloa, but who holds no office at present under the Mexican government. A raid was made upon Guaymas, and much property was seized there by forced contributions from foreign merchants.

An attempt was made to capture a *conducta* crossing from the interior to the coast, but it was unsuccessful. Mr. Sisson states that Vega's orders to this party were to attack La Paz also, and levy a contribution. He says that trade was paralyzed on the coast in consequence of these acts, and that merchants felt themselves at the mercy of freebooters. It was commonly believed that they intended to capture, if possible, one of the Panama steamers, and the Continental, belonging to the North Pacific Transportation Company, for the sake of plunder.

Vega signed his orders to this party as general commanding the State of Sinaloa; he had, however, issued no pronunciamiento, nor was any revolution in progress; the *Forward* flew the San Salvador flag all the time, although San Salvador is at peace with Mexico.

The *Mohican* arrived at Mazatlan about this period, and Commander Low was earnestly requested by Governor Rubi, of the state of Sinaloa, General Darlus, commanding the forces, Señor Supulvida, collector of the customs at Mazatlan, and himself, to take the *Forward*. He appears to have deliberated seriously upon the subject before resolving upon his action, and seems to have felt convinced that his duty required him to capture a pirate, as he regarded the *Forward*.

Learning that that vessel was in the Teacapan River, he dispatched a force of seventy-nine men in six boats, all under the command of Lieutenant Brownson, the executive officer, on the morning of the 17th June; after pulling about forty miles the *Forward* was discovered at anchor and was immediately boarded; only seven men were found on board and they were made prisoners. The vessel's guns had been mounted in a battery on shore. A boat was seen pulling away from the *Forward* and Ensign Wainwright was sent in pursuit; failing to comply with his orders to stop she was fired into, when the battery on shore opened fire with grape and shrapnel, killing the coxswain, wounding Mr. Wainwright and two men. The fire from the shore was then directed to the steamer, but the high bulwarks forward protected greatly the *Mohican's* men. Four more only were wounded. The vessel being aground in five feet water and drawing seven, Lieutenant Brownson set fire to her and withdrew his party. He reached the ship about two o'clock of the afternoon of the 18th June. The next day Mr. Wainwright died. His remains were embalmed and delivered to Wells, Fargo & Co. for transportation to his friends. The wounded men and the sick one have been received into the hospital at Mare Island.

On the 11th instant, at 10 p. m., I telegraphed the attack and the losses of the *Mohican* to the Secretary.

On the 12th, at 10 a. m., I telegraphed to him that full reports would go by the mail of that day.

I then wrote to him, repeating the substance of my telegraphic dispatches.

Later in the day I received a visit from Mr. Sisson, our consul at Mazatlan, and then wrote again to the Secretary, embodying such information as I received from him, all of which is contained herein.

At 2 p. m. I received a telegram from Vice-Admiral Porter, directing me to send full reports of the encounter, to which I immediately replied that they had already been sent, and at 3 p. m. I telegraphed to the Secretary the principal points of Mr. Sisson's statement to me.

The prisoners, six in number, (one having escaped,) were delivered to the Mexican authorities, at Mazatlan, by Commodore Low.

His last date to me was the 1st July, and he informed me that he intended to sail for Panama immediately.

Commander Low earnestly states the necessity, in his opinion, that a man-of-war should always be stationed on the Mexican coast.

I am, sir, very respectfully, your obedient servant,

WM. ROGERS TAYLOR,
Commodore United States Navy, Commanding.

Rear-Admiral THOMAS TURNER,
Commanding Pacific Fleet, Callao, Peru.

UNITED STATES STEAMER MOHICAN, (3d rate,)
Off Mazatlan, Mexico, June 19, 1870.

SIR: I have the honor to report that on the 6th instant information was received by the United States consul at this place from our consul at Guaymas, Mexico, that the steamer Forward, bearing the San Salvador flag, had, on the night of the 27th ultimo, landed between one hundred and two hundred men of different nationalities, taken possession of and robbed the custom-house, forced the foreign merchants to contribute funds and goods to a large amount, compelled the United States consul, under protest, to supply coal for the steamer, and taken on board, as hostage, a civil officer of the Mexican government; thus, in a time of profound peace between the governments of Mexico and San Salvador, committing acts of war. Merchants of this place received at the same time information of the same tenor; the contributions were extorted from foreigners, Spanish, German, English, and American merchants having suffered, and no declaration of a condition of revolution was made by the leaders of the marauding party, nor were the colors of the vessel changed. The vessel claimed, I am told, to be acting in the interests of Placido Vega; but Vega had not declared himself to be actively engaged in revolution; everything in the civil condition of the country here, and at San Blas or Tepic, where Vega was supposed to be, was believed to be quiet, no active civil war existing, and the existence of a civil war on this coast not having been recognized by the President of the United States. Feeling satisfied that this vessel was acting as a vessel of war, without having a proper commission so to act; that she was fitted out on the pretense of being engaged in acts of civil war, but in reality for the purpose of robbery, I deemed it my imperative duty to regard her as a piratical craft, and, in the assurance of the security of navigation, equally my duty to pursue, and, if possible, to capture or destroy her.

Consequently I immediately made preparations for getting under way under steam, it being reported that the Forward was still in the Gulf of California, probably at Altata or La Paz. On the same night we left this port and ran under easy steam to Altata, anchoring there on the morning of the 8th. A boat sent to the town obtained no information; but as it was detained by the state of the bar till evening, we did not get away till about midnight; then standing on under easy steam for La Paz, anchoring in Pichilique Bay early in the morning of the 10th, and commencing at once to take in coal from the Government coal there. A boat sent to La Paz to communicate with the consul, Mr. Turner, returned with him about noon; but he could give me no information regarding the movements of the Forward; she had not visited the vicinity of La Paz. Having taken on board fifty-nine tons of coal, we got under way on the 11th, at about noon, and steamed through the

San Lorenzo Channel to an offing outside of Ceralbo Island, hauled fires and continued to this port under sail.

On arriving here, on the afternoon of the 14th, I was informed by Mr. Sisson, United States consul, that authentic information had been received here to the effect that two days previously the *Forward* was at Chacala, a port twenty-seven miles below San Blas. I also received additional information confirmatory of my opinion that the *Forward* was a piratical craft under the law of nations, and that I should be derelict in my duty not to make every effort to take her. As soon as steam could be got we left again, getting under way about 10 a. m. on the 15th, and reaching San Blas, where I stopped for information at about half-past nine a. m. of the 16th; a boat was sent in to gain intelligence, the officer reporting on his return that he had learned that the *Forward* was no longer at Chacala, but had gone to Boca Teacapan, a place about half-way between San Blas and Mazatlan, for the purpose of going up the river and landing her plunder. We immediately hove up and stood for that locality, arriving at daylight on the next morning, the 17th; manned and armed six boats at once and sent them in under command of Lieutenant W. H. Brownson, executive officer, with instructions to find the piratical steamer and bring her out; the boats passed through the surf on the bar at about seven o'clock, and an hour later Mr. Brownson signaled to the ship that the *Forward* was in the river, and that he was going in search of her. The party returned on the ensuing day, the 18th, at about half-past two o'clock p. m., reporting the capture and destruction, by burning, of the *Forward* under a scathing fire from four 12-pound field-pieces and the rifles of the one hundred and seventy men who had removed from her on the same afternoon to a position on shore, the better to defend her; bringing to the ship the remains of James Donnell, coxswain, killed, and reporting two officers and six men wounded. The boats had pulled nearly ninety miles since leaving the ship and had been under fire about one hour, all hands conducting themselves admirably, accomplishing the object of the expedition with the coolness and thoroughness of veterans, and extorting my unqualified admiration and approval.

It seems that the interior passages at that part of this coast form a network of lagoons and creeks, through which the tide ebbs and flows, that are very tortuous as to direction. Though the *Forward* was but eight or ten miles from the coast, the distance by the channels the boats were compelled to follow was forty miles from the mouth of the river or estuary.

The vessel had run on shore in turning a point, and her bow was raised in consequence; as she had been lately sold out of the English navy and was built for a gun-vessel, her bulwarks forward were thick and high, and in the position of the hull they afforded a breastwork for our party, giving partial protection from the fire of musketry and from the grape and canister of the four howitzers or field-pieces that the pirates had so planted ahead of the vessel that they raked her decks and swept her sides.

Though my instructions to Mr. Brownson did not expressly contemplate the absolute destruction of the vessel, still, in view of the circumstances of the case, the desperate resistance, and heavy fire in her defense, the loss sustained, and the utter impracticability of moving her, I regard his action as vindicated by the spirit of my orders and justified by the circumstances of the case; I must consequently give it my approval.

We got under way immediately after the return of the boats and steamed to this port, arriving on the morning of the 18th, at two o'clock; the necessity for obtaining, as promptly as possible, ice and other supplies,

regarded by the surgeon as essential for the welfare of the wounded, not justifying, in my opinion, the delay that the use of sail alone would inevitably occasion.

The wounded received immediately every care and attention. Donnell was buried at sea on the afternoon of the 18th, with the usual appropriate ceremonies and service.

I trust that my action in this emergency may meet with the approval of the Department, and that in the use of steam I may also be justified.

I beg to be permitted to bring to the favorable attention of the Department the ability and gallantry displayed by Mr. Brownson on this occasion, and the excellent conduct of every officer and man of the party, as worthy of honorable mention.

Lieutenant R. M. Cutts, a passenger on board this vessel under orders to join the flag-ship of this fleet, volunteered to accompany the expedition and was given charge of a boat. Commander's Clerk R. Baker also volunteered and obtained my permission to go with the party.

On board the Forward Mr. Brownson found George W. Holder, presumed to be mate, F. W. Johnson, presumed to be engineer, and four men, whom I propose turning over to the Mexican authorities at this place. A search was made for papers, but none could be found. As her regular papers, with which she cleared from San Francisco, are known to have been, at the time, in the custody of the court here, it is probable she had no papers on board.

In this affair I have endeavored to act with due deliberation; have satisfied myself that the Forward, according to Navy Regulations, paragraph 1,022, "was a vessel acting as a vessel of war, or a privateer, without having a proper commission so to act, the officers and crew of which shall be considered as pirates and treated accordingly."

I inclose herewith a copy of the report of Lieutenant Brownson, with a diagram of the position of the steamer; also, my orders to Mr. Brownson.

I have the honor to be, very respectfully, your obedient servant,

W. W. LOW,
Commander.

Hon. GEORGE M. ROBESON,
Secretary of the Navy, Washington, D. C.

UNITED STATES STEAMER MOHICAN, (3d rate,)
Off Mazatlan, Mexico, June 20, 1870.

SIR: I have the honor to report that, in obedience to your written order of the 16th instant, I proceeded, at daylight on the morning of the 17th instant, in command of the boats of this ship, across the bar and up the river Teacapan, for the purpose of cutting out the piratical steamer Forward. At 3 p. m., having proceeded twenty-five miles up the river and lagoon without learning anything definite, we fell in with a native fisherman, who informed us that the steamer was aground about fifteen miles further up the river. We accordingly pushed on, and at 7.45 p. m. we sighted the steamer about two hundred yards off, aground and heading in shore. We immediately gave way and went alongside, gaining the decks without opposition, and took possession of the steamer and six men who were on board.

Before gaining the decks of the steamer I directed Ensign Wainwright, in the first cutter, to cut off and capture a boat which was leaving the port bow. A few minutes after taking possession of the steamer

a shot was fired from the first cutter, which was immediately returned from shore by a volley of musketry, canister, and grape, which raked the decks and sides of the steamer. The first cutter received the brunt of the first volley and fell back to the ship, having lost her coxswain killed, Ensign Wainwright, Second Assistant Engineer Townrow, and two men wounded. We returned the fire with carbines and pistols from the bows, and with howitzer in launch off starboard quarter, using shrapnel with good effect. The pirates had deserted their ship and had sent on shore her battery of four 12-pounders and had placed them directly ahead of her, so as to rake her decks and sides. These pieces were flanked by men with small arms, who maintained a strong cross and raking fire throughout the engagement. I am informed that 170 men left the steamer to defend her from shore. Sharpshooters were also placed in mangrove bushes on port bow and quarter. After holding the steamer for about forty minutes, engaging the pirates the whole time, I saw that it would be impossible to bring her out, as she was hard aground and the tide falling, she drawing seven feet and having only five feet of water under her. I then determined to burn her, although not authorized to do so in your written orders. Accordingly, the wounded and six prisoners were placed in boats and shoved off. The ship was then fired in coal-bunker forward and in several places aft, in cabin and officers' quarters, using turpentine to insure success. The men were then sent in the boats, which were shoved off in good order, the first launch going under her stern and giving her a shrapnel between wind and water. We then proceeded down the river, and, having the wounded men in boats, I deemed it advisable to push directly on and to rejoin the ship. We reached the ship at 2.30 p. m. of the 18th instant.

The following is a list of the officers and boats of the expedition: Whale-boat, Lieutenant R. M. Cutts; first launch, Ensign Harry Knox; second launch, Ensign H. B. Mansfield; first cutter, Ensign J. M. Wainwright; gig, Ensign Richard Rush; second cutter, Assistant Surgeon J. E. Gillespie, and Mate W. J. Reardon. Second Assistant Engineer F. W. Townrow, Gunner J. R. Grainger, and the captain's clerk, Richard Baker, also accompanied the expedition. I beg leave to call your attention to the coolness and courage displayed by all the officers and men under my command. The coolness displayed by Lieutenant R. M. Cutts and Ensign H. B. Mansfield came under my special notice, as they were with or near me during the whole engagement. The gallant conduct of Ensign J. M. Wainwright, in rushing ahead to capture the boat, deserves special notice. I directed Mr. Rush to have the wounded and prisoners put in the boats, which orders were executed with promptness. Mr. Knox, in the first launch, did excellent service with howitzer. The men all acted well. The conduct of John Rollins, captain of fore-castle, Philip Moore, first sergeant of marines, F. Moulton, corporal of marines, George Williams, captain of top, William Cogan, machinist, and W. W. Hanold, yeoman, deserves special mention. Mr. Knox mentions Robert Ingham, boatswain's mate, for courage and coolness in serving howitzer under heavy fire. I also desire to call your attention to Alex. Von Galera, landsman, recently shipped at Mazatlan. When the pilot refused to take us across the bar on account of the heavy surf, he volunteered to show me a channel through which we could pass. His knowledge of the river was of great service to me throughout the day.

I inclose sketch showing position of steamer Forward.

Very respectfully,

W. H. BROWNSON,
Lieutenant United States Navy.

Commander W. W. Low, *Commanding.*

UNITED STATES STEAMER MOHICAN, (3d rate,)

June 16, 1870.

SIR: You will take charge of the boats prepared to go in the Taccapan River; you will please have all necessary arrangements made as far as possible this evening, that the boats may leave soon after our arrival off the bar. On reaching the bar, if the pilot thinks the surf too high for crossing, return to the ship and await a more favorable opportunity; if the pilot deems it practicable to cross, do so, keeping the boats well together that they may assist each other in case of accident, and proceed up the river to the anchorage of the steamer Forward. Endeavor to obtain possession of her, and bring her down to the bar in readiness to cross when the tide serves, under steam if she has sufficient fuel; if she has but little, preserve it for crossing the bar, and tow her.

I trust to your good judgment in carrying out my instructions, knowing that you must be governed very much by circumstances; you should use the howitzer, when within good range of the steamer, to intimidate her crew; and, when boarding, the boats should have stations for going alongside, one at each side at fore-chains, gangway, and quarter, as nearly as possible at the same moment; each boat's crew should act with the others as a consolidated force as much as possible.

On gaining the craft's deck all arms should be at once secured, the hatches closed, her field-pieces or howitzers taken possession of, the engine-room and engine secured, steam got up, or the cable slipped and the craft taken in tow, before the party belonging to her recover from their surprise and attempt recapture.

Should you find the force defending her so large as to render capture impracticable, make no attempt, but return to the ship. I trust, however, that you will meet with but little opposition, though you must be prepared to meet it.

Spare the men all unnecessary exposure to the sun.

Very respectfully,

W. W. LOW, *Commander*.

Lieutenant W. H. BROWNSON,
United States Steamer Mohican.

UNITED STATES STEAMER MOHICAN, (3d rate,)

Off Mazatlan, Mexico, June 20, 1870.

SIR: It is with heartfelt regret that I have to report the death of Ensign J. M. Wainwright on yesterday at 11.40 a. m.

Notwithstanding the unwearied attention of the medical officers, his system had become so much debilitated from loss of blood and want of nourishment, during the sixteen hours that transpired after he received his wounds before he reached the ship, that no reaction took place, and his strength gradually failed till he expired.

Intelligent and attentive in the performance of his duty, he was always prompt and zealous in its execution, giving promise of a career valuable to the service. In his private relations his amiability and gentlemanly character gained him everywhere attached friends.

His remains have been preserved, and will be sent to his friends, via San Francisco.

I have the honor to be, very respectfully, your obedient servant,

W. W. LOW, *Commander*.

Hon. GEORGE M. ROBESON,
Secretary of the Navy, Washington, D. C.

PACIFIC FLEET, U. S. FLAG-SHIP SARANAC, (2d rate,)
Harbor of Acapulco, Mexico, August 15, 1870.

SIR: Referring to my letter (No. 118) of yesterday's date, in regard to the affair of the United States steamer Mohican and steamer Forward, I cannot refrain from commenting upon the character of Ensign J. M. Wainwright, who fell in that conflict, knowing him intimately, as I did, the son of a gallant officer who fell in the service of his country during the rebellion.

I have rarely known a young officer of higher promise; possessed of rare and noble qualities as a gentleman, accomplished and intelligent, brave, and devoted to his profession, he united almost every essential that would have made him an ornament of it.

However much Commander Low may have been justified in this attack, and I have no doubt, from my knowledge of him, that he had powerful and, I trust, sufficient reasons for his action, and however successful he may have been, it has been attended by a sad sacrifice of one of the most gallant youths of our service.

Very respectfully, your obedient servant,

T. TURNER,

Rear-Admiral, Commanding Pacific Fleet.

HON. GEORGE M. ROBESON,
Secretary of the Navy, Washington, D. C.

PACIFIC FLEET, UNITED STATES FLAG-SHIP SARANAC,
San Francisco, California, September 3, 1870.

SIR: I deem it my duty to inform the honorable Secretary of the Navy that in an interview which I had this morning with Admiral Faguhar, the officer commanding the English naval forces in this sea, alluding to the affair between the Mohican and the steamer Forward, he remarked to me that he had given especial orders to his cruisers to capture this vessel after the information which he had received of her acts upon the west coast of Mexico.

I have pleasure in stating this because, whatever may be the views of the Department upon this subject, it is gratifying to know that if Commander Low erred in the course which he pursued in directing an expedition against this vessel, that the highest English authority in these seas had issued orders for her capture.

I may be permitted, also, not in justification of Commander Low's conduct at all, but simply to show the current feeling on this coast among naval men upon the question of this affair, that in leaving the English flag-ship this morning her commander remarked, alluding to this affair of the Mohican and Forward, "This is always the way with you American Navy officers; you are ahead of us when a ship of-war is required to be on the spot."

I have to mention the conduct of Lieutenant Brownson, who commanded the expedition from the Mohican, and to call the attention of the Department to Commander Low's report of him.

During an association of several months with this young officer, I formed so favorable an opinion of him that his action on this occasion has fully justified my former impressions.

Very respectfully, your obedient servant,

T. TURNER,

Rear-Admiral Commanding Pacific Fleet.

HON. GEORGE M. ROBESON,
Secretary of the Navy, Washington, D. C.

No. 14.

PASSAGE OF PALOS THROUGH SUEZ CANAL.

UNITED STATES STEAMER PALOS, (4th rate,)
Aden, August 22, 1870.

SIR: I have the honor to submit to the Bureau a report embodying such information as I have been able to gain in regard to the northern coast of Egypt, Port Said, the Suez Canal, &c.

The extreme heat of the weather has prevented me from learning a great deal that I have not, especially about the canal. With the thermometer standing at 102° in the shade, I could do no boat-work during the day.

Leaving Naples on the 3d of August, we experienced a daily aid from current of from ten to fifteen miles.

On the 9th of August, no land being visible, we made a tall, red open-work light-house, and closing it, two forts and other buildings on Rosetta Point came in view. The land is low and cannot be seen seven miles from the deck. Steering to the eastward, about four miles from the land, we ran into the discolored water of the Nile, the line of demarkation being very distinct. This at about 3° east of Rosetta. We experienced a very strong indraught, at least two miles per hour, while passing the mouths of the Nile and the bays. Tide being spring flood at the time, with northerly wind, may have caused some of this.

The sand-hills of Maestaro and Maksardera are easily recognized, and are good running marks. A strip of low sand beach divides the sea from Lake Bourlos; in the latter a large number of large native craft are seen, and by the mirage were at one time so lifted that they seemed in the open sea, the land strip being invisible. This might lead a vessel into trouble in night or during thick weather; close attention to the lead will, however, prove a sure guide, as the soundings are regular, and the Admiralty Chart No. — correct.

The inlet to Lake Bourlos is well marked. On the west side there is a round, conspicuous fort, seeming to be on an island, connected, however, with the land by a low strip; on the east side there is a village, several wind-mills, (one of which is very large, white, and conspicuous,) and a tall, white shaft. To the eastward of Bourlos Village the land is a series of sand-hills approaching close to the sea, and among them are several white towers. Six miles east of Bourlos, on a sand-hill, there is a high, red, open-work light-house, a good beacon by day and at night, showing a very brilliant fixed light, visible from deck for twenty miles; this light is on the northernmost part of the coast. It becoming dark, I was unable to get any more coast-marks, but ran by the lead and the lights. Before losing sight of the light last mentioned, we made a brilliant, revolving light on Damietta Point, which is visible twenty miles from the deck, and running by it we easily made the Port Said light, a very brilliant electric, flashing light, visible over twenty miles; Damietta light still plain in sight. All of these lights are recently built. With their aid the coast is very safe.

In the morning we made the light-house, the shipping, the houses, and the piers, at Port Said, in the order mentioned, and ran in and anchored in the basin.

Port Said is an easy place to find; striking the coast anywhere to the westward, the soundings and landmarks will give a position, and the shipping and light-house are as easily discovered as would be a fleet of ships a few miles distant at sea. Care must be taken against the

indraught, and not to be swept to the eastward by the current, which runs strong after rounding Damietta Point.

Off Port Said competent pilots came on board; they are required by the regulations of the port, and are very useful in selecting a berth. They carry a blue "Peter" in the bow of their boat.

The entrance to Port Said is through the maritime channel, which extends one and a half mile to seaward, and is kept with little trouble to a uniform depth of 26 feet, for 600 feet in width. It is marked with red buoys on the western side, and black on the eastern. At the extreme outer and inner buoys are moored light-boats, which show at 10 feet above the water, each two lights, red on the west and white on the east. The channel is protected by two piers, and runs nearly parallel with the western one, converging, however, from about 800 feet distant at the outer end to about 400 feet at the inner end.

The piers are formed of blocks of concrete, weighing over twenty tons each. They are made from the dredgings, mixed with cement, molded and hardened to a hard stone. These blocks are not placed very exactly under water, being dumped from lighters, each thus finding its own resting place. In consequence, there are many interstices through which the current and westerly winds bring quantities of deposit from the Nile. This is gradually forming a bank inside of the western pier, between it and the channel. It is expected that this bank will prove of benefit, eventually forming a natural breakwater in addition to the pier.

At the extreme end of the western pier is a low red light. The soundings at the end of this pier have decreased from 30 feet in 1869, to 7 feet. A bank is making off its end extending over 100 feet to the northeast, and across the channel, forming a shoal on the eastern side, the channel, however, being kept clear. The western pier should therefore be given a good berth, as this bank steadily increases. It is proposed to remedy this by, from time to time, extending the pier to seaward, until it shall be over four miles long, in five and a half fathoms, at which distance the Nile deposit will have little effect. The inner end of the western pier is found to be settling, and a new course of blocks is to be placed upon it.

The eastern pier is 1,800 meters (5,910 feet) in length, a green light on its outer end. It is distant from the western pier at its outer end 700 meters, (2,298 feet,) diverging to seven-tenths of a mile at its inner end. This pier is built the same as the other, and being exposed to very little action of sea or currents, remains as when built.

The harbor of Port Said is formed by a large artificial basin, subdivided on the western side into four smaller ones, all opening into the main basin. The first basin on the right (entering) is the commercial basin. It was originally 19 feet deep, but we, anchoring at its mouth, found but 15 feet. The decrease in depth is attributed to the large quantities of coal and other debris from the many ships that, since the commencement of the work, have laid here to discharge. The other three basins, viz., that of the Arsenal, of Ismail, and Cherif. I was informed, maintain their original depth of 20 feet to the first and last, and that of Ismail 26 feet. The Basin Ismail will prove an easily reached and safe anchorage for any large vessel. Coal of an excellent quality can be procured, and any repairs that a steamer might require can be made. There is a rise and fall of tide of 3 feet at spring, less than 18 inches at neap. A slight current sets seaward nearly all the time, except when driven in by westerly gales in winter, at which time the sea breaks entirely over the western pier.

Leaving Port Said at 7 a. m. on the 11th, we proceeded through the

canal to Ismaïllia, where we arrived at 3 p. m., having been detained nearly three hours in the "gares," waiting for steamers coming from the southward to pass us. We carried a line of soundings through the whole distance, sounding at every half kilometer, (about 500 yards.) I forward herewith a tabulated report of the soundings, together with two tracings, one showing a portion of this line, and one a profile of the canal taken at the gare at the 24th kilometer. The soundings are taken with as much exactness as is possible in a vessel going four to five knots, and this speed it was necessary to maintain in order to insure quick steerage and to get through the canal in such time as not to delay other vessels, there being on that day ten steamers in the canal. In a number of places we, going to the southward, were compelled to take the extreme right of the channel in order to pass small steamers, scows, and dredging machines. In these places the soundings show low, but there can be no doubt but that in the same locality there is plenty of water for a sufficient breadth to insure the safe passage of a very large steamer; this is proved by the fact that on the previous day the English steamer Delaware, 3,293 tons, length 380 feet, beam 36 feet 3 inches, and drawing 21 feet 2 inches, passed through in safety from Port Said to Suez. The sun was too hot (thermometer 102° in the shade) to permit me to send out boats.

In conversation with M. le Baron de Latour, the inspector general of the canal, I learned that at this time all of the bad spots that existed in the canal in February last, and which were reported by the hydrographer to the British Admiralty, Captain G. H. Richards, R. N., have been completed to the regulation depth and width, viz.: At 33 miles from Port Said, reported as 22 feet deep for 30 feet width, and 20 feet for 80 in width, has now 24 feet depth for 72 feet in breadth. At 44½ miles from Port Said, reported as with 22 feet at one spot, 20 feet for 55 feet, and 18 feet for 72 feet, has now 26 feet depth for 72 feet in width. That at Serapem, where a shallow part existed in February, the rock is now cleared away and there is 26 to 27 feet for a width of 72 feet. The same in regard to spot 1 mile south of Serapem, and to spot 3 miles north of Suez. That the whole length of the canal now presents a section 22 meters (72 feet) in width, in which there is nowhere less than 24 feet water, and in many places 26 to 28 feet. That the dredges are now about to pass the entire length of the canal and deepen to a uniform depth of 26 feet the whole of said section. That the "gares" are all to be widened and deepened during the present year, and that on that day he had received the report of the chief engineer of the canal, that the company could now engage with vessels drawing 22 feet, 21 feet 6 inches being the utmost heretofore undertaken. That no apprehensions exist as to the canal being interfered with by the drifting of sand. That the clayey nature of the dredgings, together with the coarse grass that is springing up along the banks, made firm banks, which in most places are high enough to prevent more than the lighter sand being blown over, and that the amount which, under ordinary circumstances, would accumulate in a year can be removed in a very short time by the dredges. My own observations confirm the most of M. de Latour's statements.

Entering the canal through a curve that necessitates careful steering, there is a straight stretch of twenty-seven miles to Kantara; through this we found no sounding less than 26 feet, and we found as much as 30 feet. The channel is staked on the 16-foot line on each side, and the width between stakes is 110 feet, except in one spot between the 13th

and 14th kilometer, where the stakes are but 72 feet apart. This is when nearing the gare at Ras el ech.

Between Port Said and Kantara there are four gares, the largest one on the canal being at Kantara. The gares are widenings of the canal, into which a steamer is hauled to permit the passage of another. Along the entire length of the canal there is a telegraph, with a station at each gare, where there is also a semaphore signal station. By this means the movements of all vessels in the canal are so regulated as to permit their meeting in the canal. We hauled into the gare at the 24th kilometer, and awaited the going by of a steamer; when hauled snug in so that we touched the bank on the right, with 7 feet water alongside starboard, we had 16 feet over the stern, in line with channel stakes, and 26 feet on port side. At this gare I went in a boat and got a sectional profile of soundings, which I forward herewith. While at the bank, in the boat, a small steamer with screw nearly at surface, passed rapidly; the wash from her was far greater than from the large steamer at lower rate of speed.

The greater part of the distance to Kantara is through a low flat plain, the bed of Lake Menzallah, now dry or with little water. Here, there is for miles a thick deposit of salt, which looks like a field of snow. This salt secures the sand below it from drifting. At Kantara the gare is three-fifths of a mile in length; this is an Arab caravan station, and a tribe with their camels were encamped there as we passed. From Kantara to Lake Ballah the canal is cut through moderately high sand-hills. The lake is nearly full of water which is, as in all of the lakes, intensely salt.

At the 54th kilometer there is a gare, where we awaited the passage of two steamers; found here a current setting to the southward of about one-half knot. At the 60th kilometer is a curve and in it one of the shoal spots before spoken of existed. It is now the full depth of 26 feet.

Leaving Lake Ballah at the 62d kilometer, the canal turns to about south southwest, and from this point to the Timsah Lake narrows down to 58 meters, (190 feet.) There are no stakes here as the channel is in the exact center, and on each side the banks are steep-to; a bank on the west, however, projecting about 10 feet. This cutting embraces the two stations El Herdane, and El Guise, and is mostly through high sand-hills with a subsoil of clay. Leaving the embankments at the entrance to Lake Timsah, the channel is marked by stakes and curving toward the town of Ismaillia, recurves to a point nearly south of its northern entrance where the embankments recommence at the south end of the lake. Leaving the canal at the curve, the town of Ismaillia may be approached in any course in from 26 to 28 feet, and a good anchorage obtained anywhere abreast the town.

The town of Ismaillia has been created with the canal. Seven years ago the place was a desert, with no human being or shrub; now it is a flourishing town, with gardens and groves, with avenues of trees and vines; and grapes, fruits, and vegetables are raised in abundance. The agent of this transformation is the fresh water canal from the Nile to this spot, and hence to Suez; and through iron pipes its water is carried also to Port Said. Ismaillia, as well as Port Said, has retrogressed during the past year. The closing of the works, and consequent discharge of many thousand workmen, has reduced the population by over one-third.

The fresh water canal is entered by two locks from the maritime canal, its level being 17 feet above that of the latter. It has a depth of

from 7 to 9 feet from Ismaïllia to Suez, and the fact that it has required no cleaning out since it was built, and that there is no sensible decrease in its depth, although exposed to all of the sand storms that the maritime canal will be for the same distance, is evidence that in the case of the latter there is no just ground for apprehension of its filling up. The native vessels, drawing 6 or 7 feet, leave the maritime canal at this spot (coming from Port Said) and pursue their voyage to Suez through the fresh water canal, thus saving half of the canal dues, and avoiding the rough weather at times experienced on the Bitter Lakes.

Leaving the Timsah Lake on the morning of the 13th August, we re-entered the canal with from 24 to 26 feet, and carried this depth and up to 28 feet through to the Bitter Lakes. At Toussoum the canal narrows to 58 meters, and is not staked; the banks are steep-to, and are cut through high sand-hills.

At Toussoum there is a rather sharp curve, and a large number of natives and camels were at work on the west bank widening; dredging machines also at work. In this neighborhood there are evidences of there having been several land slides of the bank, which is clay. Just south of Sérapéum the canal is cut for 300 feet through a rock bottom; this cutting is now as deep as any spot in the canal.

From Sérapéum, a little over three miles, in from 24 to 27 feet, leads into the Lake Amer, or Bitter Lake. The channel, after leaving the embankments, leads between iron beacons with lights on top about 18 feet high. There are four pairs of these beacons, and at their termination an iron light-tower, 40 feet high; another similar tower, eight and a half miles distant, is visible, and marks the re-beginning of the canal at the southern end of the lake. No dredging was required in this lake, the water everywhere being deeper than the canal itself.

Entering the Little Bitter Lake there is a curve which, however, is not a difficult one. We carried 26 to 27 feet through this lake. From this lake to Suez, a distance of fourteen miles, there are no difficulties until reaching the curve nearly abreast the town. Here a fresh breeze from the sea blowing across the canal and the action of the tide setting in caused difficulties in steering, and we three times rubbed against the eastern side, where a clay bank projects. At the speed used, however, no damage is likely to occur, unless a vessel should strike her propeller. A large or slow steering vessel should not enter this curve during the strength either of the sea-breeze or tide, although the bank or shelf, which is about 5 feet under water is steep-to, and a vessel can lie alongside of it as to a wharf.

We arrived at Suez at 1.30 p. m., August 13, having been under way in the canal 17 hours.

To recapitulate: The canal for its entire length has a nearly level floor with from 24 to 28 feet water; this floor is 72 feet wide. On each side of this floor the section slopes so that at 19 feet from the 26 feet depth there is 16 feet water. Thus, a vessel drawing under 16 feet has a channel 110 feet in width. In the narrow parts of the canal the 72-foot floor is carried out, but there is less width of the shoal water. Good pilots are furnished, and it is the regulation that they shall be employed. The canal dues are 10 francs per ton register. In conclusion, any vessel not drawing over 22 feet, and capable of quick steerage, can go through the Suez Canal with safety.

One of our large Pacific mail steamers, say the Japan, which is, I believe, 80 feet wide outside of wheels, would find water enough and width enough, provided the canal was cleared for her passage. Whether she could go slowly enough, or steer quickly enough, I cannot judge. But I

believe that it is passable for her to go through, liable, of course, to constant risks.

A steamer should coal at Port Said, as the coal here is 17 shillings a ton cheaper than at Suez, and the facilities for putting it on board much better.

The straight courses in the canal furnish excellent opportunities for a vessel to examine the local deviation of her compasses, as the courses here are nearly the same as are steered in the narrow parts of the Red Sea.

Leaving Suez on the 14th August, we arrived at this port (Aden) in eight days. The voyage through the Red Sea from Suez to Aden is an easy and safe one for a steamer. The passages are wide, no dangers in the channel. The heat was not so excessive as I had been led to expect, the thermometer never going above 96°, but the air was very debilitating. We had wind a large portion of the time, but it was hot and dry and not bracing. Its general course was to spring up from west to northwest during forenoon, blow quite fresh from northwest, go around to northeast about sunset and die out; calm springing up toward midnight from the southwest light. We had more hours of wind from the southern quadrants than from the northern, but the southern winds were light, except on August 18, latitude 19° 15', we had eighteen hours stiff southwest winds and rough sea, bringing us down to reefs. The weather was generally clear with the northerly winds, hazy and cloudy with the southerly. We did not experience any very strong currents, except in passing the Island of Jibbel Teer, where it runs south 18 feet. We passed out of the small Strait of Babelmandeb at night. The light on Perrin Island is visible from the northward, and although the strait is but little over a mile in width, furnishes a safe guide.

Date.	Latitude.		Longitude.		Hours.			Thermometer.			Remarks.
	°	'	°	'	North wind.	South wind.	Calm.	Maximum.	Minimum.	Current.	
Aug. 15	26	23	31	41	16	5	3	91	83		
16	24	00 N.	36	31	16	6	2	94	84		Passed Daedalus lighthouse
17	21	19	37	36	4	14	6	92	85	14' S.	
18	19	15	38	40	.....	21	3	90	70	6' S. 1 E.	
19	17	15	39	56	8	13	4	96	88	4' S. by E.	Headlight northward to westward.
20	15	34	41	32	4	10	10	93	90	15' S. 1 E.	Current south 18'.
21	13	49	42	53	12	8	4	92	88	4' S.	
22	Gulf of	Aden.			12	.....	.....	88	85	14' S. S. E.	Noon anchored in Aden.
Total.....					72	76	32				

In the above table the winds are marked as N. when there was any nothing in them; and S. when from anywhere to the southward.

Very respectfully,

L. A. BEARDSLEE,
Commander United States Navy.

Commodore JAMES ALDEN,
Chief of Bureau Navigation, Washington, D. C.

No. 15.

REPORT OF ADMIRAL PORTER TO THE SECRETARY OF THE NAVY ON PROFESSIONAL MATTERS.

WASHINGTON, D. C., *November 10, 1870.*

SIR: In accordance with Article 3d, Naval Regulations, I have the honor to lay before you a report of the present condition of the Navy, and to offer such professional suggestions as may further "promote its discipline and efficiency."

I regret to say that many of the recommendations made in your annual report remain without action on the part of Congress, and it is difficult to make further suggestions until those already submitted are disposed of.

Since the 4th of March, 1869, great efforts have been made to put in commission a sufficient number of vessels to protect our commerce, to act as dispatch vessels, and to perform the duty of surveying the Isthmus of Darien and Tehuantepec in conformity with the acts of Congress, and up to the present time there are forty-five suitable vessels on the different stations in good condition, and, as far as can be learned, in admirable discipline.

From my constant communication with the officers commanding squadrons and ships, I cannot learn that there is anything to complain of in the fitting and arrangement of the vessels, and those on board of them are enjoying a degree of comfort not exceeded in the vessels of foreign powers. The crews of our ships of war seem to be well contented with the various orders issued for their happiness and comfort, and this is evidenced by their greater attention to duty, and by a diminution of offenses necessitating trial by court-martial.

The system of rewards lately established for the benefit of the petty officers, seamen, and marines, will go far toward introducing into the naval service the best class of men, and if continued and enlarged, will in the end permanently attach to the Navy the best seamen that sail out of American ports.

There still remains a great deal to be done to ameliorate the condition of seamen in our Navy. They should be granted an increase in their pay and a slight addition to their ration, and should be provided with an outfit of clothing equal to that provided for the soldiers of the United States Army, and for the marines. There would then be little left for a seaman to complain of. Now, he considers that it is great injustice to deny him a proper outfit for the cruise, when members of another branch of the service, on board the same vessel and drawing equal pay, are furnished with a yearly allowance of comfortable clothing. Such an allowance to seamen would do away with a greater part of the desertion in the Navy, since most of the cases of this kind grow out of the indebtedness of seamen on first entering the service. Those who possess the faculty of calculation soon discover that they will be in debt to the Government for at least two-thirds of the cruise, and consequently deprived of the benefit of all the regulations made for good-conduct men, since no paymaster, under the law, can advance any money to a man in debt. This state of things operates to confine them to the ship for the greater part of the cruise. It would add greatly to the efficiency of a ship of war if the men could start on the cruise out of debt. It would enable the commanding officer at the outset to withdraw many of the restrictions which make the life of a sailor so irksome. It would prevent many of those unpleasant scenes, which occur when commanders have

to apply to the civil authorities to arrest deserters, who are often brought on board drunk and in irons, after receiving harsh treatment from the police, who, knowing little of the peculiarities of these sons of the ocean, often mistake for insubordination what would be overlooked by an officer of the Navy. Our Navy is small, and the country can well afford to make this trifling addition to the comfort of its seamen. Several efforts have been made to have this outfit of clothing allowed, and I think they have failed because the subject was not fully explained to Congress, or not brought before them in a manner to attract their particular attention. Many less important measures have been passed without comment, and I am confident that our national legislators only require to know the wants of our seamen to have them supplied. The life of a sailor is a hard one, hard beyond the conception of any one not familiar with the sea, whose only idea of a sailor is a rollicking fellow, who makes lots of money on shipboard, and pours it out like water when he goes on shore; who sails most of his time under smiling skies and encounters a gale of wind now and then, merely by way of pastime. I am of opinion that the Department might authorize an allowance of clothing to seamen without any legislation on the part of Congress, as the President is authorized by law to regulate their pay and emoluments. It should be remembered that seamen are exposed in all weathers, which destroys their clothing very rapidly, to say nothing of the deteriorating influence of the salt air. They are required to dress with the greatest nicety, and are liable at any moment to be placed in a position where their best suit may be rendered totally unfit for service. In cases of epidemics seamen are frequently called upon to destroy all they have been collecting out of their earnings for months, and seldom or never receive an equivalent therefor.

When our men come in contact with British or French vessels of war they find the sailors fitted out by government, or, if the latter are obliged to purchase articles of any kind, they are furnished at one-third of the cost our seamen have to pay. The result is, that the crews of our ships of war do not always present that uniformly neat and comfortable appearance to be met with in foreign navies, a mortifying circumstance to commanding officers, who are, however, powerless to remedy the defect. The seamen keenly feel this neglect on the part of our Government, and, while admitting the various benefits conferred on them from time to time, cannot see the justice of withholding from them a proper allowance of clothing, an opinion which is shared by the officers of the Navy generally. Although improvements have been made in the system of shipping seamen, and the business has been partly taken out of the hands of rapacious landlords, there is still something wanting to perfect the arrangement. There should be a good shipping-master appointed at each of our naval stations, whose business it should be to procure men for the Navy. We would experience difficulty now in obtaining men on a sudden emergency, which might result in serious inconvenience.

In this connection I beg leave to draw your attention to a matter wherein great injustice is done to our seamen, and a law of Congress, made for their benefit, becomes in some cases a nullity. The law provides that when seamen, ordinary seamen, &c., having received honorable discharges, shall present themselves to a shipping officer, within three months of the date of discharge, they shall be reshipped and credited with three months' pay. By the late law limiting the number of men in the service to 8,500, it often happens that a seaman whose conduct has been irreproachable, and who, for particular excellence, has

received a "good-conduct discharge," is refused at the rendezvous on the ground that the number allowed by law is filled. The result is that the seaman turns away disappointed because faith has not been kept with him, and determines to enlist no more in a service which holds out rewards that are not paid. This happened in many instances during the past year, and is liable to occur again. I consider that it is within the power of the honorable Secretary of the Navy to remedy what appears to be a defect in the law regulating enlistments. If the government is not in a position to employ the seaman, the latter having performed his part of the agreement and presented himself at the rendezvous, should be entitled to receive his three months' pay. A still simpler way would be to give an order to ship all honorably discharged men presenting themselves at a naval rendezvous, since they are so few in number compared with all the others in the service, that their enlistment would seldom cause an excess in the regular allowance. We cannot do too much to attach good seamen to the naval service; and all the rewards now allowed them are insufficient to compensate them for their years of hardship and devotion to their country's flag. It is a notable fact that when the late rebellion broke out not a single seaman deserted the flag, and many of them distinguished themselves by acts of heroism that deserve to be forever remembered.

Since the year 1846 the quality of our seamen has fallen off as well as the quantity, and our ships have occasionally been provided with a larger proportion than formerly of ordinary seamen and landsmen. This is a condition of affairs which will have to be guarded against in the future, and improvements on our present system must be made if we do not wish our ships manned by inferior men.

Up to the year 1846 we possessed, for the limited number of ships in our Navy, the finest body of seamen in the world. At about that period steam was introduced, but merely as an auxiliary, and the ships continued with full-sail power. Even at the first introduction of steam power into the navy a deterioration in the crews of ships could be perceived, owing, in a great measure, to the seamen being employed in coaling ship and hoisting out ashes, to the exclusion of their more agreeable and legitimate duties.

All foreign navies have adhered to the system of full-sail power in their ships, using steam only as necessity required, thus maintaining economy and guarding against a deterioration in seamanship; while we, from year to year, discarding our sails, have increased our steam power even while introducing the trice-up propeller. Thus, we have enormously enlarged the expenses of our vessels, so that during the war of the rebellion our expenditure for coal was at least \$18,000,000. This sum does not include the increase of expenses for engineers, firemen, and coal-heavers, and wear and tear of engines, which last item is beyond computation. Our ships from time to time fell off in sail power until, with the exception of the old-fashioned steam-frigates, they had not more than sufficient canvas left to lay to under. In some of our largest vessels the masts were placed without regard to the center of effort; and the necessity of so regulating the power that the vessels would be perfect machines under sail was ignored. Sail, in fact, became auxiliary, our seamen were transformed into firemen and coal-heavers, our officers had little to do but walk the deck, while the vessel was under way, and attend to the routine of a man-of-war. Such a state of affairs was most injurious to officers and men, for while other nations held on to their seamanship we lost sight of ours to such a degree that we have had almost

to commence anew, and instruct the men as if we had been adopting an entirely novel system.

Since 1869 we have equipped, with full-sail power, twenty-six ships, besides those already existing, and at present have no other than full-rigged ships in active service, with the exception of four or five iron-clads and a few side-wheel steamers, used as dispatch boats and surveying vessels.

A system of exercises has been devised and put in operation, and monthly reports of the same directed to be made to the Department. In many instances these reports are highly creditable to the ships wherein the exercises have been conducted, and go to prove the necessity of this kind of practice on a more extended scale than at present. It has improved the discipline and creates a spirit of emulation which has not existed in the service for some years, and it has shown to both officers and men that no sea-going vessel of war can be a perfect machine unless she is rigged with full-sail power and managed in the most seaman-like manner.

During the war of 1812 it was our seamanship and gunnery that gave us so decided an advantage over our clever antagonists, who have never forgotten the lesson, and from that time to the present have spared no pains or expense to improve their officers and men in these particulars. Their navy, supervised by a united board of professional men, who guard against the admission of doubtful or unwise experiments, and who take every opportunity to keep up the naval prestige, must, in many ways, have an advantage over our own; but with the zeal that animates our officers and men, the rigid inspections and exercises that are now, or will be, established, and by availing ourselves of the experience gained by our commanding officers abroad, we can still hold our own with foreign navies, as regards the discipline of our ships.

From personal observation I can assure you that there is now great economy in the sailing of our vessels of war compared with what there was before the ships were fitted with full-sail power. Comparatively little coal is now consumed, the engines and boilers are not worn out from constant use, the hulls of the ships are not heated and the wood thereby destroyed, and there is a reduction of four-fifths in the expenses of the engine-room and coal-bunkers.

In addition to the measures already taken to restore the former standard of seamanship in the navy, I would strongly recommend the formation of a *practice squadron*, to be employed on our coast, which will serve the two-fold purpose of a school for officers and men, and, at the same time, afford assistance to our mercantile marine during the inclement season. We have now eight sailing ships that will suit admirably for this purpose; viz., The frigate-built Sabine, Savannah, Macedonian, Constellation, and Constitution, and the sloops-of-war Dale, Portsmouth, and Saratoga. All these, with the exception of the Constitution, are nearly ready for service, and she can be prepared with very little expense. She is now at the Naval Academy, but is no longer needed as a school-ship, the midshipmen having been accommodated in barracks on shore. The place of the sailing vessels heretofore used as practice ships for the midshipmen can be supplied by the Tennessee, which vessel is well adapted for a school-ship, having a fair combination of sail and steam. She is of the "Wampanoag" class, and has been altered with the hope of making her a serviceable vessel. She has a direct-acting engine, has had an additional deck put upon her, to afford accommodations for her officers and crew, and has been rigged as a full-sail power ship. It still remains to be seen whether the alterations will

accomplish what is expected, and if the *Tennessee* proves to be all that is hoped, she will be admirably adapted for a school-ship.

The water in the harbor of Annapolis seems, of late years, to be somewhat shoaler, so much so that the frigates have some difficulty in getting in and out, and those at the dock are most of the time lying aground, which must be more or less injurious to them. The *Tennessee*, drawing less water, can get in and out without difficulty, and having so much room on board can easily accommodate two hundred and twenty midshipmen, as many as will be likely to be sent to sea at one time.

With a practice squadron composed of the ships I have mentioned, under an energetic commander, we should be bringing up a fine class of seamen for the Navy, officers and men, and afford the finest naval school in the world for boys. These latter should be taken into the service, not with the idea that they are to become officers, but to be instructed as seamen and petty officers, giving those a chance who have the ability to reach the highest positions. This squadron, ready at a moment's notice to obey the orders of the Department, could be relied upon to go to any point where its services might be desired, or to protect our coast in case of trouble from abroad.

I have lately seen the necessity of being provided with ships at home as well as abroad. On several occasions we have required vessels to be in readiness at short notice, to enforce our neutrality laws, and have been obliged to depend on tugs and small steamers. These could have exercised no influence against vessels of heavier metal, had the latter been disposed to resist the orders of the Government. Such a temporary squadron as I have indicated could also be called upon to supply ships fitting out for foreign stations with well-drilled seamen and seamen gunners, so that when a vessel of war does sail from our shores she will not be manned by a raw crew throughout. There are, in fact, a thousand advantages that present themselves in such a squadron as the one proposed. It would be like the practice fleets of England and France on a small scale, and would serve to perfect our officers and men until we can build some sea-going iron-clads, which must sooner or later be done.

The people of this country will not be content to see all other nations advancing with their iron-clad vessels while we remain just where the war of the rebellion left us. At that period we had some formidable monitors, admirably adapted for coast and harbor defense, and these, if repaired with good timber, will still last for some years. The best of these vessels have been kept in a fair state of repair as far as the limited appropriations will allow, but they are not desirable as cruisers. There is a certain amount of comfort required on board a ship of war that has to be absent from the United States for three years, and this the monitors do not possess. They have no sail power, and when they go to sea for any distance have to be accompanied by two or three vessels to take them in tow. We have used them in the West Indies for the want of other more suitable vessels, and, so far, they have proved themselves safe. The general opinion in the Navy in regard to these vessels, derived from repeated tests, (and in which I share,) is that the principle upon which they are built can be carried out in the construction of sea-going vessels. Indeed, I have no doubt that the monitor principle is the most formidable one that can be applied to the construction of a fighting ship, an idea that seems to be accepted abroad as well as with us.

Since I have been connected with the Department, various plans for sea-going iron-clads have been discussed, but we have always recurred

to the monitor principle as the one combining the most advantages. Of course the system will have to be modified to suit the open sea, and the vessels so planned as to be able to go under sail as well as under steam. It would be very unwise to convert any of the iron-clad turret ships now under construction into sea-going vessels, as they are unsuitable for such a purpose, and should be kept for coast and harbor defense. We have few enough of them for this purpose, for, in the event of a war, there are many points of great importance on our extensive coast to be defended.

To return to the subject of the coast squadron. I would say that the importance of our officers becoming familiarized with our own coast can not be over-estimated, and yet they know less of it than of foreign shores and harbors, where they seldom take a pilot. On our own coast the reverse is the case, and the officers are entirely at the mercy of the pilots, who are not in all cases expert in their business or worthy of reliance without good charts.

In former days many officers were educated on the Coast Survey, where they necessarily became familiar with our harbors and could take vessels where pilots would not venture without a chart. In time of war knowledge of this kind would be very valuable; indeed, no captain would feel comfortable in command of a ship, without a thorough knowledge of our coast, so as to be independent of pilots. The proposed coast squadron, then, would furnish the information formerly supplied by the Coast Survey, and at the same time be a good school of discipline, which the Coast Survey was not.

In the rearing of seamen Massachusetts has taken the lead of the General Government, and has already two fine ships fitted up for the instruction of boys reclaimed from the streets of her cities, and from her house of correction. The example of this State is worthy of imitation by the National Government. Thousands of fine boys are roaming the streets of New York, whose parents would consider it a great boon to have drilled into seamen on board a naval practice squadron. Unless some such plan is adopted our man-of-war's men will run out. We cannot, as of yore, depend upon our mercantile marine for seamen, and in a sudden emergency we should find ourselves placed in a very humiliating position. As an example of the shortness of our crews and the inadequacy of the present allowance to fit out even a fair proportion of ships, our West India squadron, fitted with all dispatch, when the complement allowed by law was filled up, amounted to but nine vessels, carrying sixty-six guns and about 2,000 men, while the Spanish fleet in Cuban waters amounted to fifty-six vessels, carrying five hundred and sixty heavy guns and 13,000 men—a greater number than we had in our entire Navy. It will easily be seen how little chance we should have to cope with nations possessing such heavy forces, even with all the ships we had in commission, scattered as they are all over the world. No doubt our officers and seamen would do all that men could do under adverse circumstances, but it would be unjust to expect impossibilities from them or permit them to be sacrificed, when, by a wise forethought and preparation, we could maintain our prestige against an ordinary naval power.

The American people are so accustomed to expect success from their Navy, that they would not patiently bear defeat, and might be ungenerous enough to impute to the personnel of the service the failures due to unwise economy and neglect of the warnings of those who have to meet the difficulties when they occur.

While we devote ourselves to the building of iron-clads we should not neglect wooden vessels, with which so much has heretofore been accomplished. I doubt if the annals of history furnish examples of more heroic service than has been performed in the wooden ships of our Navy. These have attacked the heaviest batteries (known in modern warfare) either at anchor or under way, and have had to contend with guns far more destructive than those used at the time these same vessels were launched; yet, in spite of all the disadvantages under which wooden ships labor, there are few instances where they failed to capture the heaviest forts or earthworks. Wooden ships will probably always remain a necessity in naval warfare. They can carry so many more guns than an ordinary iron-clad that their fire is much more rapid and effective against the present style of forts and earthworks than the slow loading and slow firing twenty-ton guns. *Combined* with the iron-clads, our wooden forty-gun ships would be very formidable.

By close observation of the necessary class of vessels to be used in time of war, professional men of the largest experience have agreed that it is our best policy to go on building fast cruisers with light armament to cut up an enemy's commerce.

In time of peace a class of vessel of from fourteen to sixteen hundred tons is more desirable for foreign service than the unwieldy iron-clads used in foreign navies, and in time of war they are very destructive to an enemy's commerce. Still we should have iron-clads in our squadrons on the coasts of China and Japan, South America and the West Indies.

A nation possessing an extensive commerce will hesitate to attack another which has the means to destroy its mercantile marine. For instance, England would hesitate a long time before she would attack us were our navy provided with a large number of fleet and powerful cruisers that could remain at sea for any length of time under sail, and be able, when occasion requires, to make great speed under steam.

We have not yet recovered from the injury done to our commerce by one or two rebel cruisers, and it can readily be imagined how much damage we could do, even now, to the commerce of such a nation as Great Britain, a commerce extending into every sea and increasing with as great rapidity as our own is disappearing.

Plans have already been prepared for a class of cruisers such as I have alluded to, and the models sent in. I would recommend that a good number of these vessels be built as soon as possible. The expense of such ships will not be great, as they can be run so much cheaper than the larger vessels now in service. We have very few small vessels worth anything, and we must resort to building to supply the ships necessary to keep up our squadrons abroad.

There are now six ships on the stocks that should be launched and fitted without delay; but these are all large and comparatively expensive vessels, and would do no better service than the class proposed. The latter could be run with half the expense, and with little more than half the number of men—a great desideratum when we are limited to 8,500 seamen, landsmen, and boys. If the ships now on the stocks are not launched, we shall soon be unable to derive any benefit from them, as they are fast going to decay. Should they be left to rot on the stocks, the result would be a loss of several millions of dollars. Some of them are fine vessels, and it would be a misfortune to see them thrown away. I am much pleased with the model of one of them, the Connecticut, of Boston, and I recommend that the engine now on board the Chattanooga be transferred to her, and that she be fitted for sea. The hull of the Chattanooga has been condemned as entirely unseaworthy,

and it is not even considered safe to send her to Boston, as she will not bear caulking; but the Connecticut can be got ready for the engines, and sent to Philadelphia to take them on board, where they can be put up for about \$40,000. With the boilers so arranged as to have but one smokestack, or two at most, and these telescopic, the Connecticut would be a beautiful ship, and a most excellent cruiser.

We are much in need of a larger class of vessel for our flag-ships on every station, there being but two suitable flag-ships afloat, and those now used cannot properly accommodate the staff of the commanders-in-chief. For this reason I recommend that these larger ships be fitted out or kept in condition to be made available at short notice. We have but two vessels, the Wabash and Minnesota, that can be relied on to relieve flag-ships abroad. The times of the latter will soon be out, and the two vessels named are by no means in a forward state of preparation.

I beg leave to call your attention to the fact that owing to the decadence of our commerce, and the decline of steamship building, there is very little emulation among our machinists, and little or no improvement in marine steam-engines. All improvements are made abroad on the Clyde and Mersey, where giant strides are taking place in the construction of machinery for war and merchant ships. Time and economy are so much objects to the British builders that the greatest ingenuity is brought into requisition. An engine is no sooner built and pronounced perfect than another of later improvement is brought forward to supersede it.

Naval engineers have no opportunity to witness anything very new in this country in the line of their profession. When we are called upon to build vessels of all classes, we must necessarily provide plans of engines for them, and I do not think the best engineers are favorable to the plans hitherto adopted in our Navy. The English are now adopting a compound engine, which affords great economy of fuel, high speed, and increase of room, and can be built at much less expense. In merchant steamers there is a saving of more than one-third in coal, which, in a few years, would more than pay for the engine, to say nothing of the amount saved in the extra room afforded for freight. The advantages would be the same proportionately to a man-of-war as to a merchant vessel, and would enable her to stay so many more days at sea.

I would recommend that some of our most intelligent engineers be kept abroad for a time, to collect plans for the engines and boilers of the four classes of vessels it is proposed to build for the Navy. I am satisfied that their visit to the great workshops of England would be of much use to them professionally, and in the end be a great benefit to the country.

TORPEDO CORPS AND STATION.

In August last I visited the torpedo station, and was much gratified to witness the advances made in this important system of national defense. There is still, however, much to be done to make the torpedo system thoroughly available in time of war. If suitable appropriations are made, we can in a short time place our numerous harbors in a perfect state of defense, rendering them proof against any attack. To enable the officer in charge of the station to perfect the arrangements necessary to place the torpedo system in a condition for service, it will be necessary to very much enlarge the present establishment, which, although well conducted, is not of sufficient magnitude to meet the wants of the country. There should be kept at the station a considerable corps of young officers to perfect themselves in the manipulation of

torpedoes, and the management of the instruments used for their explosion. This is done at present in a measure, but no officer should be permitted to leave the station without urgent reasons, until he shall have received from the officer in command a certificate that he is in all respects qualified to take charge of torpedoes and instruments, ashore and afloat. This is absolutely necessary, since all our ships of war and steam launches are fitted to explode torpedoes against an enemy's ship, and it would be useless to place a torpedo on board a vessel unless in the special charge of an experienced officer, held responsible for its care and preservation.

Plans are now being prepared for a torpedo boat to act against an enemy. The model is an ingenious one, and is a combination of forces which, if properly managed, must be very destructive to an opponent's ships. These torpedo boats are intended to be of about two hundred and eighty tons burden, possessing great speed, and armed with one 15-inch gun. Offering but a small surface as a target, they will be quite impervious to shot or shell, and can boldly approach a hostile vessel in open day, either to attack with the 15-inch gun or blow her up, as opportunity offers. We have tried experiments with this invention, and I am satisfied that the principle is a correct one, and can only fail for want of proper mechanical arrangements. The cost of each of these vessels complete will be \$140,000, and being constructed entirely of iron, and exposed to little wear and tear, they will last for many years. Twenty of these boats should at once be constructed. It will take over eighteen months to build them, and they will be used for harbor and coast defense.

For foreign service torpedo boats of one thousand tons burden will be required, with a proportionate increase in cost.

We have converted several large iron tugs of three hundred and fifty tons burden into torpedo boats on the plan mentioned above, and I am satisfied that they will prove very formidable. It is not deemed prudent to publish any description of them, but to follow the example of all other nations engaged in perfecting the torpedo by guarding the secret inventions from disclosure.

The torpedo has now become an established part of the system of warfare with all nations, and because we are somewhat backward in our other preparations it behooves us to be prepared in this. The officers of the Navy are alive to the importance of the system, and several of them have given their attention to perfecting inventions which will be valuable additions to those we now possess.

It is the opinion of some experienced officers that the introduction of the torpedo in naval warfare will result in an entire change in the system of constructing war vessels; that the huge iron-clads of the British and French navies will be laid up as useless, and that the torpedo vessel will ultimately sweep all other ships of war from the seas. I am not prepared to indorse this view of the subject, yet it is within the limits of possibility, and when a vessel can be built having a speed of fifteen knots under steam, and capable of resisting the heavy shot now fired from ships of war, the problem of a successful torpedo boat will be solved.

Every one who has watched the progress of late events in Europe must have noticed how little has been effected by the powerful French fleet of iron-clads fitted out at so great a cost. Their inactivity may be ascribed in a measure to the dread of the torpedoes which are planted along the German coast. Had the Prussians been provided with suitable torpedo boats scarcely any of the French vessels would have escaped

from the North Sea or the Baltic. At the same time, I do not think it advisable to depend altogether on torpedo boats in naval warfare.

Iron-clads will still have their uses in encountering heavy ships at sea or in bombarding forts, so that after all, an effective navy must be a combination of iron-clads, rams, torpedo boats, and wooden or other fast ships. All have their parts to perform in the drama of war, and for the present, at least, we cannot dispense with either. The nation that can best combine all these forces in action will be the mistress of the seas.

NAVY YARDS.

Although you will no doubt receive full reports in relation to the navy yards from the Bureau of Yards and Docks, yet I beg leave to add some opinions of my own, which I trust may be of service.

It has often struck our own officers, and is always a matter of astonishment to foreigners, that, with all our yards, we have so very few docks for taking ships out of the water, and attention was drawn to this subject in your last annual report. Since then, great difficulty has been experienced in rapidly fitting out the few ships we have sent to sea. One dock is a small allowance for a navy yard when a dozen or more vessels are being prepared for sea at once, and if by any accident the dock is rendered useless, a certain portion of the work on all the ships has to be stopped.

The want of docks was severely felt during the rebellion, when vessels were constantly returning to port for repairs which it was not always possible to give them. Thus, they were for the time being rendered useless to the Government, which was sometimes compelled to purchase others to supply their places.

Should we be engaged in a foreign war I should regard this want of docks as a great calamity, and the commander of a fleet acting on our coast and liable to constant conflict with an enemy, would experience great anxiety of mind when his thoughts reverted to the impossibility of having his fleet repaired after an action in time to follow up any advantages gained.

It must be remembered that offensive missiles are ten times more destructive at the present time than they were when our existing dry-docks were built. At that time a 42-pound solid shot was the largest in use. Now a 600-pounder is part of the general armament of foreign ships of war.

Not many years ago a man-of-war could, when damaged, be "hove down" or "careened" at a dock, by taking out her guns, tanks, and ballast. This can no longer be done, because the operation involves the removal of the machinery and boilers, which, to take out and replace, would cost a hundred thousand dollars or more for each large vessel.

We have, in all, seven dock-yards, which united are not equal to the dock-yard at Cherbourg, which, built on the open ocean and protected by a great sea-wall, makes the finest establishment of the kind in the world.

Our system of numerous dock-yards is, in many respects, a good one, as it enables us to make use of all the skilled mechanics in different parts of the country; and some locations possess advantages that are not shared by others, although on the whole the Government work is about equally well performed at all.

We cannot at present rely upon civil establishments to raise our war ships out of water. Not many of them are able to dock our largest

vessels, and they are not often willing to do Government work, as they have so much other employment.

It is remarkable that we have managed so well during the last year in docking our ships. All that have been sent to sea, forty-five in number, have been docked; but it has only been done at great expense and with many vexatious delays.

In California we experienced great drawbacks in this respect. The entire Pacific fleet, consisting of thirteen vessels, required thorough overhauling and repair, and every ship had to lie for months at Mare Island before she could go on the dock, a floating-dock, and the only one belonging to the Government.

Mare Island is destined in time of war to be the most important of our dock-yards, and I therefore beg leave to invite your particular attention to it.

It is evident that in the future all of our ships in the Pacific will have to depend upon the Mare Island navy yard for repairs. The passage around Cape Horn, at the end of a three years' cruise, should not be attempted, and it will be found much more economical to fit out vessels for China in California, by which they avoid the long passage around the Cape of Good Hope, via Brazil, or the troublesome and expensive one through the Suez Canal. By the Cape of Good Hope route the passage from New York to Hong Kong cannot be made in less than one hundred and ten days, or by way of the Suez Canal in less than sixty-five days, while the voyage from San Francisco to the same point can be performed in twenty-eight days. This is at once an argument in favor of fitting vessels out at Mare Island for all parts of the Pacific and for the Asiatic coast. The argument holds good also for laying the vessels up there, as they can reach California from the China seas quicker than they can the eastern coast of America, to say nothing of the wear and tear of the longer voyage, and the anxiety of coming on our stormy coast in the winter, which they will escape.

Several of the European powers are making preparations to establish repairing stations in the east, if they have not already done so, while we need not go to such an expense if we provide the facilities for repairing the different vessels at Mare Island.

The steamers of the Pacific Mail Company make the trip from California to Japan in twenty-two days, and vessels of war will not require a much longer time; hence will appear the importance of having a large and efficient naval establishment at Mare Island, a location that possesses all the natural advantages for such a purpose.

I have no doubt that in a few years we shall be able to build as strong and cheap vessels in California as on the eastern coast, for labor is gradually approximating in price to the same commodity in the Atlantic States.

There are required at Mare Island machine shops, tools, several docks, storehouses, quarters for officers, and war material of all kinds, for the supplying of vessels. It would be a wise economy to make ample appropriations for the above objects at once, for many of the articles required have to be sent around Cape Horn to save freight, while the tools and pieces of machinery, which can be made in San Francisco, require time to get them ready for use. It is important that skilled labor in ships and steam machinery should be encouraged in that quarter, so that the Government can depend on a sufficient number of mechanics in the hour of need.

We have every evidence that the work performed in the California yard is equal to that done in other yards, even with the poor facilities

it possesses at present, and it is not likely that the work will deteriorate when the facilities are improved. It may appear to you strange that ships of war are so much longer in fitting at Mare Island than at other naval stations. I can account for this circumstance from the fact that the yard has not been supplied with the requisite tools and machinery possessed by the others, and yet a force amounting to one-fourth of the entire navy in commission has been fitted out there since March 1869.

CLOTHING.

I am satisfied that the system of purchasing ready-made clothing for the Navy is a bad one, and that the seamen are unfairly dealt with. It would be much cheaper and better for the Navy Department to establish at Boston, New York, and Mare Island manufactories of their own for the purpose of making up the seamen's clothing. The material could be purchased by wholesale, and persons employed in the making up by the day or by the piece. Thus every article of clothing would be inspected at the time it was made up, and the whole work being under the supervision of experienced inspecting officers, there would be no opportunity of palming off on the Government materials or workmanship of bad quality. It would prevent much loss to the Government, for at present there is a large quantity of clothing annually condemned by survey, which if made at a Government establishment would never have been rejected. The measure I have proposed is approved by all the officers with whom I have conversed on the subject, and I beg leave to recommend it to your favorable consideration.

SCHOOL-SHIP.

After some years' observation, I am of the opinion that it is not desirable to send the school-ship with the midshipmen on a foreign cruise every year, but that as a general rule they should be kept on our coast, where officers and midshipmen can become familiar with our shores and harbors. In other words, the cruise abroad should be the exception, not the rule. In my opinion the midshipmen could receive more instruction, and be subjected to much less expense and inconvenience, if the above system was pursued, as they become involved in debt on a foreign cruise, and are unable to provide themselves with proper clothing and books, for which purposes, indeed, their pay is barely adequate. The *Tennessee* could accommodate all the midshipmen at one time, and with the yacht *America* acting as a tender, be used to instruct them in seamanship. These two vessels would form an economical squadron for the Naval Academy.

The number of vessels at the Academy has been gradually decreased since 1865, from six of different classes to two sloops of war, with a proportional decrease in the expenses of the institution. The arrangement proposed will still further lessen the expenses, to say nothing of the reduction in the number of officers and men.

I would propose further that the *Tennessee* be kept at all times in commission, whether cruising with the midshipmen or not; that her officers and men be maintained in the highest state of discipline, and that when not in use for the practice cruise she be stationed at Norfolk as a gunnery ship. She will then be ready for emergencies.

I have seen the disadvantages of having the midshipmen go on board of a ship with a new crew. They should have nothing to do with any ship where they may derive wrong impressions, but should always be

practiced in a vessel where every department is in the finest state of discipline, and where the best seamen and most moral men in the service should be collected. This will be an economical arrangement, and will be of great benefit in the instruction of seamen gunners, a class which it is very desirable to establish on board every ship in the navy. At least one seaman gunner to every gun should be sent on board every ship carrying over four guns, and two to every gun where there are three guns or under.

ENGINEERS.

During the administration of Mr. Secretary Welles there was a class of engineers established at the Naval Academy, but it was discontinued on the ground, I believe, that the law made no provision for appointing engineer cadets with the pay of third assistant engineers. There is, however, a provision by which cadet engineers can be appointed and be educated at the Naval Academy. In this way several young men were appointed, two of whom passed with great credit to themselves. I think it would be advantageous to the Navy to reëstablish a class like that formerly existing at the Naval Academy, and fill up the vacancies in the grade of second assistant engineer from the graduating engineer cadets. It would, in my opinion, also be advantageous to establish the grade of marine cadet. The young men who are successful in passing the examination for admission to be educated two years at the Naval Academy and on graduating to receive commissions of second lieutenants in the Marine Corps. This would be the most effective step yet taken for the improvement of this branch of the service.

PRIZE MONEY.

Notwithstanding the efforts of Congress to regulate the subject of prize money the laws are still defective, at least they have not been carried out in the spirit in which they were framed. During the war of the rebellion large amounts of property were captured, but much of the proceeds was frittered away in prize courts for illegal fees. Even the employment of special counsel did not protect the captors, as the Department has in its possession evidence that the counsel employed by Government secured fees far in excess of their proper compensation, after which they neglected the interests they were intended to defend. There is but one way to avoid these evils and that is to appoint an officer of the Navy to be attached to the Department and have cognizance of all prize matters, employing counsel by direction of the Secretary of the Navy in special cases. This would not be a difficult duty to perform, nor would it require any great legal ability. It only needs some one who will see that the laws of Congress are not violated, and who will honestly call the attention of the head of the Department to a misappropriation of prize property. Sections 14, 17, 18, 19, 22, 23, and 24 of an "Act to regulate prize proceedings and the distribution of prize money, and for other purposes," approved June 30, 1864, are not and will not be complied with until an officer specially employed in the Department has charge of the matter. At present and for some time past this duty has, in addition to his other duties, been performed by a clerk.

At this moment there are large amounts of prize money due to captors, lying in the treasury waiting only for certain forms to be complied with. This is prize money that has been adjudicated by the courts and about which there can be no question. It is but justice to the claimants that they should be paid without delay, and it only requires an or-

der from the Secretary of the Navy to enable them to receive their dues. If there is likely to be any delay in the future payments of prize money, owing to any law of Congress, an effort should be made to have such law repealed. The whole subject of naval prize money should properly be under the direct supervision of the Secretary of the Navy, but at present it is under control of the Interior Department, where great difficulties seem to exist in transferring the money from the treasury to the captors to whom it has long been justly due.

SQUADRONS ABROAD.

I would earnestly recommend an increase in our squadrons abroad, particularly in the Mediterranean, Brazil, and the East Indies. In the latter quarter I recommend the employment of one of our heaviest iron-clads, and would suggest that the *Monadnock*, now repairing at Mare Island, be sent there at the earliest convenient moment. This, with the vessels at present on the Asiatic station and an addition of three vessels (of the class of the *Palos*, lately sent there) which are suitable for navigating the Chinese rivers, would constitute a fair supply of vessels for the squadron, considering the present means.

The Brazil squadron should be supplied with a larger flag-ship and two small vessels of the *Narragansett* class, as soon as possible, for the *Wasp* is the only vessel now on that station that can ascend the rivers.

The duties to be performed abroad by our naval vessels are not generally understood or appreciated, yet it is, nevertheless, a fact that, in proportion to the force we have in commission, we give more protection to our commerce than any other naval power. Our policy has always been a contracted one, and so small have been our squadrons abroad that they have given foreigners but a feeble idea of our strength at home, and if the system is continued on the Asiatic or South American coast, it might seem to invite aggression. While we may not aim to contend with the greatest naval powers for supremacy on the ocean, we may at least hope to be able to afford our countrymen proper protection and not subject ourselves to the derision of semi-civilized Asiatics.

SHORTNESS OF CREWS IN OUR SHIPS OF WAR.

I notice in the reports of exercises on board our vessels abroad, that complaints are made of the shortness of the crews, which causes the exercises to be incomplete. The deficiency in the complement of the vessels is owing to the fact that only 8,500 men are allowed our entire Navy. When it is remembered that out of this aggregate a large number are employed in receiving-ships, and in vessels engaged on surveys in compliance with laws passed by Congress, while Congress makes no provision for extra sailors, it is creditable to our officers and men that they can fulfill the requirements made on them with so small a force. To enable our ships to perform all the duties required of them abroad they should be fully manned. It would be small comfort to the country to be told that one of our vessels was discomfited in action, or had suffered wreck, because she had an insufficient crew. We all know what anxiety exists among the friends of our officers and seamen when a vessel's arrival is not reported within a few days of the appointed time, and how ready some persons are to impute to the negligence of the Department any accident that may occur, notwithstanding the latter has used all the means in its possession to make our ships of war efficient in all respects. The proof of the Department's success in this lies

in the fact that many of our war vessels have lately been exposed to the tremendous hurricanes that have swept the coast of Europe and America, and filled the ocean with wrecks, and, although in the heaviest part of the cyclones, the only damage suffered was the loss of a few sails, spars, and boats. Reports from the commanding officers have been received, expressing perfect satisfaction with the strength and equipment of the vessels. Considering that many staunch and well-tried merchant steamers have had to succumb to the late fearful gales, it is nothing more than just to attribute some of our good fortune to the watchfulness and care of the commanders and officers of our naval ships. It must also be recollected that our naval seamen, on their first starting out, are in some cases little versed in the intricacies of ropes, mallets, and marline-spikes, or going aloft—very important parts of a seaman's education.

NATIONAL FOUNDRY.

The importance of establishing an experimental foundry is becoming more apparent every day. During the war of the rebellion the Government was obliged to purchase guns in large quantities. Many of these proved more dangerous to friends than to our enemies. Indeed, so many fatal casualties occurred, caused by the bursting of guns made by gentlemen of known probity, that great want of confidence has been engendered in ordnance not manufactured directly by Government. All nations are now devoting much time and making close investigation into the method of manufacturing the largest and lightest guns, and although we have hitherto taken the lead in this respect, we are at present unable to compete with European powers for want of adequate means. We can only keep pace with them in this respect by experiments, which the size of the naval appropriation will not justify.

In 1862 there was commenced at the Washington navy yard a large experimental foundry, in which it was proposed to cast the heaviest kind of ordnance. This building has, however, until latterly, been neglected and used simply as a storehouse, whereas no means should have been left untried to insure its completion on the most approved plans.

A government that depends on private manufacturers and contractors must at times be subjected to disappointment, while a government that possesses within itself the means of casting its own cannon can be ready for emergencies at any time, and carry on the experiments necessary for the perfecting of ordnance.

For the want heretofore of a proper foundry the Navy will lose the benefit of many guns which have suffered so much from the tests to which they were subjected that they are no longer fit for service.

A gun furnished by a contractor must necessarily be more closely scrutinized than one cast by Government employés, who pay every care to the smelting and mixture of materials and who are more intimately connected with the interests of the Government. The object of contractors is to realize a profit, while the object of the Government would be to make a gun that would render service without endangering the lives of our own officers and men.

After considering the subject in all its details, it was determined by the late Secretary of the Navy, Mr. Borie, that the edifice known as the ordnance building, at the Washington navy yard, should be proceeded with to completion, and that the Ordnance Department should make such experiments as the growing wants of the service require.

The Bureau of Ordnance, during the last session of Congress, gave this matter full consideration, but no appropriation was made by Congress to

proceed with the building, and we still remain without the means to undertake experiments of vital importance to the Navy.

By way of illustration, I will endeavor to show what foreign powers are accomplishing in this direction, that you may be assisted in forming an opinion of what we owe to ourselves.

IN RELATION TO THE NECESSITY OF FITTING UP AN EXPERIMENTAL
FOUNDRY ON THE WHITWORTH PLAN.

Ordnance.—The system of constructing ordnance pursued at the Woolwich dock-yard, at the manufactory of Sir William Armstrong & Co., at that of Krupp, at the manufactory of the French breech-loading guns, and other places, are all matters with which we are more or less familiar, as they have at various times attracted considerable attention and discussion. Our ordnance authorities have not, however, adopted any of the English, French, or Prussian plans of guns, because, up to a recent period, we believed that we had the best gun for smashing in the sides of iron-clad ships, our 15-inch gun at Shoeburyness having broken a majority of plates with a lighter charge of powder than we should use in action against an armored vessel. Our large guns have been found able to stand a larger charge than was originally intended for them, and I am aware of no instance in which any of them have burst after repeated firing with the adopted service charge. Several have broken at the muzzle from binding tightly in the iron port, (the shell at the same time exploding in the muzzle,) but as the “chase” near that part of the gun is made thin in order to pass through the narrow port, it does not take away from the merit of this kind of ordnance. This gun of ours has, however, but a certain amount of crushing power, which cannot be increased, owing to the fact that the best cast iron can only endure a strain of 37,000 pounds to the square inch, which is nearly reached with a hundred pounds of mammoth powder. It must be remembered that our gun was projected when vessels were clad with not more than eight and ten inches of iron, and when it was supposed impossible for ships with heavier armor to be efficient or manageable at sea. At this point we have rested without making any advance in ordnance, while the English and Prussians have made such strides that they possess guns that will drive a shot through the best iron of twenty inches in thickness. We cannot hope to compete with these nations until we have our own experimental foundry, when we can make such tests under the immediate direction of the Ordnance Bureau as will at once enable us to detect all defects in a gun and prevent the adoption of what may in the end prove ruinous.

We have on several occasions cast rifle guns, which, although answering tolerably well for the immediate occasion for which they were required, would be of no use in maritime warfare as at present conducted, except in light-armed wooden vessels for cutting up commerce. During the war of the rebellion many of these rifle guns burst, inflicting more damage upon us than they had previously inflicted upon our foes.

The army 13-inch rifle gun, although of great power, is looked upon by some with distrust, and the several large rifle cannon which have been cast by contractors, and for which the Government has had to pay large amounts, have been so weakened by the not unusual tests to which they have been subjected that they are of no use to the Navy. My observation teaches me that we cannot make a rifle gun fit for service against heavy armored vessels, because we adhere to the system of cast-iron ordnance, in which the metal used has not the tenacity to stand the work required of it.

The Elswick works are celebrated all over Europe, and at this time employ 1,500 men in casting guns for almost every foreign government.

The British government spent many millions of dollars in the adoption of the breech-loading Armstrong gun, which, after a few years of trial, was thrown aside, and the muzzle-loader substituted in its place.

The Armstrong establishment at Elswick, after a career of unexampled embarrassments, has at last reached a point where its reputation is established, and in it the British government possesses all the advantages it would have in a manufactory of its own, although rendered independent of it by the possession of a similar establishment at Woolwich. The guns manufactured at the last-named place are no doubt as good as any can be made of forged materials, with their steel inner tube and coiled reinforcing bands, but they do not, in my judgment, excel the Whitworth ordnance, to which I wish to draw your attention:

“In the Armstrong gun there is a combination of steel and iron, and the union of any two metals is always objectionable. The gun is, moreover, ‘built up,’ and the numerous welds are so many weak points. Finally, the gun is extremely expensive.

“In the Whitworth system all these objections disappear, as but a single metal is employed in the manufacture; yet the British government adheres to the Armstrong gun, and upon the latter depends the supremacy claimed for the royal navy.

“That the claims of the British are not altogether well founded may be inferred from the fact that serious injuries have already been discovered in their 18-ton gun, and they have reduced the charge in their 25-ton gun, throwing a shot of 600 pounds.”

Having considered the advantages and disadvantages of the British naval system, I would recommend that a board of intelligent ordnance officers should be sent abroad to carefully examine into the system pursued at the works of Sir Joseph Whitworth, at Manchester.

If my information is correct, we can obtain a cast steel smooth-bore 15-inch gun able to bear a charge sufficient to smash the sides of the heaviest iron-clad at present constructed, and a 25-ton rifle gun cast at an expense that will enable us to dispense with our present rifle ordnance on shipboard.

To arm our iron-clad vessels with guns the shot from which will crumble to pieces against an enemy's sides, seems merely to invite defeat, which must be the case with our present cast iron shot.

It has been found at the Whitworth works that from the metal there in use can be made guns bearing a tensile strain of 84,000 pounds to the square inch. This is not on the Bessamer or forged steel principle, which is not so strong as the Whitworth, because the metal is never free from porosity, but is simply *molten decarbonized metal*, which is poured into molds, and subjected to great compression while cooling by means of a very powerful hydraulic press.

The immense pressure closes all the pores in the metal, and, bringing its particles into close proximity, the result is the production of a casting having all the tenacity of forged steel combined with the special convenience and economy of cast steel. The press at present in use has a power of 2,500 tons, and another which the Whitworth company are now building will exert a pressure of 8,000 tons, and will be used to exert a pressure upon castings of 20 tons to the square inch. With this pressure no molds will stand except those made of the Whitworth metal itself.

In the above extract from the report of First Assistant Engineer R. H. Thurston you have the principle on which the Whitworth gun will be made in the future, and here we find the means by which we can obtain a cheap and effective gun that will at once, as respects ordnance, place us on an equality with any other naval power.

Unless blind to our own interests we cannot permit such a principle as this to go unnoticed, and means should be at once adopted to secure its introduction in our service, if it is correct. This can be effected with much less expense than was incurred by the original inventor of the process, who exercised a great deal of ingenuity in arranging the details of his simple method, and was, beside, subjected to a large expenditure of money.

To sum up the advantages of guns made by the Whitworth process, "The metal can be relied on to bear a tensile strain of 45 tons per square inch, and to elongate 25 per cent. before breaking." Here, then, is a metal that will enable us to cast the toughest and lightest smooth-bore gun, and is yet sufficiently hard to stand the friction of any steel projectile that may be fired from rifled ordnance—a desideratum long sought for in the fabrication of our guns, but never before attained.

For shells intended to penetrate armor, we have here also the metal that will not crumble to pieces against the hardest plates, and that made into a chilled or flat-headed shot will cut through the toughest iron.

It would be good policy to purchase a small number of these guns from the Whitworth establishment to try them in service while we are preparing the works to construct them ourselves, which we shall no doubt have to do for our own convenience and safety. Some other process, it is true, may be discovered to succeed that of Whitworth, but we must do as other nations do, incur expense to keep up with the progress of the age.

We can no more stand still watching for others to reach perfection in ordnance than we can in building iron-clads. A navy kept up even on the humble scale of our own is an expensive establishment, yet it would be better to have none at all, and to depend upon the friendly feeling which the world at large might be disposed to extend to us, than to have one incapable of coping with the ships of a very inferior naval power.

It is an absolute necessity that we should at once provide ourselves with a rifle gun equal in all respects to the 25-ton English gun. Such a piece of ordnance, in combination with the heavy smooth-bore to which we adhere, would be very effective, and give us a great advantage over an enemy armed with but one of these two kinds of guns.

We have no gun that will penetrate the sides of an iron ship under water, while the English rifle gun, with a flat-headed shot, will break through the sides of a ship at an angle of seven degrees.

By experiments made with a 1-pounder Whitworth gun, a flat-headed shot of Whitworth metal reached the point aimed at, 39 inches below water, without deflection, and penetrated the armor. The effect of a 600-pound flat-headed shot would be the same, and it may be conceived how soon one of our vessels would be disabled by such a projectile.

We have not paid that attention to experiments of this kind that the subject demands, but have depended too much on experiments made abroad. This neglect does not arise from any want of interest in our ordnance officers, who are keenly alive to the importance of the subject, but from the very limited appropriations allowed, and from the want of a proper ordnance practice ground. The experiments required are expensive, and, to secure any approach to perfection, must be continuous and employ a considerable number of officers, who would not only be performing the duty required of them, but would be constantly improving in this important branch of their profession.

I append herewith a table containing particulars of the Whitworth

guns now made, showing prices much less than similar ordnance could be procured in this country.

Particulars of Whitworth guns.

Size.....	7-inch.	8-inch.	9-inch.	11-inch.
Weight	7 tons.	10 tons 6 cwt.	15 tons.	27 tons.
Weight of shot.....	255 pounds.	375 pounds.	535 pounds.	965 pounds.
Weight of charge.....	23 pounds.	34 pounds.	50 pounds.	90 pounds.
Price.....	£950.	£1,400.	£1,800.	£3,200.

Penetration and range 20 per cent. greater than Armstrong.

IRON-CLADS.

While other nations are experimenting in iron-clad vessels, and endeavoring to find some method of resisting the impact of the heaviest shot, we are doing absolutely nothing in that direction. Until lately it was perhaps just as well that we looked on and carefully observed the supposed improvements made by foreigners, for there have been many failures, involving much expenditure of time and money, both in England and France, the two nations furthest in advance in the construction of iron-clad vessels.

We have carefully noted what has been done abroad in this line from time to time, and the qualities of the different foreign vessels have been closely criticised. The conclusion arrived at is that there is no difficulty in building, in this country, an iron-clad vessel equal, if not superior, to any that has been constructed abroad, and at the same time avoid the errors committed by our transatlantic friends.

Expensive as the vessels of war now in use may be, we are obliged to keep pace with those who stand before the world as our maritime rivals if we desire to possess that prestige which should naturally belong to a nation of our magnitude. We cannot hope to maintain the character of a first-rate naval power if we content ourselves with merely observing the experiments of others, (who are gradually attaining perfection,) with the idea of finally adopting their plans when matured.

There can be no absolute perfection in the building of ships or machinery; there is always an improvement going on, and a ship, considered perfect of its kind, is no sooner completed than another, with additional improvements, is desired. Great Britain, France, and all other European powers have not been hindered by expense from the adoption of new plans for iron vessels, and no sooner are defects discovered in one of their vessels than another is planned with a view to remedy them. The result has been an accumulation of iron ships, the majority of which would appear to be unexceptionable vessels.

There are so many questions involved in the construction of iron ships of war with heavily armored sides that it would be strange indeed if partial failures did not sometimes occur; and this is what we must ourselves expect in building ships of war of the present style. There are four points of great importance to be considered in naval construction—stability, steadiness, speed, and invulnerability; and in reference to these points we shall never be able to arrive at any conclusion until we commence building ourselves, and thus encourage the talent of our own country, which has hitherto given proofs of great superiority.

After all the fine vessels built by the English, many of which have been pronounced perfect, they have projected a new class of iron-clads.

Three of these, the Vanguard, Audacious, and Invincible, are finished, and are being tried, and three others are under construction. These are no doubt powerful vessels, and as we have generally no means of ascertaining the result of the experiments undertaken to test them, we can know no more of their performances than it may suit the British government to make public. How, then, could we be justified in waiting to copy ships built after years of experience, and probably perfect of their kind, when we cannot get the reports of the officers who command them, such reports abroad never being made public as similar ones are in this country ?

To show the folly of our waiting for foreign powers to further perfect the iron-clad system, I would simply remark that we would be as likely to adopt their failures just at the time they were abandoning them.

In regard to the British vessels I have mentioned, the last of those built, although very fast under steam, are not considered successes as ships of war, and I think that their officers and men view them with distrust. The admiralty having found that raising the weight from below increased the steadiness of the vessels, made this change at the expense of stability, and have so far affected their iron-clads and their magnificent Indian troop-ships that the latter, on their trial trip, without a stitch of canvas set, heeled sixteen degrees. There is consequently some fear, increased by the loss of the Captain, that they will capsize in a heavy squall. In consequence of the anxiety that is felt, orders have been issued to put 300 tons of water within the water-tight compartments and double bottoms of the vessels. Such a proceeding at once affects their speed and deprives them of the first requisite in a ship of war, and although these iron-clads have only the spars of our old first-class frigates, the authorities already talk of reducing them. From this will appear the absurdity of our waiting any longer for foreign powers to solve the problem of an iron-clad ship. We must accept the situation as it is, and go to work with our common sense practical ideas, which I am sure will again give us the lead we took in the earlier construction of iron-clads.

The English do not confine themselves to building one kind of vessel, but have several plans on foot at one time, and have lately produced a new ship, the Devastation, which, if report speaks truly, is a marvel of her kind. This vessel has a 12-inch plated hull, with 18-inch heavy wood backing lined with iron. Her 14-inch iron turrets, with 12-inch plates on the breastwork in front of the turret, would seem to bid defiance to our heaviest guns, which were cast at a time when nothing stronger than five or six-inch plates were in use. It was never calculated that their smashing projectiles would demolish such structures as those mentioned.

There is a delusion prevalent among the majority of our people, that we possess the most powerful ordnance in the world in the 15 and 20 inch guns. The former, at a moderate distance, would break through 15 inches of English iron plates; and the latter would, by calculation, with 200 pounds of powder, penetrate or smash a 20-inch plate, with solid backing; yet these guns would probably have little or no effect on a vessel of the "Devastation" class; while the latter, armed with the 12-inch Woolwich gun, could drive her shot through our best 14-inch plates and demolish those of 20 inches in thickness. Formidable as this vessel is, we should hesitate to blindly copy her, not knowing whether she possesses the requisite stability and sailing qualities of a ship of war. If one of our monitors were to come in conflict with a ship of the "Devastation" class, there would be little doubt as to which would be the

victor; for, although at sea and at close quarters we look upon our smooth-bore guns as possessing certain advantages, it is defective as far as obtaining great initial velocity is concerned, and can only be damaging to a heavily-armored opponent at a very short distance. This position of close quarters can only be gained by possessing very great speed.

At the present time we have reached a point of endurance in American cast-iron ordnance that cannot be exceeded with that material. Our gun metal has only been made capable of resisting a strain of 37,000 pounds to the square inch, and as the limit of elasticity of a metal is passed long before the breaking strain is reached, the limit of safety is attained before a pressure of 30,000 pounds. Thus it will appear that, while we may be battling against a vessel with a double armor, (of 14 and 12 inches combined,) we using a shot of over 400 pounds, with an initial velocity of 900 feet per second, she will, in return, contend against our 13-inch plates with a gun that can bear a tensile strain of 45 tons to the square inch, a shot weighing over 600 pounds, and having an initial velocity of 1,600 feet per second. These are heavy odds for our Navy to contend against, and nothing but disaster can result unless we keep pace in the march of improvement.

Should war unfortunately be forced upon our country it would not be pleasant for those who have to take part in the conflict to contemplate the probable results, and humiliating as it is to be obliged to confess our weakness, it is surely better to do so now than to have the knowledge sprung upon the nation when too late to remedy the evil, and when the greatest disasters have overtaken us.

In conclusion, will you please allow me to draw your attention to the available sea-going vessels now belonging to the Navy. The register presents an array of names that would lead our legislators to believe that we had a respectable force; and, indeed, if we possessed the number of vessels, of the right kind, stated in the list, it might be said that we had a fair navy. Our whole available force of vessels, sail and steam combined, in commission, under repair, and laid up, is fifty-three, calculated to mount seven hundred and seventy-nine guns. Four of these, intended to carry ninety-two guns, will never be of any use to the service, for, as they are built of unsound timber and require great alterations, it would be cheaper to build new vessels. Out of the whole number, twenty-four, to mount three hundred and sixty-two guns, are under repair. Some of these require slight, but the majority need thorough, repair. This will leave twenty-nine available sea-going vessels, of sail and steam power, carrying four hundred and seventeen guns.

There are six screw steamers on the stocks to mount one hundred and twenty-two guns. These, if not soon launched and placed in commission, will so deteriorate that they will require a much larger amount than at present to finish them.

There are four heavy monitors on the stocks, which it will be well to keep there for the present. When completed they will be formidable vessels, capable of bearing armor that will resist the heaviest foreign shot. They can also be arranged to carry 20-inch guns, throwing a weight of shot which few ships could resist. I would recommend that every care be taken for the preservation of these vessels, and that all the material required in their construction be collected and fitted so that they can be launched at a moment's notice.

We have in commission three monitor or turret vessels mounting eight 15-inch guns, and nineteen others laid up in ordinary that could be made serviceable. Some of them require large expenditures, but a

few are in tolerable repair. For harbor defense, to act in concert with forts, these monitors could, in a short time, be made very serviceable, with the exception of three or four which are so far gone that it would not be economy to repair or rebuild them.

We have twenty light-draught monitors that are simply worthless as fighting vessels, yet they could be made valuable in time of war in obstructing channels by stretching chains from one to another.

There are twelve paddle-wheel steamers, only two of which are fit to go into action. Seven of them should be sold out of service, and their places supplied with light screw steamers.

There are twenty-two old sailing vessels of various classes, used as receiving ships, store-ships, &c. Of these, eleven are serviceable as store and practice ships, but are not suitable for war purposes.

There are thirty-five tugs and store vessels in moderately good repair, though not suited for offensive purposes. The tugs are useful as dispatch vessels along the coast and for towing.

There are five condemned vessels, including the *New Orleans*, 74, (on the stocks at Sackett's Harbor.)

Together we have a sum total of one hundred and eighty-one naval vessels, of which number only forty-nine are at present available as ships of war.

Many of the vessels on the register should be entered as "hulks," for at present they tend to deceive our own people with regard to the strength of our Navy, while foreign powers are well aware of the value of every vessel in our service, as they have for years employed intelligent officers in this country to keep them informed in all particulars relating to our ships in commission or under construction.

From this exhibit it will be seen how necessary it has become for us to build a new set of vessels; for to repair many of those that we have on hand would cost more than to construct new ones, since there is first the expense of pulling the old vessels to pieces, and then of putting them together again, all without obtaining first-class vessels of war.

I have the honor to be, very respectfully, your obedient servant,
 DAVID D. PORTER,
Admiral.

Hon. GEORGE M. ROBESON,
Secretary of the Navy.



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