

HARBOR DEFENSE AND BASES OF SUPPLY.

Uncle Sam's Elaborate Precautions For Keeping Off Hostile Fleets. Some Mammoth Guns.

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The subject of the coast defense of the United States is one which not only animates the movements of the war department under the special supervision of Brigadier General Daniel W. Flagler, chief of ordnance, but it is also of personal interest to millions of people whose property and lives are in some prospective danger from the sea or, as it is called, from the guns of an enemy.

It will be a surprise to the general public, but the United States government has had in process of construction for some years past a magnificent new system of coast defenses that entirely superseded the old and less effective fortifications of the highest and most advanced type. It was begun in 1880 under the supervision of General Thomas Lincoln Casey (since deceased), the then chief of engineers. It is these defenses rather than battleships that will protect our coast trade and cities, and no more important necessity for absolute protection can be imagined than in the metropolis of the country.

The duty of the defense of New York was to be advanced by the batteries in an emergency by the heavy batteries of Fort Hancock, at Sandy Hook, and Fort Wadsworth and Fort Hamilton, facing each other across the Narrows, and even the fortification of Plum Island, in Flamingo Bay, will be a helpful adjunct.

Sandy Hook, from its position at the narrow entrance of the outer New York bay, is the most important defensive point and has been specially prepared for the establishment of a permanent battery of guns. The place has undergone a transformation since its only importance as a lighthouse station that renders it unfamiliar in the vision of some days. The government took possession of the beach for six miles from the sand dunes to the prevailing ground, and for months there have been signs of life and activity previously unknown. Residents of the Hook who could not furnish official reasons for their presence were evicted months ago, and work was immediately commenced on the new fortifications. It was pushed with commendable rapidity, a large number of laborers having been employed in addition to the enlisted men.

Visitors by rail find a weary walk of five or six miles through New Jersey sand, and the only other means of reaching this isolated spot is by the government boat or launch, which makes regular daily trips from South ferry, at the foot of Broadway, New York city, touching at Governors Island, Fort Hamilton and Fort Wadsworth. For transportation by this small steamer Colonel A. K. Mitchell, deputy quartermaster general, issues passes to those who have business there, principally to officers and others engaged by the contractors who have charge of the work.

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Naturally great secrecy is maintained. The government never tells its secrets and thereby adds a grand mystery to the individual and visitors are never allowed to do more than view the fortifications from the outside.

It is very apparent that the masonry has no part in the present plan for harbor defense except in the foundations for the great rifle guns upon which, as much reliance is placed. The old fort at Sandy Hook has been removed, and the white faced masonry that once stood so boldly at Fort Wadsworth and Fort Hamilton, facing each other across the Narrows, is regarded rather as a menace to the masonry in action from flying fragments and shrapnel than a protection to either men or guns. Embankment of earth, with concrete that is prearranged to be poured in place, is the most approved method for the construction of the earthworks. The earthworks are constructed with steam shovels. One of the larger shovels, despite their enormous weight, have the machinery of their discharging carriages so nicely adjusted that these immense weights are loaded and lowered with the greatest ease and rapidity of action.

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The probability is that no vessel that would fall to be completely demolished if one of these projectiles strikes the hull and explodes in her interior. This would easily be the case of a well aimed shot, as the shells without difficulty, and the steel deck of a vessel is rarely more than half an inch thick. The shells can be fired from four to six miles and drop with great accuracy into an area smaller than that covered by the deck of a ship, and each projectile is charged with about 100 pounds of highly explosive powder of very comminability. The steel gun, which weighs about 10 tons, is mounted, as are the 12 inch and 10 inch guns, on either the United States disappearing carriages or the one known as the Howitzer-Howitzer. The latter permits the firing, as shown by actual test at Sandy Hook, under unfavorable conditions of wind and weather, of ten rounds in 16 minutes and 12 seconds. The weight of a projectile of a 12 inch steel gun is usually about 1,600 pounds. It can pass through 12 inches of steel at a distance of two miles with a charge of 50 pounds of brown prismatic powder.

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employment will be fully \$300,000. The first casting of the gun was made at Bethlehem, Pa., last October. It was a great nickel steel cast 14 feet 7 inches long, 6 feet 2 inches in diameter and weighing 352 gross tons. The several castings were made and put under the 12 ton hammer in succession, and when finally the great muzzle was all fabricated and built up it was shipped to the Watervliet arsenal for completion.

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So as to give them the benefit of association with soldiers who have had some experience and this, while not weakening the working force of a gun, strengthens the morale and capability for the service. That the soldiers now assembled have the special duties to perform and are not supposed to be in "dull round men." The specialists in the defense of the coast are the most experienced and the most efficient of the army.

Naturally great secrecy is maintained. The government never tells its secrets and thereby adds a grand mystery to the individual and visitors are never allowed to do more than view the fortifications from the outside.

It is very apparent that the masonry has no part in the present plan for harbor defense except in the foundations for the great rifle guns upon which, as much reliance is placed. The old fort at Sandy Hook has been removed, and the white faced masonry that once stood so boldly at Fort Wadsworth and Fort Hamilton, facing each other across the Narrows, is regarded rather as a menace to the masonry in action from flying fragments and shrapnel than a protection to either men or guns. Embankment of earth, with concrete that is prearranged to be poured in place, is the most approved method for the construction of the earthworks. The earthworks are constructed with steam shovels. One of the larger shovels, despite their enormous weight, have the machinery of their discharging carriages so nicely adjusted that these immense weights are loaded and lowered with the greatest ease and rapidity of action.

The batteries are placed some distance apart, which enables them to act independently and to greater advantage and at the same time to scatter the fire of the enemy as to increase the chances of its being ineffective. Each battery is connected by telephone and telegraphic communication with the other and with the command post, where the commanding officer occupies a protected position that enables him to observe the movements and tactics of the enemy and direct the operations of his own force.

The personnel of the post with an officer exposing himself to view of the enemy is utterly useless. It would result in almost instant annihilation. There may be several charges of the army with all the old, solid and brilliant endeavor, but in naval engagements and shore batteries the soldiers and officers must be under cover.

The men at work behind the ramparts, even the gunners, often move about in almost total darkness. They are not to be seen by the enemy, and the only light is that of the searchlights. The men at work behind the ramparts, even the gunners, often move about in almost total darkness. They are not to be seen by the enemy, and the only light is that of the searchlights.

The proving ground at Sandy Hook is rarely visited by one of our guns different either in construction or principle from those in ordinary use. The new ideas for the mounting and machinery of carriages are constantly being put into practice.

The guns that are thought to be the most formidable in coast defense are the 16 inch and 12 inch breech-loading steel rifles and the steel and cast iron mortars. The 16 inch and 12 inch types form part of each coast battery, the mortars generally being regarded as the most reliable for defensive purposes. They have great destructive power and are the only type of gun that are also called howitzers—easily and precisely handled at angles of extraordinary elevation. They carry a projectile of 1,600 pounds that can be sent up into the air and dropped on the deck of a vessel, thus doing a certain kind of damage impossible by any other means and surely more effective than any straight shot, in which the chances of striking a vital spot are conjectural.

The probability is that no vessel that would fall to be completely demolished if one of these projectiles strikes the hull and explodes in her interior. This would easily be the case of a well aimed shot, as the shells without difficulty, and the steel deck of a vessel is rarely more than half an inch thick. The shells can be fired from four to six miles and drop with great accuracy into an area smaller than that covered by the deck of a ship, and each projectile is charged with about 100 pounds of highly explosive powder of very comminability. The steel gun, which weighs about 10 tons, is mounted, as are the 12 inch and 10 inch guns, on either the United States disappearing carriages or the one known as the Howitzer-Howitzer. The latter permits the firing, as shown by actual test at Sandy Hook, under unfavorable conditions of wind and weather, of ten rounds in 16 minutes and 12 seconds. The weight of a projectile of a 12 inch steel gun is usually about 1,600 pounds. It can pass through 12 inches of steel at a distance of two miles with a charge of 50 pounds of brown prismatic powder.

Whether these mammoth guns have been tested the public has not been told, but should they prove a success it will be a great triumph for our ordnance officers, as they differ in their estimate of the value of these formidable weapons from many of the experts abroad.

It is stated that the complete fortification at Sandy Hook will be a battery of two 12 inch guns mounted on

discrete. The operations of these instruments also occupy a great deal of time and space, and the information by means of the telephone.

The largest gun in the world is to be put on the new fort at Sandy Hook, and the 16 inch and 12 inch guns, it is a matter of greater defense power than a whole battery of small ordnance and will greatly protect the harbor from an invasion by Spain's heaviest cruisers. A full sized gun could easily cross into its muzzle. It far surpasses the famous Krupp gun that was exhibited at Chicago during the World's fair of 1893.

The American gun is 120 feet long and a foot 2 inches longer than the Krupp gun. Its range is 24 miles longer. It will 24 miles longer. Its powder charge 40 pounds larger, while the caliber, 16 inches, is one-half inch less. Its dimensions are as follows: Length, 120 feet 2 inches; weight, 130 tons; weight of the shell or projectile, 1,600 pounds; powder charge, 1300 pounds. The diameter through the breech is 16 inches.