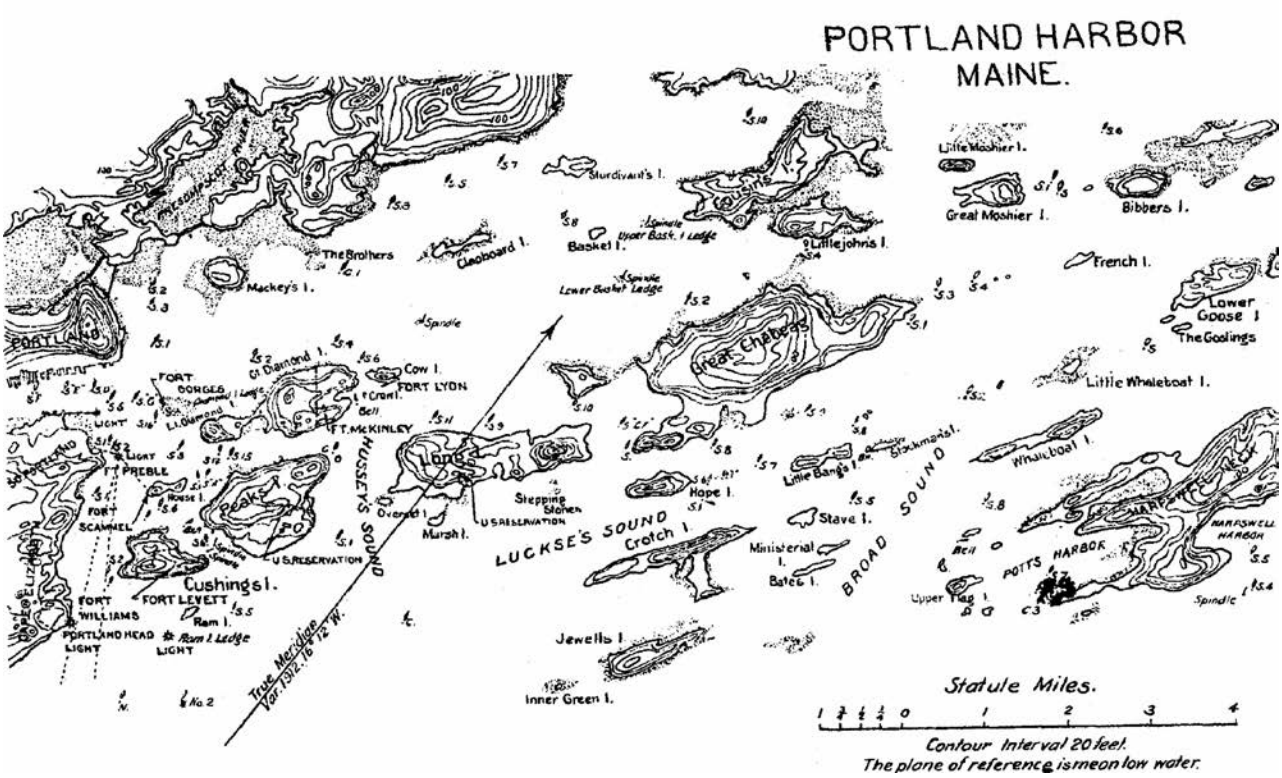
The Seacoast Defenses of Portland, Maine 1605-1946
Part I: Portland's Initial Defenses

William C. Gaines

Casco Bay

Casco Bay is an extension of the Gulf of Maine, between Cape Elizabeth on the southwest and Small Point on the northeast, along Maine's southwest coast. The bay's seaward boundary is formed by numerous islands and mainland promontories. From seaward, the islands give the impression of an irregularly indented and almost continuous shoreline. However, numerous sounds, channels, and passages wind through the chain of islands across the mouth of the bay to one of the largest and best-protected anchorages north of Boston. Casco Bay is comprised of three distinct portions, each well defined by finger-like projections from the mainland and groups of islands.(11)



Portland Harbor and Casco Bay. *NARA*

Portland Harbor itself constitutes the westernmost portion of the bay, bounded by Cape Elizabeth, the mainland, and Cousins and Great Chebeague Islands. Long Island, Little and Great Diamond Islands, Peaks Island, Cushing Island, and House Island form a chain across the seaward side of this portion of Casco Bay. Between Cousins and Great Chebeague Islands on the west, and Harpswell Neck and Bailey Island to the east, lies the middle portion of Casco Bay. The bay's easternmost section, the smallest and least protected by barrier islands, is formed by Harpswell Neck and Bailey Island and a promontory known as Small Point.

Some of the more than 100 islands in Casco Bay have had more than one name in the course of their history. Great and Little Diamond Islands were formerly known as Great and Little Hog Islands, while Cushing Island has been variously named Fort, Andrews, Portland, and Bangs Islands over the past three centuries. Other geographic features, such as Hussey Sound and Peaks Island, have had a variety of spellings.

The rock-girded islands of Casco Bay are not unlike much of Maine's coastline. Cliffs rise sharply 40 to 50 feet from the water's edge and then slope up more gradually to 100 feet or more on some of the larger islands. While some of the smaller isles are relatively barren, thick vegetation covers most of the bay's islands.

Colonial Antecedents

Although various 15th and 16th-century navigators such as John Cabot and Giovanni de Verrazano may have been among the first Europeans to see Casco Bay, Capt. George Weymouth is credited with the discovery of that expansive body of water that would become Maine's foremost commercial seaport.

The First Defenses, 1623-1676

It was not until 1623 that the Council of Plymouth gave Capt. Christopher Levett land to establish a plantation. The 6,000-some acres encompassed all the islands in Casco Bay as well as a sizable portion of the adjoining mainland, including the small peninsula initially named Casco Neck, later known as Falmouth Neck, and still later as the City of Portland.

Almost immediately after their arrival, the initial settlers took measures to protect themselves from the nearby Abnaki Indians. Levett erected the first strongly built "fortified house" about 1623 or 1624, on an island in the bay believed to have been Fort (later Cushing) Island.(2)

As the number of settlers increased and the plantation on Casco Bay expanded, the colonists built additional fortified houses on other islands. Their sole refuge in the event of Indian attack; these could be easily relieved by sea in the event of a siege. These fortified houses were the chief defensive structures for the colony's first 50 years until garrison houses begin to supplant them in the 1670s.(3)

Although Casco Neck, the present location of Portland, was first settled in 1632, it was not until 1675 that the settlement had any defenses stronger than the fortified house. The first garrison house, Munjoy's Garrison, was a larger-than-average refuge erected atop Munjoy Hill for the settlers on the "Neck." The early garrison houses were generally two-story, built of heavy timbers, with the upper floor projecting beyond the lower story. Some had flanking lookouts at the upper-story corners. Normally "garrisoned" by two to six men, they were usually commodious enough to house ten times their garrison.

The First Forts

The first uprising of the Indian tribes, King Philip's War of 1675, brought an abrupt close to an era of peace for sparsely populated Casco Bay. Marauding bands of King Philip's followers soon laid waste to much of coastal Maine from Kittery to Mohegan into 1677, although the chieftain had met his death a year before.

Even before the destruction of the Casco Bay settlements in 1676, plans were underway to construct fortifications on Casco Neck. The planning pace increased markedly after the attack, however, and in September 1676, the General Court of Massachusetts ordered Capt. William Hawthorn to

construct a fort on a low hill near the shore at the foot of present day India Street in Portland. Actual construction was probably not begun until the late 1670s, when the neck was again resettled.(4)

Fort Loyall, completed about 1679, consisted of a barracks, guardhouse, several shops, and a storage building, all of logs, within a loopholed timber palisade. Towers on the interior of the palisade served for observation and defense. The fort was arranged for eight pieces of artillery, and the garrison consisted of a sergeant, a gunner, and 10 privates initially under Captain Hawthorn and later Capt. Edward Tyng.(5)

The 1680s were relatively free of overt Indian attacks on the neck, but the inhabitants continued to improve their defenses. A new garrison house, Lawrence's, was built of stone on the summit of Munjoy Hill. A half mile west of Fort Loyall, Ingersoll's Garrison was built on the "Fore" at the edge of the settlement. Two other garrison houses were also built, but their locations are unknown.

The war between England and France known as King William's War had been underway for a year when the French undertook to drive the English colonists out of Maine. In September 1689, a party of French and about 400 Indian allies descended on the neck and threatened the settlement. The timely arrival of several companies from Boston under Major Church saved the settlement, whose inhabitants had taken refuge in Fort Loyall. Church drove the French and Indians off after a sharp fight some two miles west of the fort. In light of these increased threats to the neck, another small work was erected about one mile west of Fort Loyall. This half circle, or lunette, was enclosed on its rear or gorge. The capital of the work bore on a marsh that extended to the Casco River in front of the fort.

Fort Loyall faced its second test in May 1690, when another force of French and about 400 Abnaki Indians again attacked Casco Neck. The 200 men, women, and children in the settlement took refuge in the fort. Count de Portneuf and Francois Hertel, leaders of the invading force, threatened to set the fort on fire, and Capt. Sylvanius Davis agreed to surrender when his effective force dwindled to less than 50 men. The terms of capitulation, which included safe passage for the settlers to the nearest English town, were quickly forgotten when de Portneuf's Indian allies slaughtered all but five of the fort's inhabitants. The French then burned the fort and the town and moved on to attack other settlements in the region. The massacre of Fort Loyall's refugees so horrified the English settlers that nearly all of the communities along the coast southward to Wells were abandoned. Only Wells, York, Kittery, and the Isle of Shoals remained populated.

The Casco Bay area remained abandoned for nine years, but Major Church, with five companies of troops and some Indian allies, landed at Spring Point on Cape Elizabeth and defeated a large force of Androscoggin Indians in September.(6)

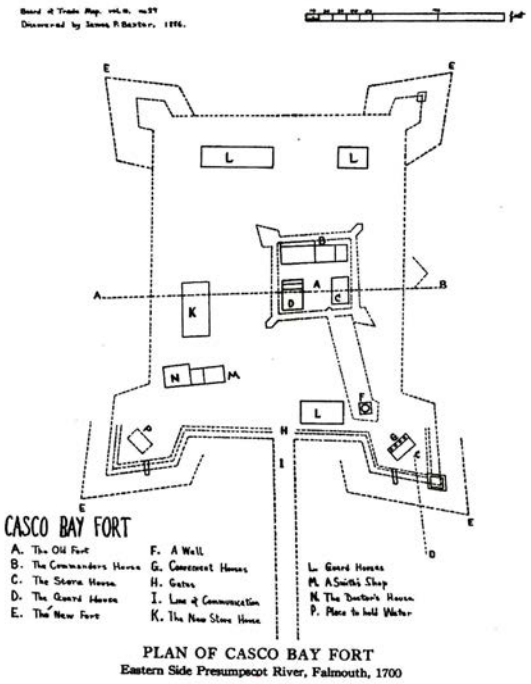
New Casco Bay Fort

Reassured of their safety at the end of the war in 1698, the settlers returned to Casco Bay. However, their settlement named New Casco Fort was not at Casco Neck, but some three miles from old Fort Loyall, on the left bank of the Presumscot River at present day Falmouth. The abandoned settlement at Casco Neck was termed "Old Casco."

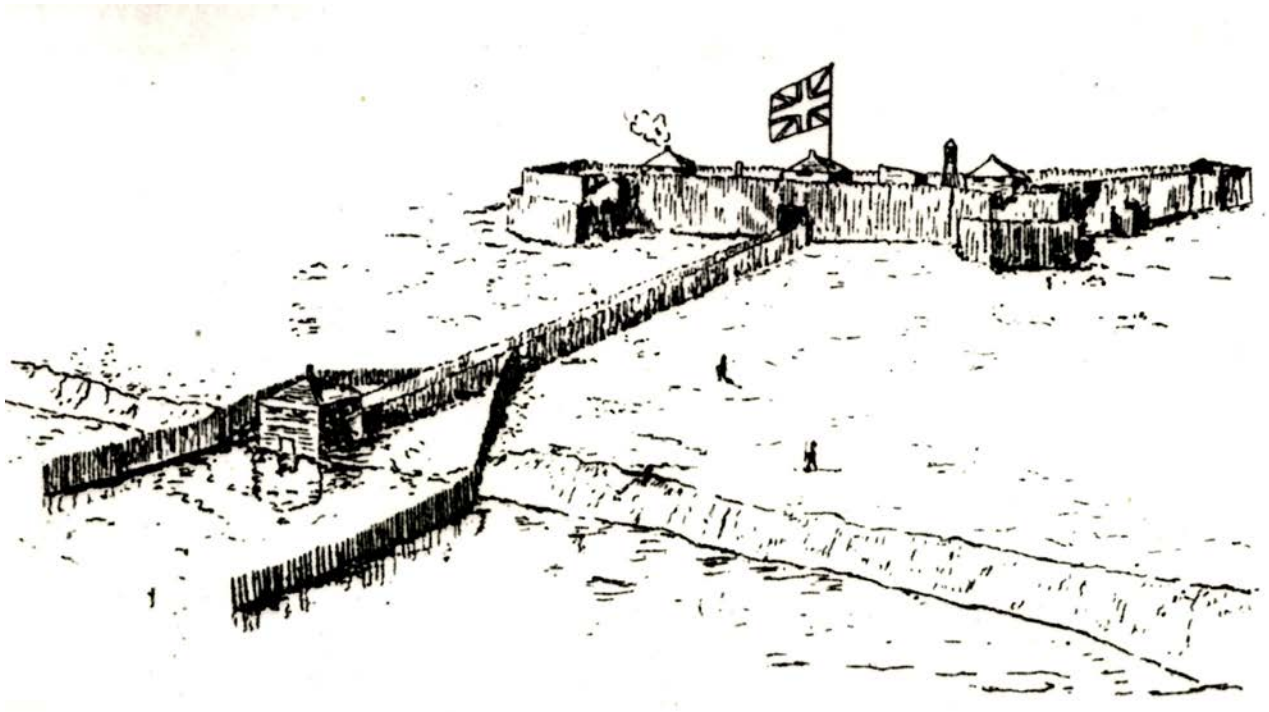
New Casco Fort was a small square work with bastions at the northeast and southwest corners and sentry boxes at the opposite corners. The stockade curtains were of logs and timbers. A postern in the south curtain opened to a path, enclosed on both sides by a stockade, to the well some 100 feet southeast of the fort.

The new fort had been complete only about four years when war between England and France erupted again in 1703. Queen Anne's War quickly spread to the colonies and New Casco Bay Fort was one of several locations attacked by the French and their Abnaki allies, 500 men under Sieur de Beau-

bussin. The fort's 36 men under Major March put up such an effective defense that the French were forced to begin regular siege operations. The siege was lifted, however, when an English man-of-war from Boston took the French and Indians under heavy fire, scattering them in hasty retreat.(7)



Casco Bay Fort, 1705. *Dunneck, Maine Forts*



New Casco Bay Fort, 1700

Scarcely had the siege been raised when Governor Dudley of Massachusetts assigned Colonel Redknap to build new fortifications at New Casco. Construction commenced quickly and was completed by 1705. This new fort, 10 to 12 times the size of the first fort, encompassed the old works within it. The regular-bastioned quadrangle with a stockade trace encompassed about one acre. The east and west curtains were 250 feet long, the north and south curtains 190 feet. There was a sally port in the center of the south curtain and posterns in the other three fronts. In front of the east postern, a small redan protected the small gateway.

Inside the work were eight log and timber buildings for quarters, storerooms, etc., as well as the old fort. The Southwest Bastion contained a cistern and the Southeast Bastion the latrine. From the south face, a stockaded roadway extended from the postern to the river, where the stockade walls flared to encompass a blockhouse and provide a protected mooring for the garrison's boats.(8)

Casco Neck Fortified again

With the resettling of Falmouth Neck in 1717, Fort New Casco, north of the Presumpscot River, was abandoned and dismantled, and the timbers floated over to Falmouth. For the next 15 years, the rebuilt settlement had no defensive works beyond a few garrison houses, although a small force of troops was quartered in the town. In 1731, however, the town appealed to the General Court of Massachusetts to have Fort Loyall rebuilt. Work began on the site of the old work but was not completed.

In 1742, work was resumed and an earthen battery for ten 12-pounders was thrown up on the site of old Fort Loyall and a blockhouse was erected in the rear of the battery. The province appropriated £400 for construction; the townspeople provided the labor. Enoch Freeman directed the project and became the fort's commander upon its completion. While the town was secure from raids by Native Americans, smaller coastal settlements like Scarborough were still susceptible, and the interior remained dangerous. The threat of French naval attack in1746, during King George's War, prompted the people of Falmouth to throw up a small two-gun battery of 18-pounders at Spring Point. That same year, a blockhouse was built in the back of town (now Monument Square), where a new county house was later built in 1760. Fortunately the French did not come.

When the French and Indian War broke out in 1754, Falmouth was protected only by the small battery and blockhouse on the site of old Fort Loyall, and a few garrison houses. Falmouth Fort on at Spring Point, the site of the 1746 battery and the future site of Fort Preble, was repaired in 1755, on the outbreak of the last French war. After the Treaty of Paris in 1763, there suddenly was no French or Native American threat along the coastline or the first tier of inland settlements, and Falmouth Fort was allowed to deteriorate. By the coming of the American Revolution, the town of Falmouth had become a flourishing seaport, the epicenter of the Maine District, but it was once again all but defenseless.(9)

The American Revolution

No town or city in America suffered as much at the hands of the British during the American Revolution as did Falmouth. The strained relations between Great Britain and her North American colonies in December 1774 found Falmouth totally unready for war. The lack of powder and shot for the town's decrepit battery of four old cannon prompted the selectmen to remove them to a safe location. Although some expenditures were authorized in 1775 to improve the town's defenses, little progress had been made and ammunition was lacking.

There was no doubt that most of Falmouth was squarely on the side of rebellion. A number of incidents had occurred in Falmouth, not the least of which was the detention of Lt. Henry Mowat, captain of H.B.M. sloop *Canceaux*, 8-guns, and two others by Col. Samuel Thompson and a company of Brunswick militia on May 9, 1775, just three weeks after the battles of Lexington and Concord. The townspeople were furious at the Brunswick militia, realizing the ramifications. Mowat's second-in-command warned that he would fire the town, and at the urging of the townspeople, Thompson freed Mowat that night on parole, which Mowat broke the next day, sailing back to Boston.

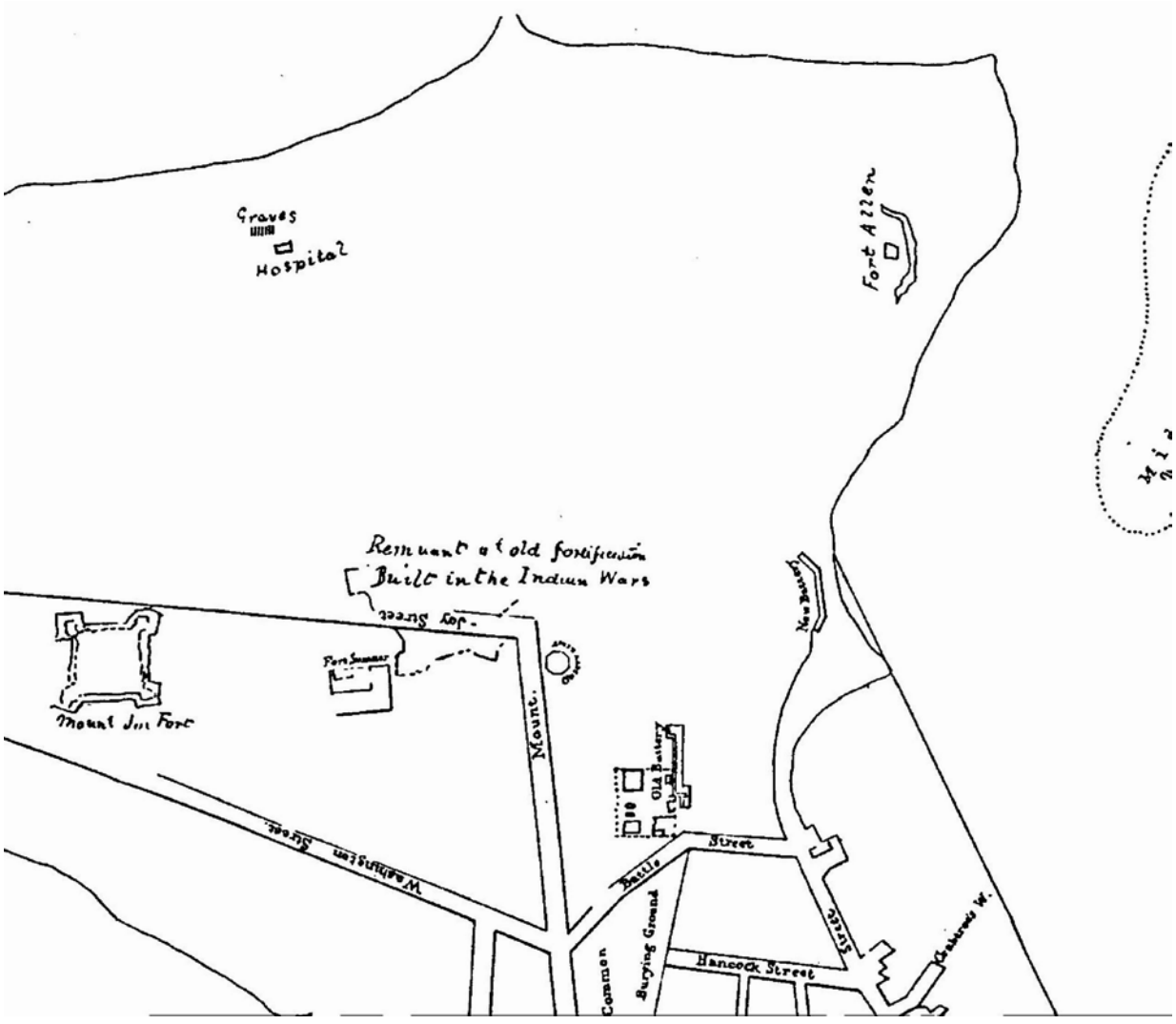
A small five-ship flotilla led by Lt. Mowat arrived in Portland Harbor October 16, 1775, and anchored opposite the town the next day. Mowat sent a lieutenant under flag of truce to the town, with a warning. A committee chaired by former Gen. Jedidiah Preble met with Mowat on October 17 on board his ship. Mowat told the committee that he would delay any punishment if the town gave up its cannon, arms, and ammunition by 8 A.M., and would dispatch the British admiral for approval to abandon the bombardment. The town refused to give up its war materiel the next morning, and Mowat's bombardment began after 9 A.M. and lasted until 6 P.M., while landing parties of marines set buildings on fire. There was no opposition, and only one marine was injured. Three-fourths of the town was destroyed - 414 buildings, including 136 houses, most of the wharves, and all of the shipping, and this near the onset of a Maine winter. Many of the 100 houses left standing were damaged. The town was nearly destitute for much of the remainder of the long war and did not begin to effectively recover until after the war. The town immediately requested soldiers and supplies from General Washington at Cambridge as well as from the Massachusetts General Court, but little was forthcoming.

Two weeks after the bombardment, on November 2, Capt. John Symonds in H.B.M. frigate *Cerebus*, 28-guns, arrived in Falmouth Harbor and warned against throwing up any fortifications, but when the locals quickly showed their intent to ignore the warning, he departed. With the arrival of *Cerebus*, the townspeople quickly began building earthwork fortifications, although the damage had already been done and the town virtually destroyed. Initial activities centered on the Lower Battery that had been rebuilt as Falmouth Fort in 1742 and 1755, and the Great Fort on the Hill, atop barren Munjoy Hill (adjacent to where the future Fort Sumner would be built two decades later).(10) Both works mounted just a small handful of guns, as did all of the harbor fortifications. In the meantime, the General Court chose Gen. Joseph Frye of Fryeburg, ME, as the obvious person to command. Frye was commissioned to command a seacoast battalion of four companies to be raised, and he arrived in Falmouth from Andover, MA, on November 25, 1775. He continued the fort construction while weather permitted, oversaw training, and attempted to obtain supplies. In early February 1776, Frye learned that he and Benedict Arnold had been commissioned brigadier generals in the Continental Army on January 10, 1776, and he left for General Washington's camp at Cambridge, MA. Maj. Daniel Ilsley assumed command at Falmouth on February 10.(11)

Ilsley expanded fortification construction after the ground thawed in the spring of 1776, overseeing completion of the Great Fort on the Hill and the Lower Battery, and initiating a new battery near the County House where a blockhouse built in 1746 had been replaced by a jail in 1769. With half of the jail converted to a magazine, the Magazine Battery of a few guns was established. Another battery was built at the south of town, called the Upper Battery. At the same time, the town of Cape Elizabeth built a small battery at Spring Point, future site of Fort Preble, called the "Battery at Spring Point" or the "Fort at Spring Point," until formally named Fort Hancock in 1778 in honor of Massachusetts Gov. John Hancock, signer of the Declaration of Independence. In addition, the old battery on the site of Fort Loyall was repaired and armed with an 18-pounder and two or three 12-pounders. Meanwhile, Cape Elizabeth set up a watch station at Portland Point, with a signal gun to warn of an approaching enemy. No vestiges of the Revolutionary War fortifications in the harbor survive.

The garrison in Falmouth Harbor fluctuated during the war. There were over 400 troops during most of 1776 in anticipation of another attack, about a 100 during 1777, and less than a hundred during the remainder of the war, except for 300 men under Lt. Col. Joseph Prime from March to May 1780 in anticipation of an invasion from Penobscot. This trickled to just a handful after October 1780.(12) After 1775, the enemy never reappeared; Falmouth had suffered such destruction it was no longer a worthwhile target or of any use a base of operations. In mid-1779, a British fleet descended on Castine at the mouth of the Penobscot River and initiated construction of a large earthwork named Fort George. Understandably, Falmouth was alarmed, but the British made no move in their direction.

When the war ended, the various batteries were permitted to fall into ruin and general disrepair. Meanwhile, Falmouth quickly began to recover, and within three years, the compact social, political, and economic center on Falmouth Neck successfully petitioned in 1786 to create a new town named Portland encompassing just the Falmouth Neck peninsula, leaving the name Falmouth to include present-day Falmouth, a small, rural and suburban vestige of the original Falmouth, which once also included Cape Elizabeth and South Portland.



Fortifications at the east end of Portland as they appeared between the Revolutionary War and the early 19th century. *Fort File, Portland Public Library*

First System Defenses

Despite the Treaty of Paris in 1783 that recognized American independence, feelings with Great Britain were still embittered. Friction regarding trade between the former colonies and Europe, the political upheavals of the French Revolution, and interference with American shipping by both British and French served to keep old wounds open and festering. The defenseless American seaboard finally moved Congress to take action to improve the nation's seacoast defense. On February 28, 1794, Secretary of War Henry Knox sent the House of Representatives a list of those ports and harbors that "ought to be put in a state of defense..." along with an estimate of the cost for such fortifications.

In March 1794, Congress directed seacoast fortifications be erected from Portland to Georgia. Since the U.S. Army lacked skilled military engineers, the government hired over two dozen French *émigrés* in the next few years.

Portland Selected as a Fortification Site

Portland was the northernmost of the 16 locations in Knox›s initial list, which ultimately became known as the "First" System of National Seacoast Fortifications. Of $76,053.62 earmarked for the program, $2,749.28 was requested for Portland.

Secretary Knox envisioned works "of a nature to defend the several ports and harbors against surprise by naval armament, and that the parapets of the batteries and redoubts should be formed of earth where circumstances will admit." The secretary recommended defending Portland with a single fort, 12 heavy cannon mounted *en barbette* behind a parapet of earth. To protect the rear approaches, a redoubt 100 feet square for four field pieces was to be provided, along with a blockhouse or barracks for 50 men and a powder magazine.(14)

Fort Sumner

After Congress provided appropriations for seacoast defense on March 20, 1794, Secretary Knox undertook to hire eight French émigré military engineers to oversee laying out and constructing the fortifications. Etienne Nicholas Marie Bechet, Sieur de Rochefontaine, was serving as a lieutenant in the French *Corps de Genie* in September 1778 when he came to the attention of Benjamin Franklin, who was then seeking engineer officers to serve with the Continental Army during the American Revolution. On September 18, 1778, he was appointed captain of engineers by the Continental Congress. He served until the end of the Revolution, when the Continental Army was reduced to 80 men. In 1783, Rochefontaine returned to France, but fled 10 years later upon the execution of Louis XVI, returning to the United States and Americanizing his given name to Stephen.

On March 29, 1794, Secretary Knox appointed Rochefontaine a temporary engineer to erect fortifications at eight New England seaports. The secretary laid out the specifications for the new works in broad terms, leaving it up to the engineer to determine the specific nature of the defenses.(15)

Knox directed his engineer to meet with the selectmen of Portland with respect to erecting works for the defense of that harbor. In company with the selectmen, Rochefontaine examined the harbor on July 14. The next day the citizenry of Portland authorized the selectmen to purchase "in behalf of the town, and for the United States, the ground necessary for the erecting of the fortifications for the defense of the harbor."(16) The four-acre site chosen was that originally occupied by Lawrence's garrison house and the Revolutionary War fort on Munjoy Hill, purchased for $68.00. Over the next several days, a plan of the new fort was prepared and approved by the selectmen and the governor of Massachusetts. (Maine did not become a separate state until 1820.)

Rochefontaine called for a water battery of ten 12 to 32-pounder smoothbore (SB) guns covering the anchorage and an enclosed redoubt or citadel on the summit of Munjoy Hill. At the battery site at the end of present day Adams Street, near Eastern Cemetery were a brick guardhouse, a reverberatory furnace for heating shot, and a bombproof magazine. From the battery a covered way led some 800 to 1000 yards to a 100-foot-square bastioned redoubt at the crest of the hill. The 15-foot rampart would be of earth revetted with rubble stone, with a sod parapet sustained by a stone breastheight wall. Topping the parapet was a timber stockade. The rampart was surrounded by a dry ditch; a drawbridge led though the sally port to the fort's interior.

Inside the fort a 15-foot high, one-and-a-half-story brick blockhouse served as citadel and barracks for the small peacetime garrison of some 23 men, and contained a small powder magazine. The 25-foot-square blockhouse had a sentry box lookout atop its four-sided pitched roof.(17)

Although the fort's peacetime garrison was to consist of about two dozen officers and men, the work was designed for a wartime garrison of 100. Designated the rendezvous for the local militia in the event of an attack, Rochefontaine believed the works could accommodate as many as 500 officers and men. The French engineer's plan was the most ambitious yet devised for Portland, but concerned about a combined land and sea attack, he advised Secretary Knox that the hilltop fort should be provided with a glacis and two advanced outworks. Rochefontaine believed these additional works, augmented by four gunboats, could be built for an additional $8,500.(18)

Another of Rochefontaine's concerns was the fort's artillery. He held the fort's ordnance in low esteem, which appeared justified when the fort's guns were proof fired and a cannon burst, killing one bystander and wounding another.(19)

The fort was designed to act as a citadel, a place of last-ditch defense, while its water battery was the main harbor defense. Work on the fort and its connected (by a stone-lined covered way) water battery was relatively complete by 1796, and the fort was known as the "Fort at Portland."

On March 3, 1799, Capt. Amos Stoddard, of the 2nd Ragiment of Artillerists and Engineers, wrote Maj. Gen. Alexander Hamilton in New York City concerning the fort he commanded at Portland. Stoddard noted that a "wall of very little consequence" enclosed the small blockhouse, with a breastwork around the top and a magazine underneath. The detached battery mounted "four 24 pounders, four twelves, and one eighteen," with a storehouse for clothing, military arms, and supplies, a small guardhouse, and a reverberatory furnace for heating cannon balls. Stoddard characterized the complex as inadequate to defend the town against an enemy by water. He suggested that the battery be replaced by one closer to the water, with larger cannon.(20)

On July 4, 1799, Secretary of War James McHenry formally named Fort Sumner for deceased Massachusetts Gov. Increase Sumner, who had died a month earlier. In September 1799, Maj. Lewis Tousard (anglicized from Anne-Louis de Tousard) visited Portland as part of his eastern tour at the request of Secretary of War McHenry. Tousard found no hospital and the blockhouse of Fort Sumner insufficient for barracks. He directed the roof of the blockhouse be pitched and the resulting half-story divided into two rooms. An 18 by 32-foot building was to be built as a hospital and kitchen, and funds recently expended to build a small officers' quarters should be charged to the public account. Almost $6000 was spent on improvements to this small fort in 1799-1800.(21) Tousard was another former French officer who had also served in the Continental Army. A major in the Corps of Artillerists and Engineers, he was inspector of artillery, acting inspector of fortifications, as well as personally supervising the reconstruction of Fort Mifflin below Philadelphia and the construction of the Narragansett Bay defenses in Rhode Island, and commandant of those latter defenses, all at the same time! He was forced out of the army in 1802 because of bias against French officers, particularly by Secretary Dearborn. In

1801, Tousard, as acting inspector of fortifications, concurred with and passed along a plea from Capt. John Henry, the new Fort Sumner commander, for new officers' quarters.(22)

The impermanent materials used in the construction of First System works such as Fort Sumner deteriorated rapidly. Exposed to harsh winter freezes and thaws, masonry joints cracked and wooden gun platforms rotted. The earthen embankments of the batteries, if not tended almost continually, soon began to erode and frequent allotments were required to repair damages. From 1795 to 1801, however, the War Department expended a mere $60.00 on the fort's upkeep. By 1808, the fort had fallen into such a state of disrepair that it was nearly useless.(23)

Fort Sumner did not receive a garrison until the Act of April 27, 1798, authorized a second regiment of artillerists and engineers and Capt. Amos Stoddard of Portland was commissioned to raise one of the 20 new companies. Stoddard raised his company in the vicinity of Portland during the summer of 1798, and by October his command of "stout, able bodied men" had been provided with uniforms. The townspeople of Portland raised $2,000 to refurbish and otherwise prepare the fort for occupancy. (24)

Stoddard's company of the 2nd Regiment of Artillerists and Engineers manned Fort Sumner and Fort William and Mary at Portsmouth, NH, until the summer of 1799, when it was transferred to Narragansett Bay. In 1800, Capt. John Henry's company of the 2nd Artillerists and Engineers arrived at Portland and took up quarters in the fort.

The 1798 crisis with France also brought about the organization of a provisional army. Portland contributed a company, the Portland Federal Volunteers, organized September 10, 1798, which served and paraded alongside the "Regulars" at Portland over the next few years.(25) In February 1801, Henry agreed with town officials that the fort's sentinels would act as a fire watch for the town below.(26)

In spite of continuing concern over France and Great Britain in the early 1800s, the decision was made to reduce the army to a more economical size and carry out a general reorganization. The provisional army of 1798 was disbanded and the Portland Federal Volunteers were reorganized as a militia unit. The regular army was also drastically reduced. The two regiments of artillerists and engineers were reduced to a single artillery regiment, the engineers being separated from the artillerists. This reorganization, implemented in the Act of March 16, 1802, abolished Captain Henry's company, although some of its men were merged into other companies of the Regiment of Artillery.

As a result of the reorganization, in 1802 Captain Stoddard's company returned from Rhode Island to Fort Sumner in Maine and Fort Constitution in New Hampshire. Thirty-three men and a lieutenant from Stoddard's company were assigned to Fort Sumner. However, Stoddard's command was soon alerted for movement to the western frontier in September 1802 and by the end of the year were enroute to Pittsburgh, PA.

Capt. Lemuel Gates' Company of the Regiment of Artillerists was sent from Boston to Fort Constitution to replace Stoddard's company and may have also provided a small detachment for Fort Sumner. First Lieutenant William Wilson of the regiment commanded the fort at Portland until sometime in 1803. From 1804 through 1807, Fort Sumner had no federal garrison.(27)

Second System Seacoast Fortifications

In March 1801, President Thomas Jefferson appointed Henry Dearborn of Pittston, ME, secretary of war. A mediocre secretary at best, Dearborn distrusted Frenchmen serving as senior officers, and most were discharged within the next two years, setting back the ordnance and fortification programs, as well as the fledgling military academy at West Point. The resulting defensive program of Jefferson

(and Dearborn), involving small forts at various harbors supported by numbers of small gunboats, with great reliance on the militia, was a woefully inadequate program.

As part of the fortification program in 1808 (deemed the Second System in hindsight by Colonel Totten in 1851), two new fortifications, designed by the War Department and reworked by Maj. Joseph Gardner Swift of the Corps of Engineers on site, as well as a gun house, were added to existing and decayed Fort Sumner and its water battery for the Portland Harbor defenses. Fort Sumner was virtually ignored, but Swift noted that "Fort Sumner Battery" was repaired.(28) Fort Preble at Spring Point was formally dedicated on November 26, 1808, in honor of a Dearborn friend and local notable, the late U.S. Navy Commodore Edward Preble of Portland. Fort Scammell on House Island was formally dedicated on March 4, 1809, in honor of Col. Alexander Scammell of New Hampshire, another friend of Dearborn, who was killed during the Revolution.(29) The gun house in the rear of the repaired Fort Sumner Battery was a garage-type building for housing cannon on traveling carriages.

Between 1803 and 1807, the military focus was on the western frontier. The eastern seaboard received little or no attention and works like Fort Sumner were all but abandoned as the majority of the army occupied the length of the Mississippi River.

The resumption of hostilities between Great Britain and France in 1805, however, threatened the neutrality of the United States and President Jefferson noted the threat to the nation's eastern seaports. In response, Congress called on Secretary of War Henry Dearborn for a report on the nation's seacoast defenses. In February 1806, Dearborn described Fort Sumner as "A small enclosed work, with a blockhouse magazine and barrack, and a detached battery, near the water, for heavy cannon, with a storehouse, and a furnace for heating cannonballs...The works generally require repairs."(30)

By 1807, relations with Britain were increasingly strained. The Royal Navy hovered off American seaports to capture French vessels trading with the United States and to seize American seamen for their own crews. The disputes reached a fever pitch in June 1807, when HMS *Leopard* fired into USS *Chesapeake* off the Virginia Capes, killing or wounding a score on the American frigate and impressing four sailors for service in the Royal Navy. Feelings were still running high the following December when Congress reconvened.

Secretary Dearborn reported to Congress at the end of 1807 that Fort Sumner was utterly unable to protect Portland and its commerce. He considered the fort to have been injudiciously sited and called for new works further seaward to protect the harbor. Portland's state of defense was typical of most of the nation's eastern seaports, so the legislators quickly voted more than one million dollars to bolster the nation's seacoast defenses.(31)

In response, Secretary Dearborn in February 1808 instructed Lt. Col. Jonathan Williams, the senior engineer of the army, to assign engineer officers to the several military departments to develop new seacoast defense for the principal harbors. On February 29, 1808, Colonel Williams placed Maj. Joseph Gardner Swift in charge of projected works in New England. To assist Swift, engineer lieutenants Prentiss Willard and Sylvanus Thayer were assigned, along with "such cadets as can be drawn from the military academy."(32) At the same time he issued his instruction to Colonel Williams, Secretary Dearborn also selected and appointed agents to represent the War Department with regard to site selection and to procure construction materials. For Portland, he selected his son, Henry Alexander Scammell Dearborn.(33)

Agent Dearborn wasted little time searching out sites for the projected fortifications at Portland. On February 9, 1808, a 12-acre tract on the southwest end of House Island, one of the smaller islands in the harbor, was purchased from John Green Walden for $1,200.(34)

A site for a second fort was located across the main ship channel from House Island at Spring Point on Cape Elizabeth, the site of Revolutionary War Fort Hamilton. The War Department attempted to trade Fort Sumner for a better tract, but these negotiations had been unsuccessful and Fort Sumner was retained as part of the harbor defenses. On February 29, 1808, Ebenezer Thrasher and his wife conveyed a five-acre tract on the end of Spring Point to the federal government.(35)

On March 12, 1808, the State of Massachusetts ceded jurisdiction of the sites on House Island and Spring Point to the federal government. The State of Maine reaffirmed this cession of jurisdiction when statehood was granted in 1820.(36)

Joseph G. Swift arrived at his new headquarters at Boston in mid-March 1808, and by April had set out north along the coast, selecting sites for new works and determining the repairs needed for the First System forts that would be retained. He proceeded as far as Portland, where he found Agent Dearborn active in selecting the prospective fortification sites. Here Swift learned that the secretary of war had placed Maj. Moses Porter of the artillery in charge of the works to be built northeast of Portland.(37)

The site on House Island commanded two of the channels leading into the harbor. On the island's east side, White Head Passage separated Fort and Peaks Islands. To the south of House Island, the main ship channel, at this point only three-fourths of a mile wide, passed between the island and Spring Point.436

In addition to authorizing construction of the works at House Island and Spring Point, Swift also gave Agent Dearborn instructions for the repair of Fort Sumner and its outworks.

The works authorized by Major Swift for Portland were part of a new national system to deter European powers from carrying their disputes to America. To control costs and provide consistency, a set of standardized fortification designs were prepared in Washington and approved by Secretary Dearborn.

These standardized plans, soon derisively termed "Washington Stars," were probably the product of Col. Henry Burbeck of the Regiment of Artillerists, a veteran of the Revolutionary War. In planning the Second System of seacoast defenses, several senior officers of the Corps of Engineers favored the multi-tiered casemated castle developed by the French fortification theorist Montalembert, but this concept had not been well received by Secretary Dearborn, and the more conservative thinking of Colonel Burbeck prevailed. Burbeck produce two plans, a star form for larger works and a curvilinear battery with circular wings on the flanks for smaller works. Both designs would be utilized in the new defense of Portland.

When Swift received his set of standardized plans from Washington in May 1808, he found them "too small for any flank defense, and too complicated for a mere battery." Because these plans had been prepared without considering the actual sites the works would occupy, all Swift could do was rotate the plans on their axis and adapt the designs as best he could to the sites. Although the plans developed in Washington were strongly recommended, Swift was free to use either of the two basic designs. He went a small step further and combined elements of both plans to form a third design type. This variant of the "Washington Star" was adopted at Spring Point, while the curvilinear battery design was chosen for House Island.

Major Swift laid out the traces of the projected forts in late May and turned supervision of actual construction over to Agent Dearborn. The major then returned to Boston to finalize plans for the Massachusetts seaboard. Agent Dearborn had begun preparation for construction as soon as weather permitted and had collected materials for the project, so work was quickly initiated once Swift had settled the plan. Construction was carried out simultaneously at both sites throughout the summer and fall

of 1808. On September 8, 1808, Secretary Dearborn and Major Swift met in Portland and toured the two sites being advanced by the secretary's son.(39) With the onset of winter, it was necessary to suspend operations until spring, but both works were well advanced at the end of 1808.

Fort Scammell

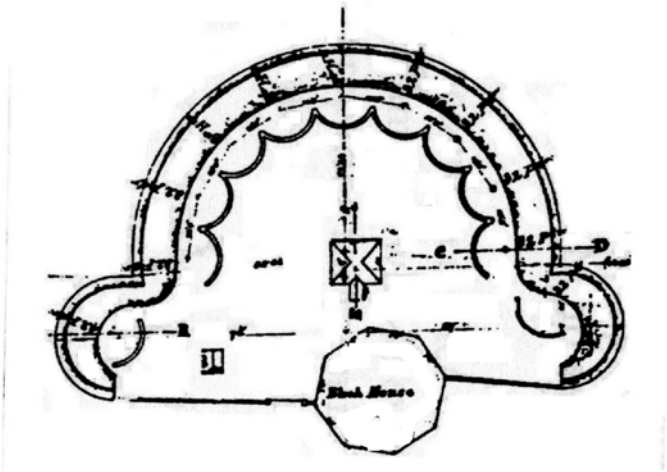
By December 1808, the works on House Island were generally complete. Finish work was carried out in the spring of 1809 and the fort was declared completed. The battery was named for Col. Alexander Scammell, mortally wounded near Yorktown, VA, in September 1781 while serving as aide-de-camp and adjutant general of the Continental Army.(40)

Fort Scammell in its initial form was a prime example of the curvilinear battery and blockhouse complex built at numerous sites along the nation's seaboard early in the 19th century, of more durable materials than those used a decade before to build Fort Sumner. Facing Fort Preble on Spring Point across Portland's main channel, Fort Scammell's main structure was a semi-circular granite battery with an interior diameter of 38 yards. At each end of the battery arc was a curved wing eight to nine yards long. Measured along the covering line of the battery, the total length was 100 yards. The granite scarp rose six to sixteen feet above the shore, depending on the terrain, and an earthen parapet surmounted the scarp. On the two wings, the parapet was eight feet thick, along the great arc of the battery, twelve feet thick.

The rear or gorge was closed by an earthwork topped by a timber palisade. Inside the enclosure, an octagonal two-story timber blockhouse measured 60 feet across. Its second story extended two to three feet beyond the first story and its floor was provided with musketry loopholes. Each of the blockhouse's eight faces had an embrasure and loopholes on the second level, while those on the first level had only loopholes. The blockhouse had a white clapboard exterior finish, and the low upright center timber of the pointed roof was adorned with a carved wooden eagle with spreading wings.

Also within the small fort were a bombproof brick powder magazine and a well. Outside the fort were a wharf, two barracks for 50 men and two officers, and a storehouse.

Fort Scammell was arranged for 18 smoothbore guns in its battery and blockhouse. When Major Swift visited in 1809, its battery mounted fourteen 24-pounders and one 12-pounder gun on barbette carriages and one heavy 10-inch seacoast mortar. Inside the blockhouse were three 6-pounder guns on blockhouse carriages.(41)



Fort Scammell. *NARA*

Fort Preble

Simultaneously with Fort Scammell, construction of Fort Preble was undertaken. Opposite Fort Scammell, the fort on Spring Point also commanded the main channel and to a lesser extent White Head Passage. Fort Preble was a larger work than the House Island battery, but there were some similarities. Like Fort Scammell, Fort Preble had a semicircular battery with circular wings on each flank. Both works utilized granite for the scarps. Fort Preble, however, was larger and totally enclosed by a granite scarp.

The capital of Fort Preble's battery bore on the channel between Spring Point and House Island. Its semicircular form had a diameter of 36 yards and an overall length of 46 yards. The two circular wings at each end of the battery were 10 yards long. Along the battery front the parapet was 14 feet thick, its crest some 43 feet above low water.

Extending straight back from the extremities of each circular wing on the channel battery was a curtain, and midway along each flank curtains was a salient angle. Enclosing the fort on its rear was another curtain and salient. Each curtain had a length of 47 yards measured along the work's covering line. The parapets of the land curtain were nine inches lower than the battery. On the curtains the parapet was five to six feet thick. The granite scarp of the work varied from 10 to 13 feet high, depending upon the character of the ground.

Enclosed within the fort in 1809 was a brick barracks and officers' quarters for one company. There were also two brick powder magazines, a storehouse, and a well.

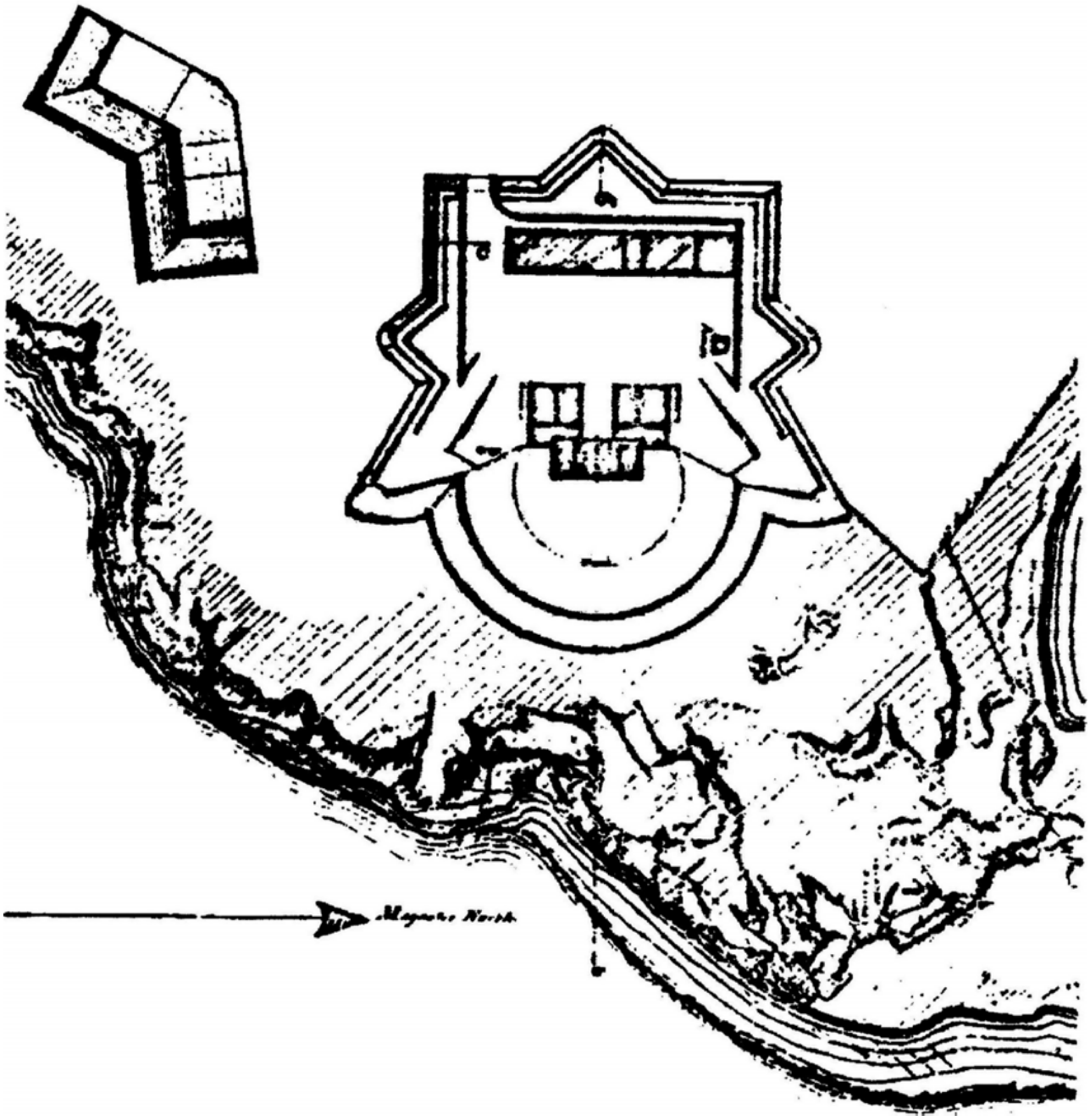
When completed in 1809, the battery was arranged for ten 24-pounder smoothbore guns. Later two 50-pounder columbiads were mounted *en barbette* on seacoast carriages. The gun platforms were constructed of timber planks, and wooden penthouses protected the guns from the elements.

In addition to constructing Forts Scammell and Preble, Major Swift also refurbished old First System Fort Sumner as a secondary defense. Four 18-pounder smoothbore guns and a 24-pounder were mounted on seacoast carriages and provided with wooden penthouses. The old work on Munjoy Hill however, had lost most of its remaining value for the defense of Portland Harbor, its guns commanding only a portion of the anchorage. With the completion of the two new forts, the older work was soon abandoned.

As Fort Scammell's armament bore on the main channel, attention turned to improving the coverage of White Head Passage between Peaks and Cushing Islands. Northeast of Fort Scammell, a detached redoubt was planned. This new work of three faces was 78 feet long and its parapet was 12 feet thick. The main fort was also strengthened with a brick shot furnace.(42)

The strained relations between the United States and Britain that had brought about the Second System also brought a substantial augmentation of the United States Army. Five new regiments of infantry and a regiment of light artillery were authorized by the Act of April 12, 1808. While the new Regiment of Light Artillery had been authorized to serve with troops in the field, until the War of 1812 only one of its ten companies was so assigned; the others were posted at forts along the Atlantic Seaboard.

Joseph Chandler was appointed captain of a light artillery company on May 3, 1808, and with Lt. Thomas Pitts took station at Portland in mid-1808 as the new forts neared completion. Chandler's company occupied the barracks at Fort Preble while detachments of Capt. Paul Wentworth's Company of the 4th U.S. Infantry under 1st Lt. Samuel Page took up quarters at Forts Scammell and Fort Sumner.



In 1810, Fort Preble employed the curvilinear battery front and elements of the "Washington Star" in the battery's rear. *NARA*

When Captain Chandler resigned after barely a year at Fort Preble, Pitts was promoted to captain and placed in command. Forts Preble and Scammell were garrisoned until 1809, when Sumner was abandoned and Wentworth's company of infantry moved to Fort McClary, near Kittery, ME. With their departure from Fort Sumner, Captain Pitts assumed charge of both Forts Scammell and Sumner. (43)

War of 1812

Forts Preble and Scammell were considered sufficient to defend Portland Harbor prior to 1812, but after war erupted in June of that year, additional defenses were deemed vitally necessary, especially after British naval threats to the Maine coastline developed in the latter half of the year. By November 1813, the first of three temporary batteries had been constructed.

Eleazer Wheelock Ripley was appointed lieutenant colonel of the newly created 21st Infantry Regiment, U.S. Army, being raised in mid-1812, and he enlisted recruits while in charge of the Maine Sub-district with headquarters in Portland. Before he and his regiment left for Vermont in the fall, Ripley began building a small battery at Jordan's Point at the curve on present-day Fore Street on the slope of Munjoy Hill opposite the Portland Company. This temporary earthen battery overlooking the anchorage was named for Lt. William Burrows, USN, captain of the brig USS *Enterprise,* who was killed on September 5, 1813, during an engagement with HMS *Boxer* off Monhegan Island. (*Boxer's* captain was also killed and both were brought into Portland for burial.)(44)

In the spring of 1813, another Portland lawyer, James Dunham Learned, was appointed colonel of the newly created 34th Infantry Regiment, headquartered in Portland while enlisting troops. Work continued on the expansion of what was known as the "Battery at Jordan's Point," "Jordan's Point Battery," or Fort Burrows at Jordan's Point; it was completed in November 1813 with state funds. Initially laid out by Ripley, a federal officer, some of the guns were provided by the federal government and some by the state, but local citizens bore the costs and the militia did "nearly the whole of the work."

In early October, "Upper Battery" had been commenced on the brow of Munjoy Hill above the Battery at Fish Point. Completed in just 20 days, the newest battery was finished at the same time as the larger battery at Fish Point, so at ceremonies on October 27, both were named for recently deceased navy officers, Fort Allen above and Fort Lawrence below.(45) Designed for eight guns, semi-circular Fort Allen was named by Capt. John L. Lewis for Master Commandant William Henry Allen, captain of the U.S. brig *Argus*. Lewis was captain of the Portland Sea Fencibles, a local militia company of mariners that was to garrison the fort.

Gen. Richard Hunnewell named the larger, semi-circular Fort Lawrence, designed for ten 24 or 32-pounders, for Capt. James Lawrence of the U.S. ship *Chesapeake*. The temporary batteries each mounted about a half-dozen guns, with 24-pounders in Fort Lawrence. Despite several threats, British warships did not attempt to pass the forts, choosing instead to lay off the channel approaches, blocking the harbor, a measure that was generally ineffective. British naval vessels and privateers did operate brazenly at the entrance to Portland Harbor. One such affair on August 4 was close enough to Fort Scammell for the fort to fire several shots through White Head Passage, which fell short of the British four-gun privateer *Broke*, and that vessel then returned two out-of-range shots "by way of *salute* to the fort."(46)

By August, most U.S. Army regulars were withdrawn from Portland Harbor to more pressing fields of action, and no militia moved into nearly vacant Forts Preble and Scammell per order of Colonel Learned. Since this could have produced disastrous results, Learned wrote the Portland Committee of Safety on August 28 that there were no fit troops in Forts Preble and Scammell, and proposing that "volunteers from the town" guard the forts at night.

On September 5, a classic sea battle was fought north of Casco Bay between the bark-rigged USS *Enterprise* and HMS brig *Boxer*, resulting in the deaths of both captains, but a total American victory. The two ships limped back to Portland and an elaborate funeral was held for the two captains on September 9, with burial in Portland's Eastern Cemetery, where they remain today. On September

13, an alarm was given on the approach of HMS sloop *Rattler*, 16-guns, with two smaller British warships near Portland Head Light, within gunshot of the two forts. A flag of truce was hoisted, and Capt. Alexander Gordon dispatched a lieutenant in a small boat to Fort Scammell with a letter for the commander concerning the prisoners from HMS *Boxer* held in Portland. In a polite, non-threatening note, Gordon requested an exchange of prisoners, or, failing that, an opportunity to visit the surviving officers to learn the status of the crew, dead, injured, or prisoner. Colonel Learned replied that he did not have authority to exchange prisoners, that the able-bodied had already been sent to Boston, the wounded were being cared for by their own surgeon, and he would not allow the lieutenant to visit *Boxer's* officers.(47) Afterwards, Learned announced that "the demand was of a hostile nature," arousing the town to a frenzy. However, the tone of the correspondence proved otherwise, and the ships departed peacefully. It appears Colonel Learned created a false scare in attempting to solidify his authority.

The reason that there were "no" [or relatively few] troops in the federal forts was twofold. Firstly, the great majority of the federal troops, including most of the 34th Infantry, had departed. Only Colonel Learned (continuing as commander of Portland's defenses), a few officers on enlistment duties, and ill or unfit soldiers remained. Secondly, a local paper noted a week later, "We understand the U.S. Officer commanding, has no authority to admit them [militia] when commanded by their officers."(48)

As earlier noted, Learned would not (he claimed he could not) allow militia into the federal forts under their own officers, but would only allow "volunteers" from the militia to serve there under federal officers. There was underlying resentment and friction between militia and regulars, exacerbated by Colonel Learned's pompous attitude.

On September 17, militia Brig. Gen. James Irish ordered two companies of militia to man the Battery at Jordan's Point, unbeknownst to Learned. When the militia captain asked Learned if he could quarter his men in the gun house in the old Fort Sumner Battery above and behind the battery, as well as in some penthouses in front of the latter battery, both federal properties, Learned refused. He also refused to allow the militia to exercise (or use even "in case of an attack") the U.S. owned guns in the battery. The militia was ordered out and the gun house nailed shut. "In consequence of this unofficer-like treatment," the militia had to hastily camp on the ground in late September. Learned and the state militia officers continued to disagree over the unfinished Jordan's Point Battery.

At the beginning of November, the militia officers appealed to the townspeople to remedy the "miserable accommodations," and $400 was raised in two days for a "neat, commodious, and elegant" barracks 136 feet long. When finished, the work was described as having an extensive, level parade ground, surrounded by earthen ramparts, "inclosing more than twice the extent of ground originally intended." On the 22nd, a local paper noted, "We have understood that Col. Learned has had serious intentions of taking violent possession of Fort Burrows - and attempting to drive out the Commonwealth's troops from the ground of its own jurisdiction."

Indeed, on the 28th, Colonel Learned went to Fort Burrows with his "guard" and took possession of the fort, but "confined his men to the platforms on which the U.S. guns were mounted." The issue was eventually resolved in favor of the militia. During most of the war, Fort Sumner proper served as rendezvous for enlisting soldiers, and in 1814 primarily as a hospital. The water battery and its gun house and other buildings were garrisoned by regulars, but its importance had been usurped by Fort Burrows closer to the water.

After the defeat of Napoleon, the British government announced a blockade of the American coastline in April 1814. Capt. David Milne in HMS *Bulwark*, an impressive 74-gun ship of the line, was ordered to patrol the New England coast with smaller vessels. On June 16, *Bulwark* landed barges

at Biddeford Pool south of Portland, and captured much material, destroying anchored ships as well as one on the stocks, and ransoming another. Portland was in a panic, but after nosing around, *Bulwark* continued north, checking out smaller, less well-defended towns. The fortifications of Portland and the militia no doubt saved the city.

Meanwhile, on August 18, 1814, U.S. Army Brig. Gen. John Chandler of Monmouth, ME, arrived in Portland to take charge, as the authorities expected the British at any time.(49) A former employee and protégé of Henry Dearborn, Chandler had been a Massachusetts congressman from the Maine District, then sheriff of Kennebec County, and a major general of militia until his appointment in the U.S. Army. His prior military service consisted of being a teenage private in the American Revolution, and pre-war militia service. Chandler had poorly handled his troops in the losing battle of Stony Creek in Canada in 1813, when he was wounded and taken prisoner. After his exchange in April 1814, Chandler, similar to his mentor Dearborn, was ordered away from the action, in this case to Maine.

A public notice was printed in a local newspaper on August 22 for volunteers with hand tools to assemble at Fish Point the following day at the northeastern tip of the Portland peninsula to throw up a "Breast Work" for the militia near the waterline. The son of the former governor, Lt. Col. William Hyslop Sumner, aide-de-camp to Massachusetts Governor Caleb Strong and agent of the Massachusetts Board of War, arrived in Portland on September 12 to arrange for Portland's defenses, and to facilitate cooperation between state militia and U.S. Army regulars.(50) At the height of the alarm, over 5000 militia from Oxford County as well as Cumberland were garrisoned in Portland, while the town was virtually empty of inhabitants, who had fled with whatever possessions they could carry away. Maj. Gen. Alford Richardson of North Yarmouth, commander of the 12th Division of Massachusetts (Cumberland County, ME) militia, was directed to command the multitude of militia in Portland.

The local paper noted on October 20 that "Major Lane" had erected a small battery of heavy guns to the rear of Fort Scammell, protecting the landward approach to the fort from the north end of the island, and had "abbatised the island" to secure the fort from landward attack.(51)

Probably about the same time, a water battery arranged to receive six guns was built next to the southern end of Fort Preble. It is not noted in the 1807-1811 reports of the secretary of war, but appears in Captain Guillame T. Poussin's 1821 plan of the fort.(52)

In addition to the constant offshore activity of American privateers and British privateers and navy, as well as the ever-current threat of invasion, Portland's other big news in the late fall of 1814 was the court-martial of Colonel Learned for "fraud and embezzlement," with General Chandler as president of the board. Ultimately found guilty and cashiered on December 1, 1814, the once pompous Learned quickly disappeared.(53)

When peace was announced in the local papers on February 16, 1815, the federal military establishment was quickly downsized and the militia disbanded. Deteriorated Fort Sumner was then salvaged of any materials usable for repairing Fort Preble, at which time a letter to a Portland newspaper described Fort Sumner as "a monument of folly. . . about as well calculated for the defence of the town as it would have been on the summit of the White Hills [in New Hampshire]."(54)

Several augmentations of the Regular Army were authorized during the first six months of 1812. By June, two regiments of artillery had been added to the army. In addition to the Regular Army units raised, large numbers of volunteer militia units were mobilized. Portland's volunteer corps consisted of at least the Portland Light Infantry, the Portland Mechanic Blues, and the Portland Rifle Corps. These separate companies served at intervals alongside the regulars in the harbor forts. In 1813, elements of the newly raised 34th U.S. Infantry Regiment were posted at Portland.(55)

The Third System

The War of 1812 provided an opportunity to evaluate the nation's seacoast defenses. There has been a long debate over the effectiveness of the combination of Second System forts, War of 1812 earthworks, federal gunboats, and state militias. Washington had been sacked and burned when Fort Warburton attempted no real defense of the Potomac River below Washington. British naval vessels had advanced up Chesapeake Bay to Baltimore before being turned back by the resolute defense of Fort McHenry and the steadfast militia at North Point. Although the British expedition against New Orleans had been repulsed in a field engagement primarily through the leadership skills of Gen. Andrew Jackson, the determined defense of Fort Saint Philip on the Mississippi River below the city greatly contributed to the British defeat. Conversely, in Southeast Georgia, the British had quickly overwhelmed the pitifully small garrison of an ill-armed fort at Point Peter near the mouth of the Saint Mary's River and sacked the river port of Saint Mary's. Fort Bowyer at the entrance to Mobile Bay successfully resisted a British naval attack, but fell to a land assault. If the war had proven anything, it showed that strong defenses moderately well armed and resolutely defended by adequate garrisons and supporting troops, could render the nation's seaports secure from enemy fleets.

The Portland Harbor forts proved an effective deterrent, as the British attempted no attack, in spite of incompetent local command, withdrawal of gunboats, and federal/militia squabbling, even with British bases and resources a relatively short distance up the coast. British spies had undoubtedly brought word of the three federal and three state forts that ultimately protected Portland.(56)

Recognizing the incomplete state of the nation's coastal defenses, the federal government arranged in 1816 to obtain the services of Simon Bernard, an accomplished French military engineer who had served under Napoleon. He was employed as a "skilled assistant" to the Engineer Department, charged with surveying the seaboard with a view to upgrading its harbor defenses. With the brevet rank of brigadier general, Bernard was named chief of a board of engineers charged with planning what became the "Third National System" of seacoast fortification. Serving with Bernard on the board were Lt. Col. William McRee and Maj. Joseph Gilbert Totten.(57)

Bernard's arrival and the status accorded him did not sit well with many of the army's engineer officers, especially Col. and Bvt. Brig. Gen. Joseph Swift, the chief engineer. Swift, who had constructed the Second System forts in Portland Harbor, had been instrumental in preparing the extensive fortifications around New York City during the War of 1812 and had been promoted to brevet brigadier general and chief engineer of the army. Although General Swift attached himself to the newly constituted board, General Cullum noted:(58)

> From the moment General Bernard was invited to be the head projector of the defense of our coast, the iron entered into the soul of the high spirited Swift, who keenly appreciated the humiliation of his position, and after wrestling over two years with his pride, at last felt compelled to sacrifice his life-long anticipations of a soldier's glorious career and consequently tendered his resignation from the army, November 12, 1818. The following day, Swift was appointed by the City of New York as Surveyor of the Port of New York.

Starting in 1821, engineer boards were established to propose seacoast fortifications for the harbors along the Atlantic and Gulf coasts (and the Pacific coast in the aftermath of the Mexican War), in terms of location, priority, and cost. These new forts were called the "Third System" in retrospect by Colonel Totten, and many reflected the few all-masonry, multiple-tiered, casemated "castles" built in New York and Charleston harbors during the Second System. Although an important harbor strategically, geographically, and economically, Portland was one of the last to receive this modern generation

nearly four decades later, starting in the late 1850s. In the first board report in February 1821, a "fort at Portland" [undoubtedly a new Fort Preble] was proposed in the "second" priority phase of construction.(59)

Numerous locations along the Atlantic and Gulf coast were identified for new fortifications. Because of the pressing need for works along the southeastern seaboard, and the relatively recent construction on the New England coast, locations such as Portland were given a low priority for new fortifications, Forts Scammell and Preble being considered adequate.

Forts Preble and Scammell

In the new board report of March 1826, Spring Point and House Island were projected for new fortifications. A revised report later in the month noted the addition of fortifications at Hog Island Ledge, the site of the future Fort Gorges, and at Fish Point, the location of 1814 Fort Lawrence. However, it was felt that if the channels on both sides of Hog Island Ledge could be obstructed, a fortification on the ledge would be unnecessary, and Fish Point need only be occupied in wartime. Forts Preble and Scammell were projected in the second class, while the secondary sites were put in the third class.(60)

Fort Preble had been strengthened somewhat during the War of 1812 and had been closely examined in 1821 by the Board of Engineers. The wartime improvements to the fort consisted of additional quarters, two storehouses, a kitchen, a stable, and a guardhouse, all built of timber outside the main body of the work. A small indented epaulement of earth capable of receiving six guns had been thrown up southwest of the enceinte to cover the land approaches, and the entire reservation had been enclosed by a plank fence. Inside the fort the powder magazine was bombproofed with additional thick masonry and a furnace was provided for heating shot. The Board of Engineers observed with concern that the interior of Fort Preble was commanded by a hill some 230 yards to the south, some 22 to 24 feet higher than the fort's parapet. Enemy guns on this hillock would defilade the entire work.(61)

By 1826, the Board of Engineers had completed a comprehensive review of the defenses required at Portland and the armament of both forts was to be increased. Fort Preble was to be armed with 57 guns and 10 carronades, Fort Scammell with 34 guns and seven carronades. This additional armament called for $103,000 at Spring Point and $32,000 on House Island. While the works would still be provided a peacetime garrison of one company of about 50 men, the wartime garrison for Fort Preble would require 150 and Fort Scammell 110.(62) These projected increases in armament would, however, remain on the drawing board for another decade.

To accommodate the new works projected for Spring Point, two additional acres were purchased from Robert Thrasher and John D. Buzzell on April 16 and May 9, 1833.(63)

The Engineer Department periodically revised the plans and armament projections for Portland's two Second System forts during the 1830s. In 1832, Portland's garrison consisted of a single company of the 3rd U.S. Artillery. Three years later, when the engineers reexamined the harbor's defense needs and reiterated their conclusions of the mid-1820s; Fort Preble was still armed with just eight guns. In the new March 1836 report, a new Fort Preble was moved to the first phase and a new Fort Scammell remained in the second, while Hog Island Ledge was in the third.(64) In the May 1840 report, new forts Preble and Scammell were both in the first phase, while Hog Island Ledge remained in the last phase.(65) A total of $135,000 was requested in 1836 to begin new works on House Island and Spring Point as well as additional works on Hog Island Ledge. Armament estimates were again revised upwards; Fort Preble would now mount 72 guns and Fort Scammell 53, and the wartime garrisons were increased to 300 and 260 men, respectively. In 1838, Fort Preble's projected armament had risen to 82 guns.(66)

On December 7, 1838, Colonel Totten was appointed to succeed Brig. Gen. Charles Gratiot as chief of engineers. Soon afterward, a comprehensive reexamination of the nation's coastal defenses was ordered. The senior engineer on the New England seaboard, Maj. Sylvanus Thayer, surveyed the northeastern seacoast defenses in company with the Board of Engineers. The obsolescence of the works built in 1808 was noted and plans were developed for appropriate repairs.

Forts Preble and Scammell were 30 years old before any of the projected improvements were actually initiated. In 1839, a portion of the annual appropriations was applied to Portland, largely due to renewed political tension between the United States and Britain occasioned by border and timbering disputes between Maine and the Canadian Province of New Brunswick known as the "Aroostook War" of 1838-1842. All of the funds were applied to the repair of Fort Preble alone.

Modifications of the fort required the partial removal and reconstruction of the scarp as well as alteration of the trace of the main battery. Granite gun platforms were constructed and the powder magazine and shot furnace were repaired. A gun house was razed and the material salvaged to repair other parts of the fort.(67)

In 1840, prior to the major improvements, in addition to three SB guns on field carriages, the seacoast armament table for Fort Preble called for:(68)

Channel Battery:
- Eight 32-pounder SB seacoast guns on barbette carriages
- Five 8-inch SB seacoast howitzers on barbette carriages

Curtain salients:
- Three 12-pounder SB seacoast guns on barbette carriages
- Two 13-inch SB seacoast mortars
- Two 10-inch SB seacoast mortars

In 1840, still another defense scheme for Portland Harbor was introduced. For many years, the channels into the harbor by Hog (now Great Diamond) Island had held the attention of the engineers. Although surveys had not been completed, obstruction of one or both channels as well as a fort on Hog Island Ledge composed the principal options.

The cost of updating Forts Preble and Scammell had increased since the 1836 estimate. The Fort Preble project was now estimated at $155,000; the Fort Scammell project $48,000. The cost of obstructing the Hog Island channels was set at $135,000.(69)

Fort Scammell

Fort Scammell in 1840 was arranged for 17 guns according to the old plan:(70)

- Eight 24-pounder SB seacoast guns on barbette carriages
- Three 8-inch SB seacoast howitzers on barbette carriages
- One 13-inch SB seacoast mortar
- Two 10-inch SB seacoast mortar

Like Fort Preble, Fort Scammell had three SB field guns.

As soon as weather permitted in the late spring of 1841, the renovation of Fort Scammell began. The initial work consisted of rehabilitating the existing battery and other structures built some three

decades before. The guns and carriages were dismounted and stored, repairs were carried out on the granite and brick scarp, a new shot furnace was erected, and new pickets replaced the rotten palisade in the gorge. By the end of September, new permanent gun platforms had been laid in the battery and by October 31 their iron traverse rails were in place.(71)

During late spring until late fall 1842, the wall, embankments, and parapet slopes of the fort were placed in good condition and the fort made ready for remounting its armament. When work resumed in June 1843, the magazine repairs were completed and the walls and roof were given an additional covering of brick to render them more bombproof. Along the gorge of the work, the rampart was extended and the circular wings of the original battery altered to increase the command of the channel to the east. The old blockhouse interior was altered to provide a small powder magazine on the first floor, completed in the summer of 1844. The lunette redoubt east of the fort, built prior to the War of 1812 to command White Head Channel, was also repaired and improved. The flanks of this battery were extended so their armament could be increased to 11 guns.(752)

The improvements to Fort Scammell were suspended from June 1844 until spring of 1845. As soon as weather permitted, the raising of the circular battery's scarp began and was completed by late fall 1845. This entailed reforming the parapet slopes, raising the level of the gun platforms, and rebuilding the breastheight walls. To reduce erosion, a clapboard roof was built atop the breastheight wall.

The East Battery continued to occupy the attention of the Engineer Department and in November 1845, Colonel Totten recommended to the secretary of war that both its fronts be extended even more and that it be joined to the main work by a scarp and earthen rampart. Totten also pointed out the advisability of reducing the level of the main parade ground, and the need for a permanent wharf and a road from the wharf to the fort. To carry out these projects, Totten requested $25,000.(73)

Preparation work began early in 1846 for this major addition to Fort Scammell. After setting up the working plant, the task of excavating stone and embanking the earth of the rampart was begun. By the end of September, 20,000 cubic yards of earth had been embanked to form the rampart and 5,000 cubic yards of stone excavated from the site. In addition, 400 linear feet of brick for the breastheight walls had been laid. A contract had been let on May 1, 1846, to provide granite for the additional gun platforms and the permanent wharf, and delivery had been completed by the end of September. In January 1847, the Engineer Department reported that during the previous seven years, nearly $22,000 had been expended on Fort Scammell. Embanking the new ramparts and parapets continued through the 1847 work season until mid-November, and 35 gun-platform pintle blocks were laid.

Work resumed at House Island in mid-August 1848. By early winter, two-thirds of the rampart slopes and parapets had been embanked and sodded, and the remaining third was nearly ready for sod, while the terreplein had been raised to its proper level. In conjunction with the work on the parade ground, the granite ledge upon which the blockhouse stood had been blasted out to one foot below the level of the terreplein. While part of the work gangs built and placed forms and mixed concrete for the foundations of the traverse circles of the gun platforms, the stonemasons redressed the granite segments of the traverse circles. By the end of the work season, 18 foundations had been poured and 35 traverse circles were ready to be laid. The granite blocks for the wharf had also been dressed and were ready to be set in place.(74)

In 1849, Fort Scammell continued to progress rapidly. Most of the sod of the rampart and banquette was complete and the granite traverse circles of the gun platforms were laid except over the posterns. The sally port entrance in the west front was built up to the spring lines of its arch and the blockhouse foundations strengthened by a wall. Outside the fort the wharf on the west shore of the island was completed except for its coping, and 300 feet of roadway from the wharf was graded.(75)

As Fort Scammell entered the 1850s, the work was rapidly completed. Much of the 1850 work season was directed at the sally port, where the arch was turned and completed and the facing and wing walls were built. The granite revetments of the breastheight wall over the passage through the rampart were also continued. With this work completed, the two gun platforms on the terreplein over the sally port were laid and iron traverse circles were provided for 21 gun platforms. Outside the fort, a dry stone wall was built to support the roadbed, and a heavy crane was set up at the end of the wharf to unload the heavy 8-inch columbiad guns to be mounted in the fort.(76)

In the final comprehensive board report prior to the Civil War, in November 1851, a new Fort Scammell was retained in the initial phase (Class D) after those already under construction, a new Fort Preble in Class E after those in D, and Hog Island Ledge in Class F, last of all.(77) Yet, seven years later, Capt. John D. Kurtz completed the first drawings of a modern fort in Portland Harbor – on Hog Island Ledge. This fort, ultimately named Fort Gorges, had always been last in priority, but became the first designed, the first to receive appropriations, and the first built in the harbor. During the war, new Forts Scammell and Preble were begun. If all had been completed and armed, they would have created a deadly triangular field of fire of over 300 guns, although certainly not all at the same time.

After more than a decade of modification, Fort Scammell bore little resemblance to the Second System battery and blockhouse of 1808. Although not yet provided with its new armament or a garrison, its potential strength was impressive. Because of congressional constraints on funding seacoast fortifications in the early 1850s, no further improvements were made on House Island beyond what an ordnance sergeant or civilian fort keeper could perform.(78)

The projected armament of Fort Scammell in 1854 called for:(79)

Channel front armament:
- Fourteen 8-inch columbiad SB guns on barbette carriages
- Fourteen 8-inch SB seacoast howitzers on barbette carriages
- Twenty-three 32-pounder SB guns on barbette carriages
- Eight 24-pounder SB guns on barbette carriages

Land front defenses:
- Four 12-pounder SB blockhouse howitzers
- Two 6-pounder SB guns on field carriages
- One 12-pounder SB howitzer on a field carriage

Fort Preble

Across the channel from House Island on Spring Point, the improvement of Fort Preble was also begun in 1841. The iron traverse rails of the gun platforms were laid and the walls, embankments, and slopes placed in good order. Colonel Totten reported to the secretary of war in 1842, "the work is ready for the service of all guns bearing on the channel and is in as good a state of defense as its low walls and contracted dimensions admit."

During the spring and summer of 1842, Fort Preble's two brick powder magazines were given "considerable additions" of masonry to their walls and roofs as well as improvements to their ventilation. On the fort's land fronts, the terrepleins were widened, and arrangements were made for mounting seacoast guns on barbette carriages along their lengths.(80)

Despite the improvements to Fort Preble, the 12 guns bearing on the channel were, in Totten's view, still inadequate to bar passage. In 1844, he asked for $10,000 to put the old exterior water battery back, increasing the coverage of the main channel by an additional 18 guns.(81)

Fort Preble sally port, ca. 1863. *South Portland Hist. Soc.*

The following work season the exterior batteries were put in order and the engineers turned their attention to the buildings inside the fort. Both barracks and officers quarters required a through rejuvenation and Totten recommended adding a guardhouse over the sally port and a portcullis. He also called for construction of a shot furnace in the newly restored circular water battery.(82)

The improvements to Fort Preble were pursued actively during the spring and summer of 1846. The old hospital and ordnance storehouse were removed and rebuilt so as not to interfere with the service of the guns. One of the exterior water batteries was extended and completed except for sodding the rampart and laying its four gun platforms. The rebuilding of the barracks was the major endeavor; between June 1 and November 20, 1846, the two structures were almost totally rebuilt, using 400,000 bricks and 400 cubic yards of granite. By September 30, the buildings had been erected, roofed, and partially plastered, and much of the interior carpentry work was completed. A cut-stone revetment wall to sustain the terreplein was built and the fort's well was enlarged by the time the work force was withdrawn on November 20.(83)

Between November 1846 and the summer of 1848, engineering activities were generally suspended in Portland Harbor. When resumed, work was limited to the necessary finish work on the project already begun, and minor repairs.(84)

By 1850 Fort Preble was in good condition and much stronger than a decade before. The fort was placed in the care of an ordnance sergeant during the early 1850s. Beyond simple repairs and care of the armament, little further was done to improve the defenses. In April 1851, an old seawall of dry rubble outside the North Water Battery at Fort Preble was destroyed by a gale and accompanying heavy swells. (85) Normal wear of the harbor's fortifications generally went uncorrected until 1855, when Maj. William D. Fraser, who had been superintending construction of Fort Knox on the Penobscot River near

South Battery, Fort Preble. *South Portland Hist. Soc.*

Bucksport, was also assigned to oversee the harbor forts at Portland. Fraser was reassigned to Key West in 1856 and succeeded by Capt. John D. Kurtz, who would become superintending engineer for the new forts on Hog Island Ledge and the mouth of the Kennebec River, along with responsibility for Fort Knox and repairs at Forts Preble and Scammell.(686) One of Kurtz's first endeavors at Fort Preble in 1856 was to repair the roof of one of the powder magazines. The old roof of rotting timbers was removed and replaced by one of slate.(87) In 1857, Kurtz undertook a general renovation of the works on Spring Point. The breastheight, scarp, and parade walls were repaired and repointed, gun platforms adjusted, and magazines put in order. Buildings were painted, roofs repaired, fencing renewed, and the defenses brought back to a high state of efficiency and appearance.(88)

By 1856, the blockhouse and other frame structures at Fort Scammell were in considerable need of repair. Gun platforms and breastheight walls required alteration to accommodate the improved carriages for 8-inch and 10-inch columbiads.(89) The connecting curtain between the advanced redoubt, or East Battery, and the channel battery was still incomplete.(90) Captain Kurtz's attentions, however, were directed mainly to constructing the new fort on Hog Island Ledge; rarely did the fort on House Island receive more than minimal care and preservation.

Forts Preble and Scammell were still ungarrisoned at the outbreak of the Civil War, but Colonel Totten considered them in defensible condition on January 18, 1861.(91)

1861-1870

Captain Kurtz supervised the commencement of the forts at Hog Island Ledge and the mouth of the Kennebec River until January 1860, when he was placed on sick leave and succeeded by his assistant, 2nd Lt. John C. Palfrey. With the outbreak of war in 1861, Palfrey was assigned as assistant engineer at Hampton Roads, VA, leaving Portland Harbor without an assigned engineer until Capt. Thomas Lincoln Casey arrived in August 1861 to begin a nearly four-year assignment at Portland. In December 1861, Totten responded to frantic pleas from Maine and ordered Captain Casey to conduct a comprehensive survey of Portland's defense needs.(92)

Gov. Israel Washburn of Maine had expressed his concerns about the poor state of the works in Portland Harbor. On October 23, 1861, he called on the federal government to bolster the works along the state's coastline, stressing the need to defend Maine's principal seaport and pointing out that an enemy warship seaward of Bang's (Cushing) Island, sheltered from the guns of Forts Scammell and Preble, could bombard the shipping and town of Portland with impunity. Washburn urged the government to construct new works on Bang's Island and to establish the primary defenses of Portland on this "natural fortress."(93)

With the outbreak of Civil War, construction continued on Fort Gorges, while what few artillerymen remaining at Fort Preble were sent to the seat of war. Shortly thereafter, Fort Preble became the base of the newly formed 17th U.S. Infantry Regiment. As men enlisted, they were given the rudiments of basic training, organized into companies, and sent off to war. For the remainder of the war, officers of the 17th Infantry would rotate to Portland for enlisting and training duties so that replacements could be sent to the warfront. In addition to the 17th U.S. Infantry, the state of Maine also formed regiments of volunteers, including draftees starting in 1863.

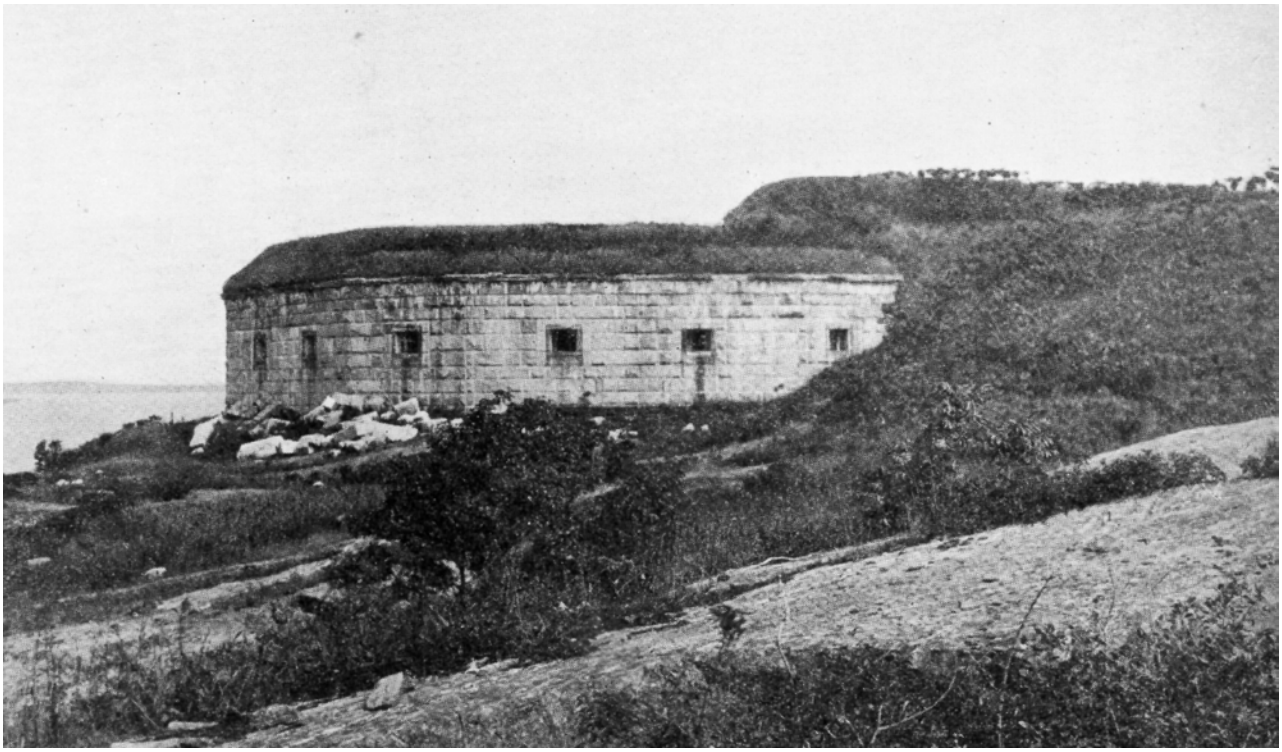
In January 1862, the newly assigned Capt. Casey drew up plans for seven earthen batteries defending the approaches to Portland Harbor, covering both Portland Sound (the main channel) and Hussey Sound. Two batteries would be sited on the mainland - six guns at Portland Head in Cape Elizabeth (site of the future Fort Williams) and 29 guns on Munjoy Hill in Portland (presumably on and adjacent to the 1814 Fort Allen). Five batteries were to be located on the islands: eight guns on Mackey's (Mackworth) Island, ten guns on Great Hog (now Great Diamond) Island, three guns on Little Hog (now Little Diamond) Island, 10 guns on Peak's Island, and six guns on Bang's (now Cushing) Island. However, none of these batteries were built, as emphasis remained on the new permanent granite forts under construction or projected. In July 1862, Casey roughed out the proposed locations of seven temporary batteries or square earthworks covering the main roads leading to Portland Harbor, three in Cape Elizabeth and four in Scarborough, presumably for militia.(94) Locations were generalized with no precise individual plans or numbers of guns projected. The three Cape Elizabeth locations were, in modern directions: (A) at Pond Cove in the middle of the intersection of Ocean House and Shore roads, (B) on the north side of Wells Road, west of Spurwink Road, and (D) on the east side of the Spurwink River near the mouth, off Charles E. Jordan Road. The four Scarborough locations were: (C) on the hill on the east side of Pleasant Hill Road opposite Chamberlain Road, (E) on a hill south of the Nonesuch River on the west side of Beech Ridge Road, (no letter) on Scottow Hill on the east side of the curve on Two Rod Road overlooking Scottow Hill Road, and (no letter) on the southeast side of the Post Road, US Route 1, at the north side of intersecting Pleasant Hill Road. These were not built either.

Governor Washburn's communications were referred to the Engineer Department and over the winter the engineers attempted to assure the concerned citizens that Fort Scammell's 59 seacoast guns, with those of Fort Preble and temporary works to be erected at other points, would secure the safety of Portland Harbor.(95)

Fort Scammell 1861-1869

The second of the two forts to be constructed in Portland Harbor was a new Fort Scammell with a strange design. Preparations for the construction of the new works at Fort Scammell began in 1862 under Captain Casey. Plans were drawn by the Engineer Department and forwarded to Captain Casey in the summer of 1862. The old 1808 fort became, in effect, a barbette South Bastion (although not known as such), with three new "detached" granite, casemated bastions, all connected by earthwork

emplacements built in the late 1840s, which had enclosed the 1808 fort and the 1814 advanced battery in its rear. A new, four-tier East Battery was designed with three casemated levels of thirteen, thirteen, and seven guns, top to bottom, surmounted by a single gun on the barbette tier. A new, three-tier West Battery was designed with two casemated levels, each with 13 guns, surmounted by a barbette tier of one gun. A new three-tier North Battery was designed with the same specifications as the West Battery. These three new "detached," batteries were located slightly outside the trace of the main work and connected to the main work barbette emplacements by tunnels. In December 1863, a new design was prepared for the old 1808 fort (the South Barbette Bastion), with emplacements for five large guns as well as for the barbette earthwork connecting the four bastions that was armed with 42 guns.(96) With the three granite casemated bastions of 88 guns, the combined firepower of the completed fort would be 135 guns. Work progressed on the fort during and after the war, with the exception of the North Bastion.



West Bastion of Fort Scammell. *Dunnack, Maine Forts*

Realizing that no manpower would be forthcoming from the embattled federal government, local citizens raised several companies of seacoast guards to man Fort Scammell in 1862, but they were disbanded after their term of service. The working plant was put in place and the collection of building materials begun, but excavation did not begin until the spring of 1863.

On June 26, 1863, Confederate Navy Lt. Charles W. Read and his crew, on their captured fishing boat, renamed C.S.S. *Archer*, sneaked into Portland Harbor at night through the main channel by unmanned Fort Scammell and uncompleted Fort Gorges, as well as the small garrison at Fort Preble. The invaders silently boarded the local revenue cutter, U.S.R.C. *Caleb Cushing*, anchored off Munjoy Hill. Leaving before dawn, the raiders headed out Hussey Sound and proceeded seaward. Unfortunately for them, the wind died and the ship was becalmed.

Meanwhile, Portlanders awakened to find the cutter gone, and lookouts in the maritime observatory on Munjoy Hill discovered the *Cushing* becalmed offshore. A motley armada of civilian boats and ships was pressed into service, manned by equally motley crews of mostly aroused citizens and 41 officers and men of the 17th US Infantry Regiment, taking with them a 6-pounder field piece and a 12-pounder howitzer. The soldiers commandeered the steamers *Forest City* and *Chesapeake*, and chased after the one-gun cutter. *Forest City*, being the fastest vessel, caught up to *Cushing* and *Archer* first. The pursuit stalled when the Confederates fired a few shots as the armada came into range. The Confederates, however, could not find the shot locker, and the cutter crew convinced them they had used all the shot on board. The Confederates also lost the wind and Lieutenant Read, realizing the futility of the situation, set fire to the *Cushing* and attempted escape in two longboats. The munitions hidden aboard the cutter exploded and destroyed the cutter after it was abandoned. The Confederate sailors were subsequently captured and held as prisoners of war at Fort Preble. *Archer* was also soon captured and was returned to Portland. The Confederate crew was transferred in July to Fort Warren in Boston Harbor for fear the locals would storm the fort and hang the "pirates." More local militia was raised to man Fort Scammell.(97)

In August 1864 just before his departure after a year as assistant engineer in Portland, 1st Lt. Jared A. Smith, a native of Maine, drew plans and mapped locations for a 12-gun earthwork battery for Bang's Island and a granite fort of 66 guns for Portland Head, a smaller version of Fort Gorges. Neither fort was built.(98)

Perhaps motivated by Lieutenant Read's raid, work was expedited on Fort Scammell during the Civil War and an additional appropriation of $100,000 was made in 1864. Both the East and West Bastions, although not yet complete, were well advanced when the war ended in the spring of 1865. By the end of the 1866 work season, the scarp of the East Bastion had been raised to the level of the cordon. The 13 second-tier casemates were completed, and seven gun platforms had been laid and were ready to receive their 10-inch Rodman guns. In 1867, the last five embrasures of the second tier were built and its six remaining casemates finished. The masonry of the two service magazines in the gorge of the East Bastion was also completed and the flagstone pavement on the bastion's interior was laid in 1868.(99)

Work on West Bastion was also brought close to completion in 1867 and 1868. Its first casemates were completed; the gorge was enclosed, and its service magazines and their anterooms finished.(100)

With the completion of work in 1869, Fort Scammell entered a new phase. The newly reconstituted Board of Engineers had prepared a new project for the Portland Defenses. With the granite and brick portions of the two bastions completed, attention turned to modifying the curtain connecting East Bastion with the circular 1808 battery. Improvements consisted primarily of three bombproof traverse magazines, one at each end of the curtain and one at the curtain's mid-point. Several projected modifications to Fort Scammell were prepared in 1867-69, but a May 1868 drawing still showed the exact specifications shown in the 1862 drawings, with the three granite bastions.(101) However, the resulting plan finalized by the new Board in 1870 cancelled the top casemated tier in both the East and West Bastions, as well as the entire projected North Bastion, as well as other adjustments, and this is what survives today. The projected North Bastion was redesigned as part of the barbette earthworks, but was never completed. In 1869, the right magazine, adjacent to the 1808 battery, was built and the site for the middle traverse magazine was excavated before the end of the work season. Construction halted in 1876.(102)

East Bastion Fort Scammell. *Author's Collection*

Fort Preble 1863-1867

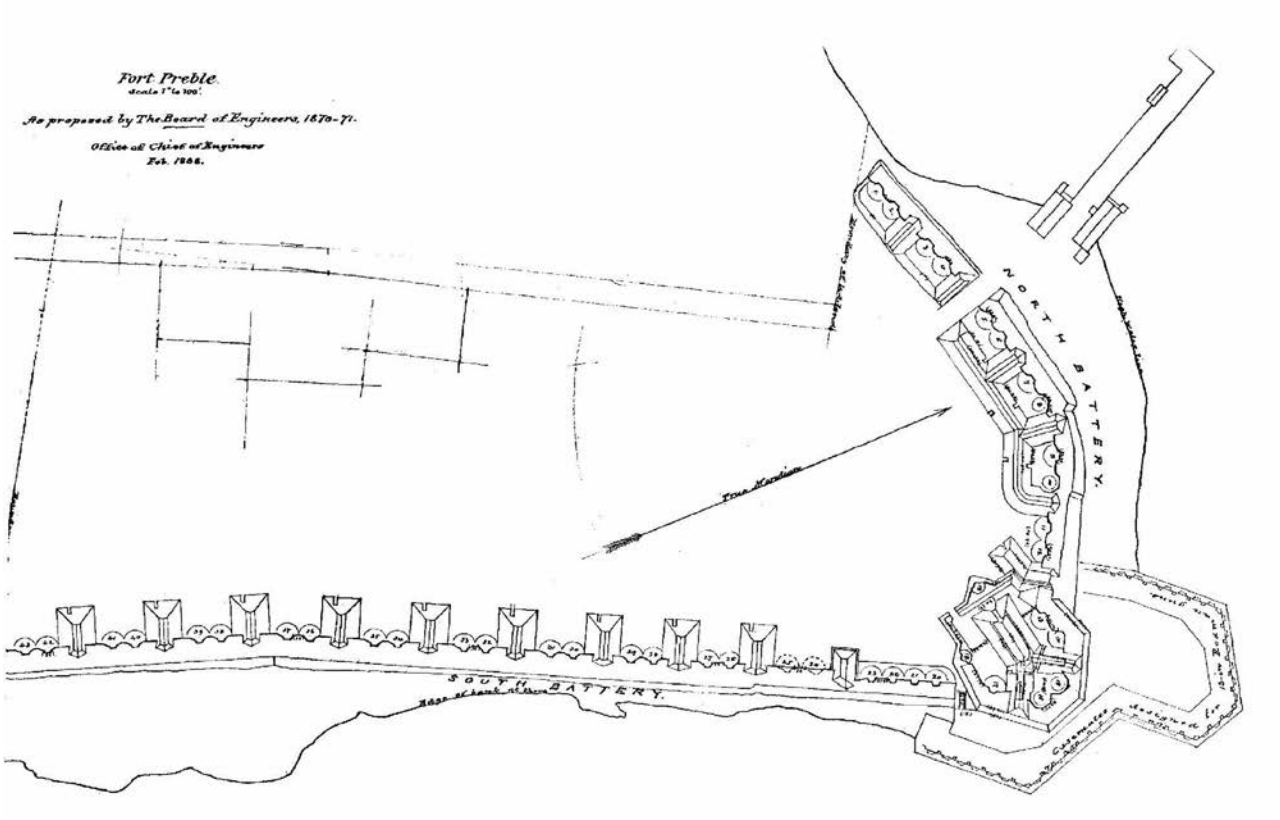
The third and last casemated granite fort in Portland Harbor was the new Fort Preble at Spring Point, the fourth of six defensive works on the site since 1745. As in the case of the two other granite forts, the design of this new fort evolved, in this instance quite drastically. The original plan designed by the Engineer Department and sent to Captain Casey in March 1863 showed a three-tier fort - two tiers of casemates and one barbette, with positions for 36 guns on each level. At that time the outlines of the old fort and the two exterior batteries of 1845 were only sketched in, with no gun positions shown; apparently they were not part of the new program.(103)

By the end of 1863, construction had begun on the new work of brick, granite, and concrete at the water's edge, in front of the older Fort Preble. They were laid out on an irregular trace of six fronts that covered the main channel approaches past Cushing Island, as well as the passage between Spring Point and House Island and the waters of the harbor itself, where it would cross its fire with the new fort on Hog Island Ledge. Old Fort Preble was to be retained as a redoubt covering the land approaches to Spring Point.(104)

Work on the massive granite battery proceeded slowly, and the Civil War ended without any visible evidence of progress. The project was delayed when the design was altered, deleting the second tier of casemates and reducing the projected armament from over 100 guns to 72.

Between the 1863 plan and the 1867 suspension, a substantial redesign was submitted by Major Casey in December 1865, with only one casemated tier (covered by an earth berm) of 37 guns. The plan for the end casemate at the north end had been redrawn for two flank guns replacing one larger gun, and the three-tier design abandoned. Three other important elements were also projected. Larger guns were designed to be barbette-mounted in the old work (the redoubt) as well as the North Battery and the South (Southeast) Battery. The redoubt would have 12 emplacements, the North Battery eight

Unfinished scarp of the new Fort Preble. A portion of the old fort's scarp is visible in the background. *Author*



Fort Preble and its exterior barbette batteries in 1870. *NARA*

guns, and the South Battery another eight. Thus, the number of projected gun positions went from 108 in 1863 to 65. The third element added to the design was a large, three-sided, granite retaining wall added in front of the old brick and stone 1808 fort wall, and in back of Fronts V and VI of the casemated work.

The final element projected involved an unusual, long, 2½-foot-thick, 12-foot-high, granite "crenellated wall" to protect the landward rear of Fort Preble, northwest to southwest, across the land end of the wharf at the end of the North Battery, behind all of the quarters and other buildings, to the shoreline at the end of the South Battery. This wall design included a sally port in a direct line southwest from the wharf, and 188 rifle embrasures, four feet apart, at a height of 4 feet 3 inches to 5 feet 11 inches above a raised earthen platform inside the entire length of the wall. However, little was accomplished other than some work on the batteries, and all work was suspended after the 1867 season. More proposals were drafted after funding was restored in 1870, all involving reconfiguring the North and South Batteries, as well as the old fort, the interior of which became a magazine.

Various proposals for the old fort showed six to twelve guns, the North Battery four to thirteen guns, and the South battery eight to twenty-six guns. Particularly interesting are two proposals prepared at the same time in November 1869 by Lt. Col. and Bvt. Brig. Gen. George Thom. One showed six, thirteen, and twenty-six guns, respectively, while the other shows seven, four, and eight, respectively. It appears that seven, twelve, and twenty-four, respectively, were accepted in 1871, but various elements of magazines, gun platforms, and especially armament mounted, were incomplete when funding was cancelled in September 1875.(105)

By mid-1866, the pilings for the scarp of the new Fort Preble had been driven and the foundations laid. On several fronts, the scarp itself had been raised up to the soles of the first tier embrasures, some 12 feet above the plane of site.

Before it was even begun, the massive uncovered vertical masonry scarps of the new Fort Preble had been rendered obsolescent by advances in ordnance. During the Civil War, rifled artillery had proven it could penetrate masonry walls and the new large-caliber Rodman SB guns had the capacity to shake the masonry forts down to their foundations. As a result, work on the casemated battery on Spring Point was suspended with its first tier only partially complete.

Inside the old fort, changes were also made in the late 1860s. The brick barracks and officers quarters rebuilt in the 1840s and the two small powder magazines were pulled down and the parade ground cleared to construct a new bombproof central magazine. On the south flank of the old "Washington Star," extensive modifications were made in the parapet and terreplein to accommodate Rodman guns and a traverse magazine.(107)

In 1870, the earthen slopes of the old fort's revamped parapet were sodded and the newly completed central magazine on the parade ground was covered with earth to make it bombproof.(108) As with Fort Scammell, Fort Preble was to be incorporated into a new defense scheme developed by the Board of Engineers in 1870.

Fort Gorges 1857-1875

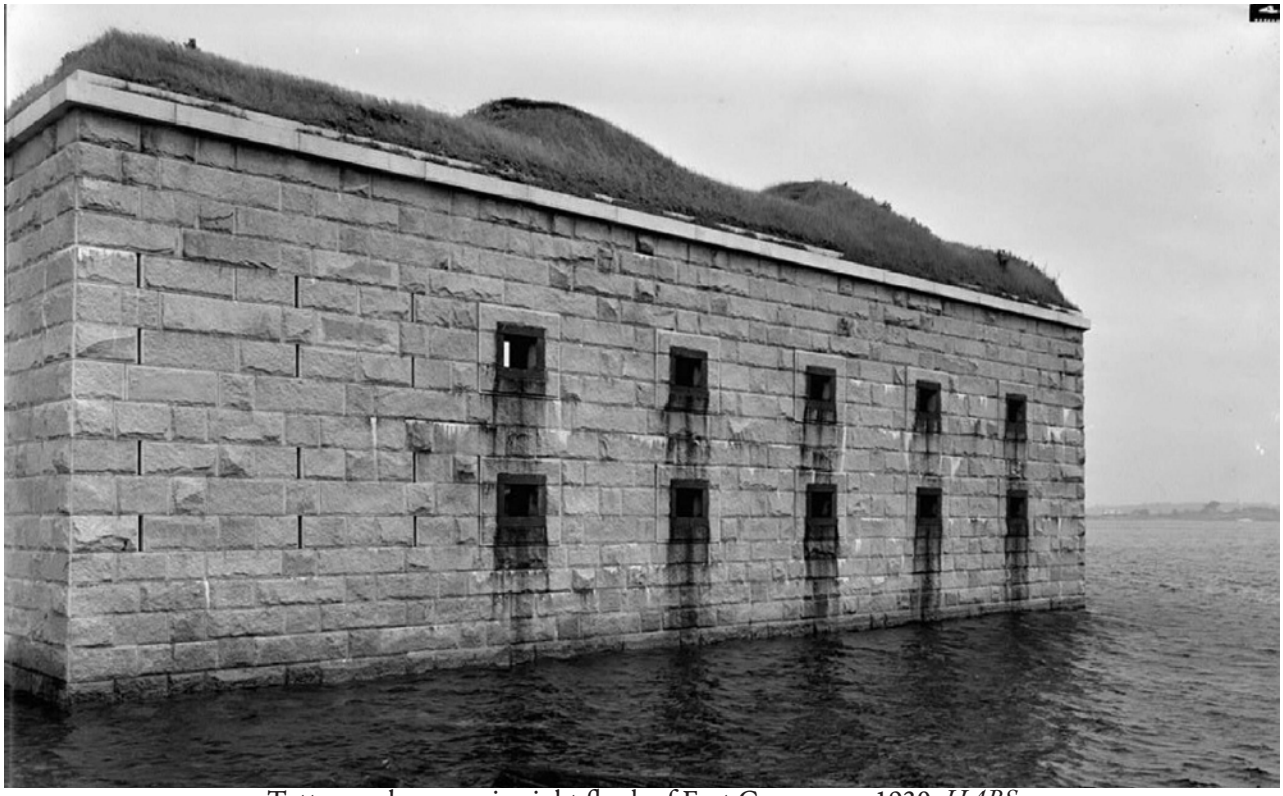
After nearly three decades of study and periodic revisions, the first steps were taken to secure Portland's harbor approaches via the Hog Island channels. While the engineers had first considered simply obstructing the channels, this had been found impractical and authorization was finally obtained in 1857 to construct a fort on Hog Island Ledge. Maine granted the federal government title and jurisdiction on April 17, 1857.(109)

Hog Island Ledge was surveyed in June 1857, and a map was prepared showing only the ledge and the projected outline of the six-fronted fort.(110) Captain Kurtz drew up the first plans in January 1858 in advance of approved appropriations. The fort was designed with two casemated tiers and a barbette tier. The original design showed 23 guns on the first tier (five casemates on Front V faced Portland with rifle loopholes, 24 guns on the second tier (and rifle loopholes as below), and 45 guns on the barbette tier.(111)

Captain Kurtz began active operations at the beginning of summer 1858. The working plant was established, Kurtz laid out the trace of the work, and excavation work began before work ceased for winter. Work progressed rapidly in the summer of 1859 and by fall, nearly a third of the fort's foundations was in place and raised above high tide. The first two seasons involved preparing the ledge for the fort foundation.(112) On April 9, 1860, the fort was officially named Fort Gorges for Sir Ferdinando Gorges, the first proprietor of Maine, in War Department G.O. No. 9, by order of the secretary of war.(113)

Second Lieutenant John C. Palfrey arrived in Portland Harbor in 1859 to serve as Kurtz's assistant and when the captain went on sick leave, Palfrey succeeded to the superintendence of fortification construction in Portland Harbor on January 19, 1860. By the end of the 1860 work season, all foundations were complete, the supporting piers had been raised 13 to 17 feet above the plane of site, six cisterns had been completed, and the parade ground was filled with earth.(114)

For a short period after the outbreak of war in 1861, Palfrey remained in charge of the works at Portland. In April, however, Palfrey turned over temporary charge of the project at Hog Island Ledge to J.J. Lee, the civilian assistant engineer, and departed for Virginia on April 25, 1861, for service in the field. Progress on the fort slowed somewhat under Lee, and Palfrey returned in August.(115) Before the onset of winter in 1861, the piers, casemate arches, and scarps on two fronts of the polygonal fort



Totten embrasures in right flank of Fort Gorgas, ca. 1930. *HABS*

had been raised some 10 to 14 feet above their foundations; 12 first-tier casemates could be armed in an emergency. The engineers expected that the first two tiers of the fort would be ready for their armament by the end of fall 1862.(116)

Substantial allocations were made to permit the rapid advancement of Fort Gorges in the early 1860s.(117) Meanwhile, the construction plans were a work in progress, as they were at all forts, with modifications or additions routinely proposed, some to the extent of a complete redesign, as in the case of the future new Fort Preble. An early change was the conversion of the rifle galleries on Front V on the two casemated levels into gun galleries. In July 1863, the Engineer Department revised the number of guns on the barbette tier to 41. By late 1864, revised plans showed a fort of 95 guns, 28 on each of the casemated tiers and 39 on the barbette tier.(118)

By late 1865 the fort was well advanced, the flanks and faces of Fort Gorgas generally complete, requiring only the concrete cover over the bombproof arches of the second-tier casemates. The gorge casemates, quarters, and storage rooms were also well advanced. The two seafront casemate tiers were complete, and except for some minor detail work, ready for their armament.(119)

The casemate embrasures were an improved type designed by Totten. "Totten," more formally "New American," embrasures, reduced the embrasure's throat. Spring-hinged iron shutters opened by the force of the muzzle blast when the gun was fired and closed after passage of the cannon ball, protecting the gun crews.(120)

District Engineer George Thom submitted an interesting addition to Fort Gorges to the Engineer Department in June 1865. His plans showed a new outwork, in the trace of an isosceles right triangle, melded to Front VI. The three-tiered granite structure about half the size of Fort Gorges ran the whole length of the rear of the fort, and extended 172 feet from the middle of the wall to a blunted point. The fort would lose Front VI, but gain the two new angled fronts of the outwork. The first tier would have

Parade of Fort Gorges 1930. Note the bombproof magazines on the barbette tier. Gorge is at right. *HABS*

20 rifle loopholes in casemates facing Portland, and five gun casemates facing the channel between Little Hog Island and Peak's Island. Interior rooms would be magazines, storerooms, an ordnance store house, bakery, and "prison." The second tier design had 15 rifle loopholes along with five gun casemates, with similar interior rooms except the prison. The barbette tier would have 12 guns with magazines, and the main fort's barbette tier was reduced to eight guns. The outwork plan, however, was not adopted.

Work continued over the next three years under Thom's supervision. The masonry was completed and earth was applied to the terreplein. Gun platforms were laid and bombproof traverses and traverse magazines were built on the terreplein. Granite stair towers abutting the parade walls of the seafronts allowed communication between tiers.

By 1869, however, work was temporarily suspended when construction funds were exhausted. On August 8, 1870, funding was restored and work resumed. In the 1870 redesign, which was constructed and remains today, the barbette tier had eight guns on Front VI between each covered traverse magazines, and earth cover was provided on the remainder of the fronts, with several traverse magazines. Construction halted in 1876.(121) The gun tube for a 10-inch Parrott rifle, weighing 13 tons, lies at the northwest corner of the barbette tier next to its partially complete mount, having escaped the scrap drives of World War II.

As the bulk of the exterior masonry was complete, attention was directed to improving the terreplein and constructing the main powder magazine on the right flank. The heavy earthen traverses on the terreplein were completed and covered with sod. By late 1874, the interior walls and arches of the gorge casemates were plastered and the ironwork of the second tier's balcony was finished. During the next two years the parade ground was graded and covered with loam, guard railings were erected at the rear of the barbette tier, and the gates on the parade side of the sally port were hung. In the gorge, flooring and other final touches were given to the quarters and the fort was pronounced complete.(122)

Fort Gorges. *Author's Collection*

For a short time, the use of earth on the barbette tiers was offered as a stopgap, but the folly of that measure was quickly seen. With few people realizing its almost immediate obsolescence while finishing construction, Fort Gorges remains a formidable-looking fortress in the middle of the harbor. As a whole, the Third System came to Portland Harbor almost four decades after initial construction elsewhere, just in time to be obsolete. Of the 338 guns visualized early in the Civil War, only several dozen were actually mounted.

The Kennebec Fortified

Defenses at the mouth of the Kennebec River had been considered for most of the 19th century, and an enclosed work had been erected on a two-acre tract at Hunniwell Point in 1808 as one of the several Second System works built by Col. Moses Porter.(123)

In 1821, the Board of Engineers described Porter's fort:(124)

> The battery part of the fort consists of a semi-circular arc of about 35 yards exterior diameter sustained by two curbed wings of about 20 ft exterior diameter. The enclosure is completed by three unequal faces which are simply palisadoed. Leaning against the longest of these faces there is a barracks; the enclosure contains besides a furnace and a small magazine. The development of the battery is about sufficient for eight guns. The scarp is revetted to the height from 6 to 12 feet. The site of this Redoubt is the extremity of a point to the shape of which the form of this batt [sic] nearly corresponds. Not more than 100 yards in rear of these works is an abrupt ridge of rocks...the summit of which is some feet higher than the crest of the parapet. At the distance of one-third of a mile there commence a range of heights which partially command the fort.

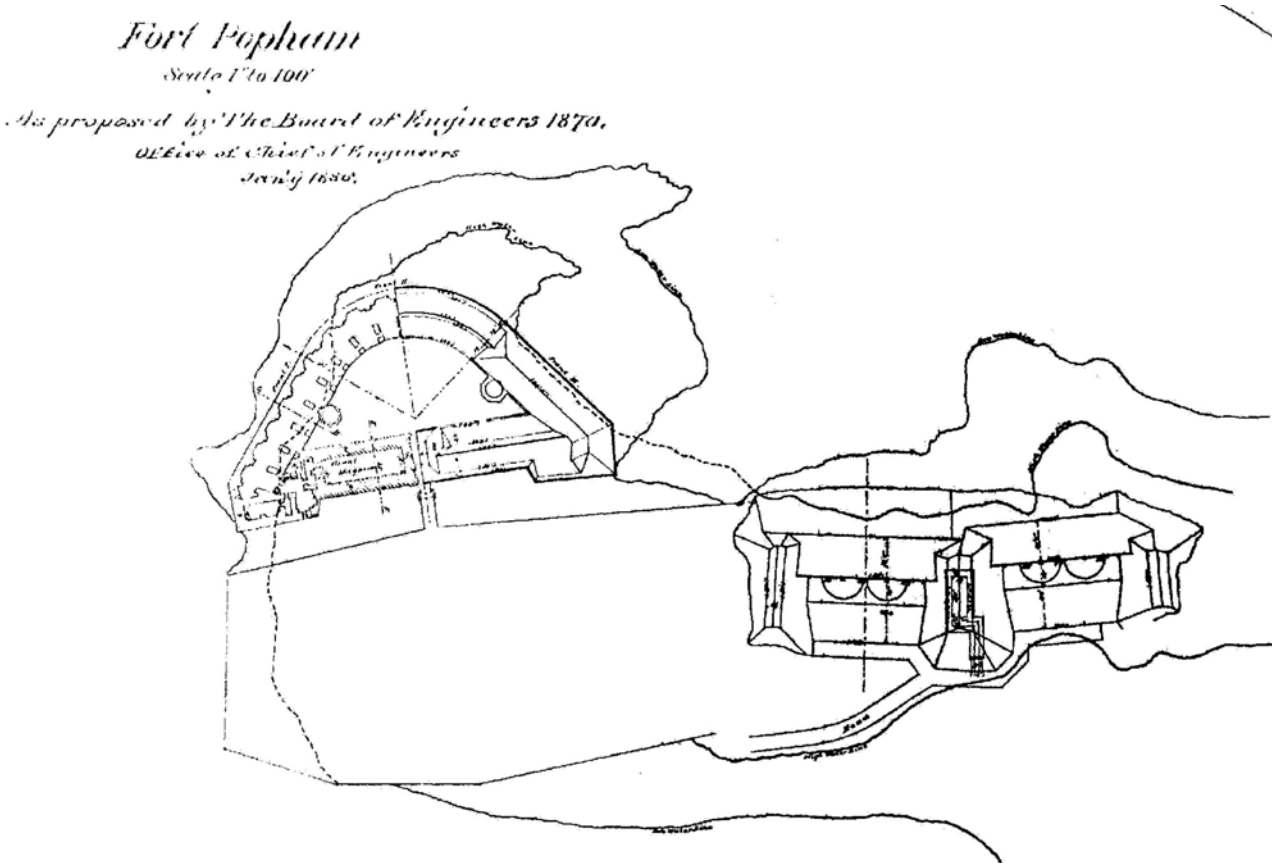
Like most Second System forts, the one on Hunniwell Point fell into disrepair following the War of 1812. Although new works were recommended, no action was taken until April 17, 1857, when the State of Maine ceded title and jurisdiction over 6⅔ acres to the federal government, of which half were flats and contiguous waters.(125)

Plans were prepared by the late 1850s for a granite and brick fort on the trace of a lunette. The armament of two tiers were to be *en casemate* and the third tier *en barbette*.(126)

Construction was finally begun in 1861, urged on by the eruption of the Civil War. On November 18, 1861, the fort was named for Sir John Popham, who established a colony on the banks of the Kennebec River in 1607.(127) By the middle of 1867, the granite masonry of the scarp and piers had been raised practically to the level of the cordon, and "The second tier of casemate arches all along these fronts has been completed, with accompanying parade wall, piers and stairway towers, and the flooring of the second tier of casemates completed far enough to receive the traverse irons of the second tier of gun platforms."(128)

During the latter part of 1867 and the first half of 1868, under Lt. Col. George Thom's oversight, the arches of the gun casemates were covered with concrete, roof surfaces were covered with mastic, and the concrete floors of the three service magazines on the terreplein of the channel fronts were poured. Additional courses of granite brought the scarp up to the level of the cordon.(129)

In June 1869, funds for continuation of the project were suspended and a board roof was placed over the unfinished casemates to protect them from the weather.(130) In 1870 the Board of Engineers prepared a project for an exterior barbette battery of four 15-inch Rodman guns. This plan, coupled with one for the completion of the fort, was approved October 16, 1872, but funds were not forthcoming and work was never resumed.(131) The fort was left in the hands of a caretaker through the 1880s and 1890s.



Fort Popham. *NARA*

Fort Popham's trace was that of a lunette closed on its rear by a curtain. The scarp was built of cut and dressed ashlar granite. A dry ditch fronted the land front. The two channel fronts consisted of two casemated and one barbette tier. Each tier of casemates contained 18 casemates for 10-inch Rodman guns. The casemate piers consisted of dressed granite blocks up to the turn of the arches. The crowns of the arches were made of brick.

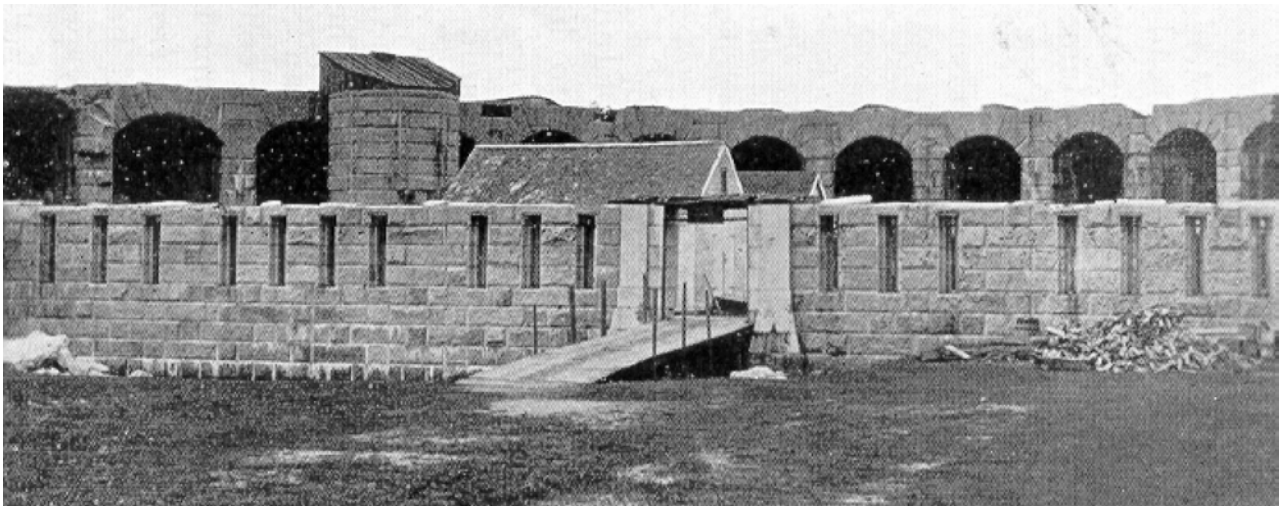
These casemates were also provided with iron-faced New American or "Totten" embrasures. The barbette tier would be for about 12 guns, some of them massive 15-inch Rodmans. The two channel faces took the form of a curved line. The rear or gorge of the fort was closed by a curtain wall pierced with rectangular musketry loopholes, flanked by demibastions at each end, also pierced with loopholes for musketry. An embrasure in the flank of the first tier of each demibastion for a 24-pounder flank howitzer covered the line of the gorge curtain. A drawbridge over the dry ditch afforded access through a sally port in the center of the gorge curtain.

Four powder magazines were in the demibastions, two on the first tier and two on the second tier. Three service magazines were to be on the barbette tier, one at each extremity of the work and one where the two channel fronts intersected.

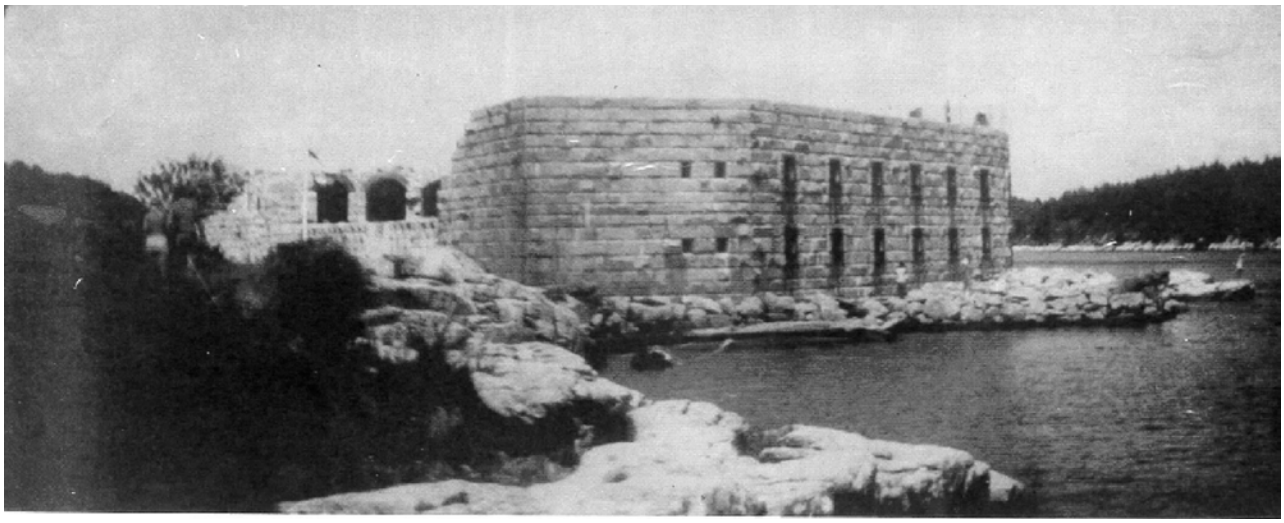
Communication between the tiers was by spiral stair towers that abutted the rear of the casemates at the mid-point of each channel front, and interior staircases in the demibastions at the flanks. The interiors and steps of the stairways were of cut and dressed solid granite blocks.

The exteriors of the casemate arches were to be coated with mastic, roofed with concrete, and covered with an earthen terreplein. The breastheight wall of granite would sustain an earthen parapet. Gun platforms and semicircular traverse blocks were to be of cut and dressed granite.

The fort was built over a large subterranean cistern, accessed by seven wells on the parade ground. The water from the cistern, while usable for washing and bathing, was not potable.



Unfinished gorge of Fort Popham. *HABS*



Right flank of Fort Popham. Portion of gorge visible at left and channel front at right. *Author's Collection*

A New Project for the Defense of Portland Harbor

As artillery increased in power, the Engineer Department struggled to develop appropriate fortification techniques. By 1870, the Board of Engineers had begun development of new defense projects consisting of massive earthen batteries with large smoothbore Rodman guns on barbette iron carriages. Most of these batteries were built outside older Third System works, with some on the terrepleins of the older forts. In some cases, the masonry scarps on the seaward faces were to be protected by thick embankments, transforming the forts into an "earthwork" fortification. In most cases, the armament consisted of pairs of gun platforms behind heavy earthen parapets revetted with masonry breastheight walls. These pairs of gun platforms were separated by concrete traverse magazines faced with brick or stone and covered with earth and sod.

The initial project for Portland Harbor called for alterations to Forts Scammell, Preble, and Gorgas, as well as additional barbette gun batteries on Great Hog (Great Diamond) Island and on Portland Head, at Cape Elizabeth.

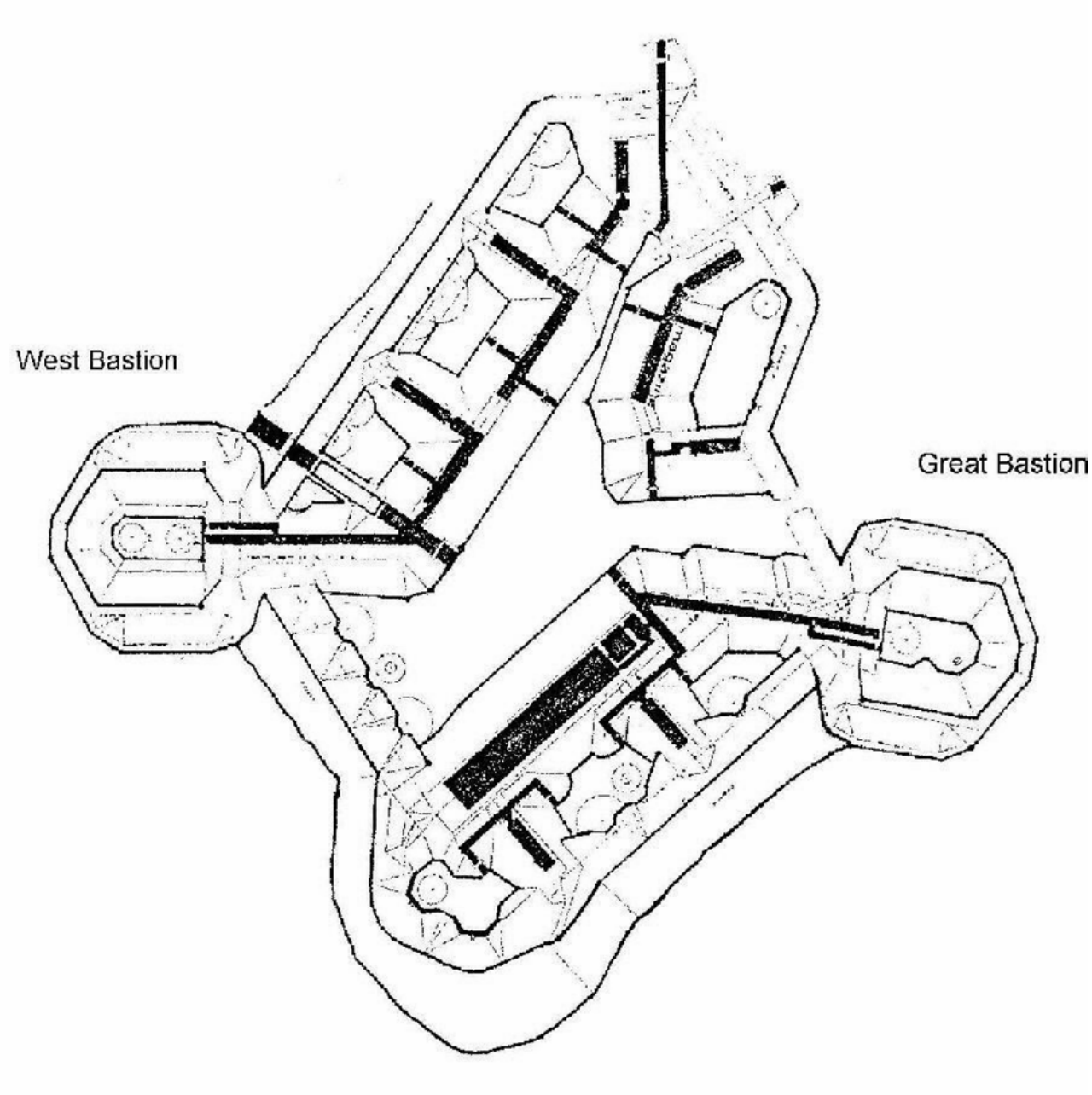
Fort Popham. Sabino Head in the background would be the site of Fort Baldwin in the 20th century.
Author's Collection

Fort Scammell 1870-75

The system adopted for Fort Scammell in 1870 called for embanking the scarp with earth that sloped away from the scarp at about 45 degrees. On both the southeast and west fronts of the fort, a heavy parados was proposed behind the barbette batteries. On the fort's north or land front, another parados was planned. Magazines were to be built within the parados. On the fort's three waterfronts, traverse magazines were to be built perpendicular to the parapet. Thus, the pairs of guns would be in "hollows" surrounded on their flanksby high earthen traverse magazines and in the rear by the parados. Communication between the gun "pits" would be by galleries cut through the traverses and parados. These new plans prompted the engineers to suspend work on the almost complete East Bastion. As the earth that was to form the terreplein and parapet of East Bastion had not yet been put in place, a temporary wooden covering was laid over the exposed drain excavations and the exterior curves of the casemate arches, pending finalization of the projected alteration of the fort.(132)

On August 15, 1870, work on Fort Scammell resumed under Colonel Duane. During the following weeks, the last vestiges of the original 1808 fort disappeared. The 62-year-old octagonal blockhouse was pulled down, along with other old structures in the parade ground. The two small service magazines in the circular wings of the 1808 battery were demolished to make way for new construction. Even the old battery itself gradually disappeared as a thick embankment was deposited against its

brick and granite scarp. Inside the rampart of the old fort, excavation was begun and nearly completed at the projected site of the "great magazine." All six traverse magazines and their connecting galleries were built and covered with two to six feet of earth. Galleries passing through the parados were constructed when building the parados.(133)



Fort Scammell, 1870. *NARA*

During the 1872 work season, Fort Scammell was steadily advanced. Behind the West Bastion parade, stone piers supported the communication galleries through the parados of Front I. Two-thirds of the massive earthen embankment of the west parados was put in place, and the east parados with its numerous galleries was completed and ready for sodding by the onset of winter. The excavations for the great magazine had also been completed and its concrete floor poured.(134)

Fort Scammell in 1968, showing improvements made during the 1870s. *E.R. Lewis*

By June 30, 1874, Fort Scammell's main magazine had been built, with its bombproof earth covering. The parade of the West Bastion had received a bombproof covering of concrete and was ready for its thick covering of earth. Also finished were the long communication galleries connecting the parade with the East and West Bastions. Three-fourths of the embankments and breastheights, and nearly all the slopes on Fronts I, IV, and VI, were finished and sodded.(135)

Between July 1874 and the end of June 1875, most of the interior finish work was completed in the two bastions. Parapets were embanked, graded, and sodded, and the service magazines and stairway communications finished in both. In the main part of the fort, the passages around the entrance to the main magazine and the parade entrance to East Bastion gallery were constructed and covered with earth. The main body of the sally port passage through the west parados was also completed by the end of 1875.(136)

By November 1875, funds for the modification of Fort Scammell were almost totally exhausted, although the work was still not complete. In the absence of additional appropriations, the project was suspended. During the next decade, only minor repairs and preservation were carried out. In 1889, the all-but-abandoned fort still mounted six 15-inch and four 10-inch Rodman guns along its channel fronts. Neither of the two bastions had been armed.(137)

Fort Preble 1870-75

The 1870 project for Fort Preble called for massive alteration of the old works and construction of heavy barbette batteries on the flanks of the unfinished Third System fort. Between April 8 and November 21, 1871, the government land at Spring Point was substantially expanded, largely by acquisition of the Thrasher estate along the southern shoreline. The interior alterations commenced in

the 1808 fort in the late 1860s were incorporated into the new project. The 1840s South Battery on the southeast side of the Third System fort was to be extended to provide 10 pairs of 15-inch Rodmans separated by traverse magazines. On the west side of the old 1808 fort the North Exterior Battery was to be totally rebuilt to mount 12 more Rodmans to cover the inner harbor. Work on these projects began in August 1870 and continued until appropriations were halted the fall of 1875.(138)

When work was suspended the project was nearly finished, the chief of engineers noting that "little time or money is needed to finish and place it in a condition of efficiency for many years to come." The changes in the previous five years were dramatic; scarcely a vestige of the 1808 fort or the 1840s' improvements remained visible. The parade ground of the old "Washington Star" was now occupied by the fort's main magazine. The circular battery's 1808 parapet and terreplein had been raised and widened, and was now occupied by a pair of center-pintle platforms for 15-inch Rodmans between traverse magazines. On the left flank of this modified front, space was now available for two more front-pintle Rodman platforms. Of these, however, only one had been built when the project was suspended.(139)

The west side of the old North Battery was to be rebuilt. Initially the Board of Engineers had planned the exterior battery for six pairs of guns on front-pintle platforms, each pair separated by traverse magazines, and the rear of emplacements was to be protected along half its length by a parados. However, the engineer on the project laid out the trace of the North Battery somewhat differently, and when construction was suspended in 1875, only six platforms had been built.

The South Battery which bore directly on the main channel between Portland Head and Cushing Island was about half finished. Eight of its ten traverse magazines had been built, but only about half its gun platforms were in place. Generally, only one platform had been constructed in each of nine of the battery's eleven bays. These platforms were the high-traverse, stone-type for the new iron ordnance carriage developed for the 15-inch Rodman guns. The seven remaining platforms of the old South Battery had low-traverse platforms for four 15-inch and three 10-inch Rodman smoothbore guns. On the land front, in the redoubt that now occupied the area once encompassed by the 1808 fort, there were two more front-pintle platforms for smaller guns.(140)

Like the other forts and batteries in Portland Harbor, the works on Spring Point received only scant upkeep after 1875, and the elements soon took their toll on the incomplete works. In spite of requests by the chief of engineers, no funds were allocated other than small sums from contingency funds for the preservation and repair of fortifications that were earmarked for the most urgent of repairs.(141)

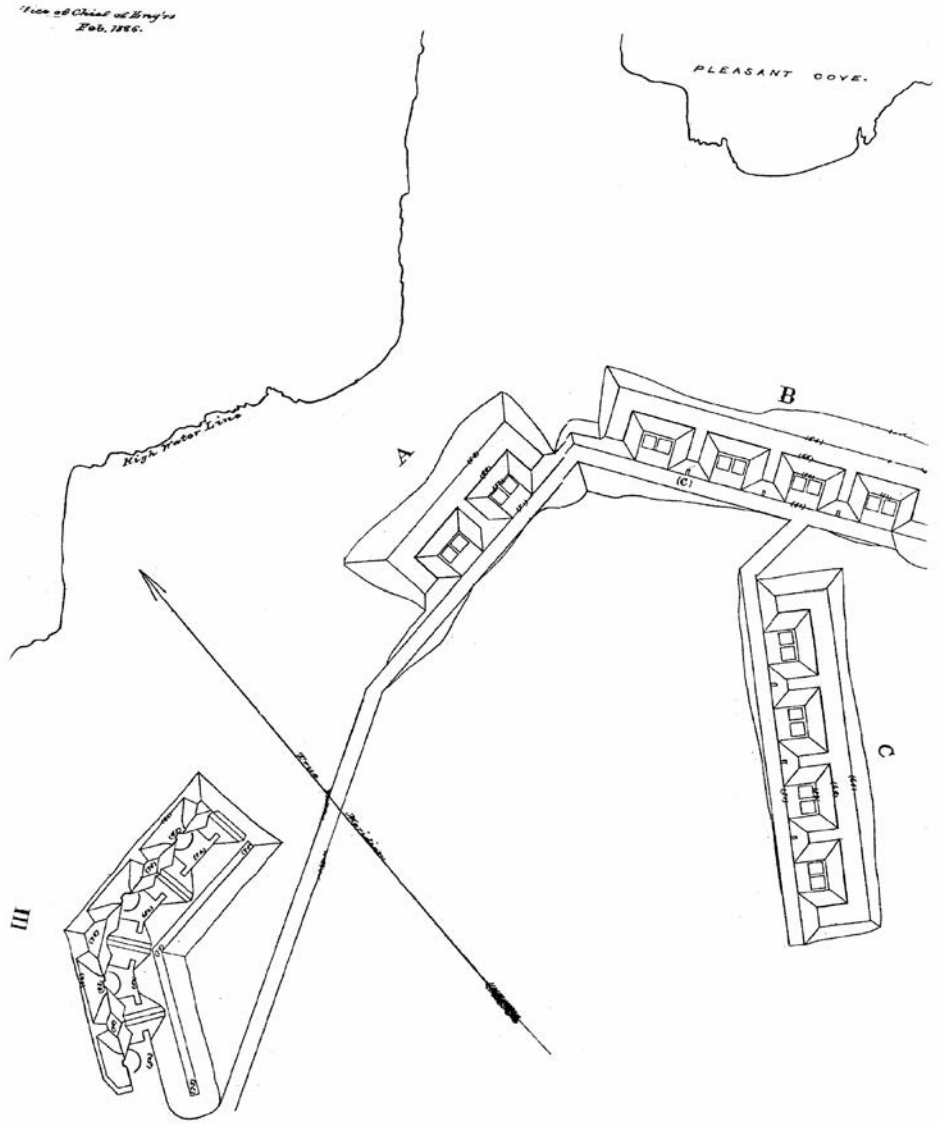
In conjunction with the completion of Fort Gorgas and the improvements to Forts Scammell and Preble, the Board of Engineers also reviewed the projections made during the Civil War for additional seacoast defenses to be sited on the islands and headlands covering the approaches to Portland. New works were projected for Portland Head on Cape Elizabeth, Little Hog Island, Great Hog Island, and Cow Island.

Portland Head

A large earthen barbette battery for 34 guns was projected for Portland Head on Cape Elizabeth, where its guns would sweep the main channel approaches to the harbor as well as "prevent an enemy fleet from taking up a position behind Bang's (Cushing Island) from which to bombard Portland and shipping in the harbor."(142)

Difficulties in gaining clear title delayed construction until January 19, 1872, when 14 acres were finally ceded to the federal government for $2,800. In October and November of the following year an additional 36 acres were acquired by eminent domain. During these proceedings, the battery plans

were altered considerably. The original battery trace had taken the form of a crémaillère line with the right-most front refused. Those portions of the battery exposed to enfilade fire were to be provided with parados, and each of the 17 bays was to be separated by bombproof traverse magazines.



Barbette batteries planned for Portland Head. *NARA*

Changes in the form and trace of the battery were also required, however, by the great irregularity of the site's elevation, the unusual hardness of the stone ledge, and difficulty procuring earth for the massive rampart and parapet. Materials had to be transported overland from South Portland, nearly four miles away. The modified plans called for just two fronts and a separate battery in the rear of and nearly at right angles to the right wing of the former work.

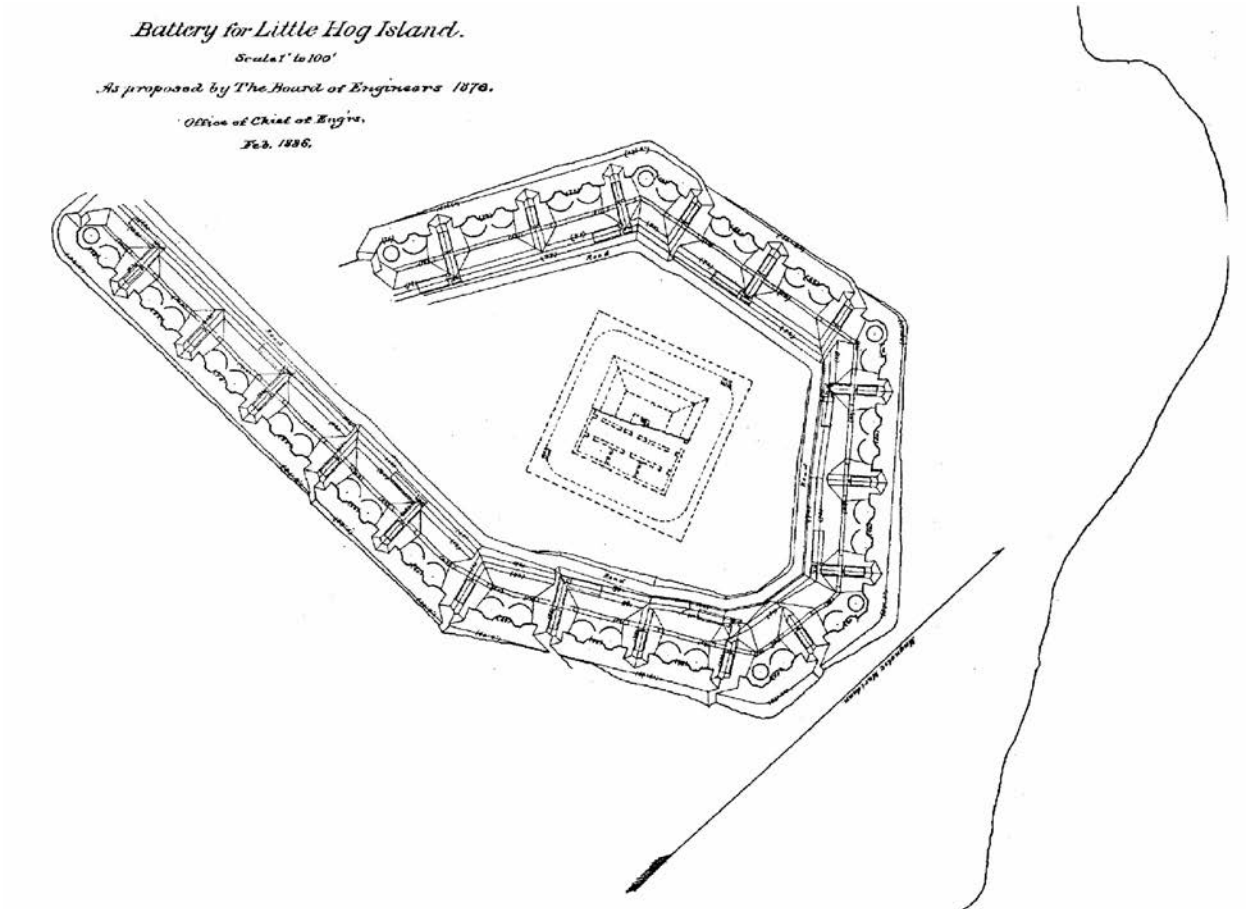
Front A, the left branch of the two-front battery, covering the main channel toward House Island and Spring Point, was to mount four 15-inch Rodmans on front-pintle platforms and one 15-inch Rodman on a center-pintle platform. Front B, the right branch of the battery, was to mount 12 more Rodmans bearing on the seaward approaches to the main channel. The separate battery, sometimes termed Front C, was to consist of eight more Rodman platforms bearing on the ocean approaches to

the southeast.

Construction finally began in late 1873 until suspended at the end of October 1875 for want of appropriations. At that time the parapet for 17 guns had been embanked, six traverse magazines had been built, five breastheight walls of concrete had been poured, and six front-pintle stone platforms laid. No guns were mounted, however. The incomplete battery was abandoned after 1875 as further funding requests went unheeded by the Congress.(143) Not until Fort Williams' modern batteries were constructed in the 1890s would Portland Head be fortified.

Little Hog Island

As part of the 1870s defense scheme, the Board of Engineers planned a large battery for Little Hog Island, a small rocky isle about halfway between Fort Gorgas on Hog Island Ledge and Peak Island. The projected barbette battery was to be an irregular hexagon arranged for 20 pairs of 15-inch Rodmans between bombproof traverse magazines. Nineteen guns were to cover the channel connecting the harbor with Casco Bay. Eight more guns would cover the channel between Great Hog and Peak Islands from Hussey Sound, while 22 guns were to supplement the firepower of Fort Scammell's west front and the North Battery at Fort Preble over the outer portion of the harbor. The interior of the battery was to contain a large bombproof redoubt. The Board of Engineers estimated the cost at $234,555, and although appropriations were requested, the project was never funded and no construction was undertaken.(144)

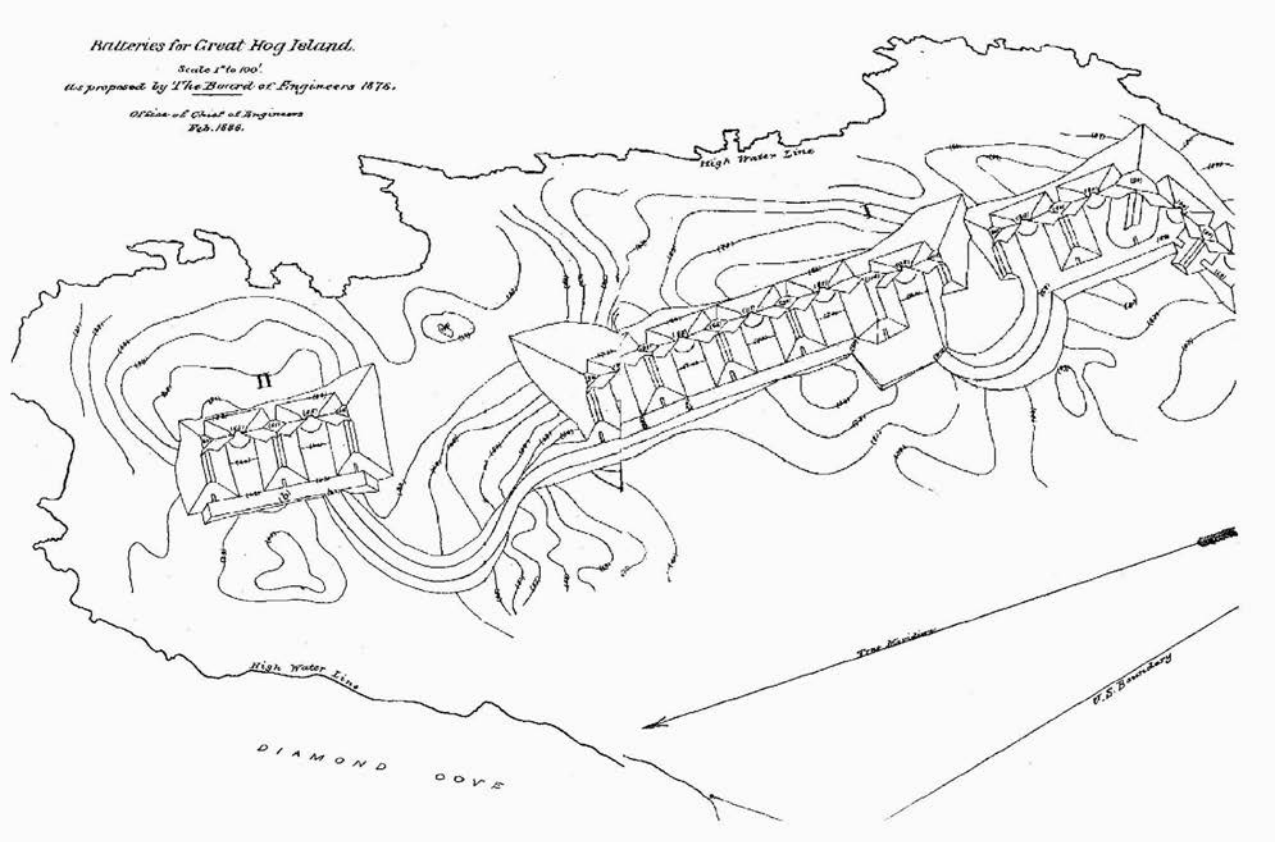


Projected work on Little Hog Island. *NARA*

Batteries on Cow and Great Hog Islands to Cover Hussey Sound

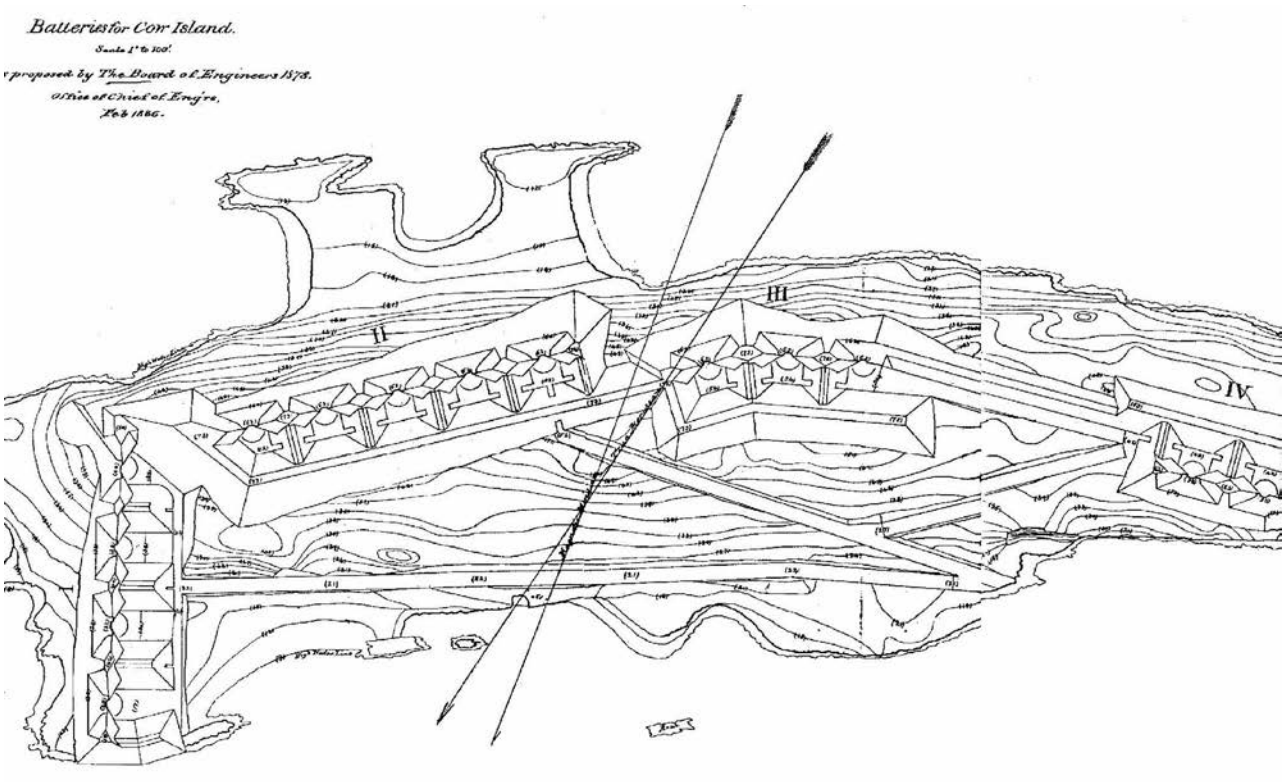
The War Department acquired 22 acres on Cow Island and 70 acres on Great Hog Island, 40 acres on the North Fork and 30 acres on the island's South Fork, from Mary L. Deering, et al., on November 23, 1873.(145)

Despite cessation of funding and the subsequent suspension of nearly all fortification operations in 1875, the Board of Engineers continued to develop plans for additional defenses. In 1878, the board submitted plans for works at two new sites to prevent enemy occupation of Casco Bay and to guard the passages connecting the bay and Portland Harbor. Four batteries for 14 heavy guns were slated for Cow Island, a rocky isle off the northern end of Great Hog Island. The other fortifications were projected for the east promontory of Great Hog Island, where 12 guns in three batteries would cover the waters of Hussey Sound. In contrast with the batteries planned in 1870, the guns in the new seacoast batteries were to be mounted singly, rather than in pairs, between massive traverse magazines.(146) It was, however, the 1890s before funds were authorized for Forts McKinley and Lyon.



Projected works on Great Hog Island, 1876. *NARA*

In November 1881, the War Department requested Brig. Gen. Horatio G. Wright, chief of engineers, to report on the nation's seacoast fortifications and which were no longer of value for military purposes. This task was passed along to the Board of Engineers and after a few days of deliberations, Col. Zealous B. Tower, its senior member, presented the board's findings. All the existing works on the interior line of defenses in Portland Harbor, as well as the still incomplete or not yet built batteries on Portland Head, Cow Island, and Great Hog Island were all necessary to secure the safety of Portland. (147)



Projected barbette batteries on Cow Island, 1886. *NARA*

Notes, Part I

1. Charles E. Clark, *Maine* (New York, 1977), pp. 6-7, 27-29.
2. Ibid. Peter J. Leary, Jr., "History of the Seacoast Fortifications of the United States: Portland, Maine," *Journal of the United States Artillery*, Vol. VI, No. 2 (Sept-Oct 1896), pp. 193-94. Hereafter: Leary, "History of Seacoast Fortifications." C.F. Porter, *A Brief History of Works Erected for the Defense of Portland, Maine* (Occasional Paper No. 18, Engineer School, U.S. Army, Washington, D.C., 1905), pp. 1-2. Hereafter: Porter, *History*.
3. Leary, "History of Seacoast Fortifications," pp. 194-95.
4. Henry E. Dunnack, *Maine Forts*, (Augusta, ME, 1923), pp. 195-97, 220-24, 235. Hereafter: Dunnack, *Maine Forts*. Porter *History*, pp. 1-2. Leary, "History of Seacoast Fortifications," p. 195.
5. Porter, *History*, p. 2.
6. Leary, "History of Seacoast Fortifications," pp. 195-99. Dunnack, *Maine Forts*, pp. 107.
7. Dunnack, *Maine Forts,* pp. 199-200.
8. Ibid., pp. 200-02.
9. Ibid. Porter, *History,* pp. 3-4. Dunnack, *Maine Forts*, p. 199. Leary, "History of Seacoast Fortifications," p. 202.
10. Henry Mowat, October 16, 1775, in William Goold, *Portland in the Past* (Portland, 1886), pp. 340-44. William Willis, *The History of Portland* (Portland, 1865, reprinted 1972), pp. 520-21. Hereafter: Willis, *History of Portland*. Willis and Goold are good sources for the various gun batteries defending Portland Harbor. Also see Donald A. Yerxa, *The Burning of Falmouth 1775: A Case Study in British Imperial Pacification* (Portland, 1975).
11. Kenneth E. Thompson, Jr., "Major General Joseph Frye of Maine, The Life and Times of a Colonial Officer," unpublished master's thesis, University of Southern Maine, 1981, pp. 321-24. A senior Massachusetts colonel in the last French war, Frye had been one of the early major generals appointed in the Massachusetts Army in June 1775. When the Continental Army took control of the provincial armies in July and appointments were finalized in October, he and several other provincial generals without commands were terminated. Frye was an obvious and available person for Falmouth.

12. Research by Ken Thompson.

13. Porter, *History*, pp. 4-5. Leary, "History of Seacoast Fortifications," p. 202. Kenneth E. Thompson Jr., "Fort Sumner: Revolutionary Fort to Parkland," *Munjoy Hill Observer*, April 3, 1983, p. 1. Hereafter: Thompson, "Fort Sumner."

14. *American State Papers, Military Affairs Series* (Washington D.C.: Gale and Seaton, 1832-1861) Vol. I, pp. 61-64. Hereafter: *ASPMA*, Vol. No., and page.

15. Raleigh B. Buzzard, "Washington's Last Chief Engineer," *Military Engineer*, Vol. XLV, No. 304 (1953), pp. 118-22. Hereafter: Buzzard, "Washington's Last Engineer."

16. *ASPMA*, Vol. I, pp. 72-74.

17. Thompson, "Fort Sumner," p. 3.

18. *ASPMA,* Vol. I, p. 76.

19. Willis, *History of Portland*, p. 606. *ASPMA,* Vol. I, p. 76.

20. Amos Stoddard to Alexander Hamilton, March 3, 1779, Library of Congress, Hamilton Papers, Reel 9, p. 105.

21. [Lewis Tousard] to Maj. Samuel Weeks, agent of fortifications, September 26, 1799, Tousard, *Letterbook, 1796-1802*, Hagley Museum and Library, Wilmington, DE.

22. Lewis Tousard to the Secretary of War [Samuel Dexter], January 6, 1801, Tousard, *Letterbook.*

23. *ASPMA*, Vol. I, p. 153.

24. Arthur Pearson Wade, *Artillerists and Engineers*, *the Beginnings of American Seacoast Fortifications, 1794-1815,* Ph.D Thesis, Kansas State University, Manhattan, KS, 1977, p. 90. Hereafter: Wade, *Artillerists and Engineers*. Frank E, Southland, "Portland Federal Volunteers, 1798-1803," *Military Collector and Historian*, Vol. XII (1959), pp. 44-56. Hereafter: Southland, "Portland Federal Volunteers." Francis B. Heitman, *Historical Register and Dictionary of the United States Army from its Organization September 29, 1789, to March 2, 1903* (GPO, 1903), Vol. I. p. 928. Hereafter, Heitman, *Historical Register*.

25. Southland, "Portland Federal Volunteers, pp. 44-56.

26. *Portland Gazette*, February 23, 1801. H. Charles McBarron and Frank E. Southerd "The Portland Federal Volunteers, 1798-1803," *Military Collector and Historian*, Vol. VII, No. 2 (Summer 1960).

27. Ibid., pp. 149, 330.

28. Joseph G. Swift, "Report of Fortifications in the Eastern District…Portland…to Newport," November 22, 1808, *Letters Received by the Secretary of War, Registered Series, 1801-1860*, Vol. 31, p. 331.

29. [Portland] *Eastern Argus*, November 30, 1808, and March 16, 1809. The history of the period before and during the War of 1812 was primarily reconstructed from period Portland newspapers, facilitated by William B. Jordan Jr's. extraordinary *Index to Portland Newspapers, 1785-1835* (Portland, 1994). The military consistently spelled the name of the fort with one "l" until the 1850s, when the proper double "l" came into usage. This text will use the more modern spelling throughout.

30. H. Dearborn, Report of the Secretary of War made by direction of the President of the United States...relating to fortifications within the United States and Territories thereof, February 13, 1806. *ASPMA* Vol. I, p. 192.

31. *ASPMA,* Vol. I, pp. 220, 223. Aubrey Parkman, *Army Engineers in New England: The Military and Civil Work of the Corps of Engineers in New England 1775-1975* (Waltham MA, 1978), pp. 12-13. Hereafter: Parkman, *Army Engineers in New England*. Wade, *Artillerists and Engineers*, pp. 198, 201.

32. War Department to Jonathan Williams, February 26, 1808, Documents Nos. 141, 143, 144, "Buell Collection of Historical Documents relating to the Corps of Engineers, 1801-1819," Microcopy No. 417, NARA, Washington, D.C. Hereafter: Buell, Document No.

33. Joseph G, Swift, *The Memoirs of General Joseph Gardner Swift, L.L.D., U.S.A., First Graduate of the United States Military Academy, West Point* (Worcester, MA, 1890), p. 76. Hereafter: Swift, *Memoirs.*

34. *ASPMA,* Vol. II, p. 285. "Fortification Notebook," Maine Historical Society, Portland, ME. Lewis W. Call, *United States Military Reservations, National Cemeteries and National Parks Title, Jurisdiction, Etc*. (GPO, 1907) p. 127. Hereafter: Call, *U.S. Military Reservations*.

35. Call, *U.S. Military Reservations,* p. 125.

36. Leary, "History of Seacoast Fortifications," p. 203.

37. Swift, *Memoirs*, pp. 75-76.

38. Swift to Secretary of War, November 13, 1809, Buell Document No. 229.

39. Swift, *Memoirs*, pp. 76-78.

40. Heitman, *Historical Register*, Vol. I. p. 863. Porter, *History,* p. 7.

41. Report of the Board of Engineers, 1821, Entry 223, RG 77, NARA, Washington, D.C. Hereafter: Report of the Board of Engineers, 1821.

42. Ibid.

43. Wade, *Artillerists and Engineers*, p. 330. Heitman, *Historical Register*, Vol. I, pp. 295, 794.

44. *Portland Gazette*, December 20, 1813. Ripley was promoted to colonel in 1813 and brigadier general and brevet major general in 1814, and was awarded a gold medal by Congress. In 1820, he moved to Louisiana and ultimately became a congressman.

45. [Portland] *Eastern Argus*, November 3, 1814.

46. *Portland Gazette*, December 20 and August 9, 1813.

47. Niles, *The Weekly Register*, September 25, 1813, Vol. 5, No. 4, Whole No. 108, pp. 59-60.

48. *Portland Gazette*, December 20, 1813. [Portland] *Eastern Argus,* December 23, 1813.

49. *Portland Gazette*, November 22 and December 20, 1813; August 22, 1814.

50. *Portland Gazette*, August 22 and September 19, 1814.

51. [Portland] *Eastern Argus*, October 20, 1814. Abatis were sharpened posts or branches with the pointed ends outward and upward. In the 1840s, this advanced battery was connected by earthworks to the main fort.

52. Drawer 12 [Fort Preble], Sheet 2, RG 77, Cartographic Branch, NARA, College Park, MD, Report of Board of Engineers, 1821.

53. *Niles' Weekly Register*, January 7, 1815, Vol. 7, No. 19, Whole No. 175, pp. 303-04.

54. [Portland] *Eastern Argus*, December 17, 1816. The writer did not understand that Fort Sumner was designed to be a citadel of last ditch defense and was perfectly located for that purpose, while its water battery was the defense against seaborne invaders.

55. Heitman, *Historical Register*, Vol. I, pp. 52-53, 79-80, 96-125. "History of 240th Antiaircraft Artillery Group [First Maine] Maine National Guard, Portland Light Infantry," Adjutant General's Office, Maine National Guard. Hereafter: "History of 240th Antiaircraft Group."

56. Fort Sumner, its covered way, and its water battery are long gone, as are Forts Lawrence and Burrows, while some of the earthworks of Fort Allen survive in city-owned Fort Allen Park on the brow of Munjoy Hill.

57. For a comprehensive discussion of the board, see: Jamie W. Moore, *The Fortifications Board, 1816-1828 and the Definition of National Security*, Citadel Monograph Series, No. XVI, (Charleston, SC, 1981) pp. 2-14, passim. Hereafter: Moore, The *Fortifications Board, 1816-1828.*

58. George W. Cullum, *Biographical Register of the Officers and Graduates of the U.S. Military Academy,* Vol. I, p. 55. Hereafter, Cullum, *Biographical Register*.

59. *ASPMA, V*ol. 2, pp. 311-12.

60. *ASPMA, V*ol. 3, pp. 257, 287-88, 299.

61. Report of the Board of Engineers, 1821.

62. *ASPMA*, Vol. III, pp. 245, 257.

63. Call, *U.S. Military Reservations,* p. 125.

64. *ASPMA,* Vol. 6, pp. 392-94.

65. U.S. House of Representatives, 37th Cong., 2nd Sess., Report No. 86, "Permanent Fortifications and Sea-coast Defenses," April 23, 1862. Includes earlier board reports for comparison.
66. *ASPMA*, Vol. VI, pp. 112, 116; Vol. VII, p. 580.
67. Report from the Engineer Department, Nov. 29, 1839, pp. 158-159.
68. Joseph G. Totten, "Report on the Defense of the Atlantic Frontier...," Senate Document No. 451, 26th Cong., 1st Sess., pp. 70-71. Hereafter: Totten, "Report on the Defense of the Atlantic Frontier..."
69. Ibid., p. 45.
70. Ibid., pp. 70-71.
71. Report of the Chief Engineer, November 19, 1841, p. 115; November 1, 1842, p. 240.
72. Report of the Chief Engineer, November 1, 1842, p. 240; November 2, 1843, p. 92; November 30, 1844, p. 164.
73. Report of the Chief Engineer, November 30, 1844, p. 164; November 1, 1845, p. 240.
74. Report of the Chief Engineer, November 18, 1847, p. 600; November 18, 1848, p. 250.
75. Report of the Chief Engineer, November 9, 1849, p. 212.
76. Report of the Chief Engineer, November 30, 1850, pp. 349-50.
77. *Report of General J.G. Totten, Chief Engineer, on the Subject of National Defences* (Washington, 1851), pp. 92, 100, 102, 104.
78. Report of the Colonel of Engineers, November 14, 1851, p. 346. Samuel Cooper to Joseph Holt, January 18, 1861, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*, (Washington, D.C. 1880-1901), Series I, Vol. I, p. 47. Hereafter *O.R.*, Series, Vol. and pages.
79. *O.R.,* Series III, Vol. 1, pp. 670-71.
80. Report of the Chief Engineer, November 1, 1842, pp. 91-92, 240.
81. Report of the Chief Engineer, November 30, 1844, p. 164.
82. Report of the Chief Engineer, November 1, 1845, p. 240.
83. Report of the Chief Engineer, November 10, 1846, p. 113. Report of the Chief Engineer, November 18, 1847, p. 599.
84. Report of the Chief Engineer, November 18, 1848, p. 599.
85. Report of the Colonel of Engineers, November 14, 1856, p. 346.
86. Cullum, *Biographical Register*, Vol. I, p. 567, Vol. III, pp. 113-15.
87. Report of the Chief Engineer, November 25, 1856, pp. 274-75.
88. Report of the Chief Engineer, November 24, 1857, p. 170.
89. Report of the Chief Engineer, November 25, 1856, p. 275.
90. Report of the Chief Engineer, November 24, 1857, p. 170.
91. J.G. Totten to Joseph Holt, January 18, 1861, *O.R.* Series III, Vol. I, p. 49.
92. J.G. Totten to Simon Cameron, December 24, 1861, *O.R.* Series III, Vol. I, p. 758. Cullum, *Biographical Register*, Vol. II, 113-15, 471-73, 674-75.
93. Israel Washburn to William H. Seward, October 23, 1861, *O.R.* Series III, Vol. I, pp. 588-91.
94. Drawer 10, Sheet 14; Drawer 134, Sheet 42, RG 77, Cartographic Branch, NARA, College Park, MD.
95. Israel Washburn to William H. Seward, October 23, 1861, and Endorsement of November 4, 1861, *O.R.* Series III, Vol. I, p. 592. J.D. Kurtz, to Secretary of War, November 11, 1861, Joseph G. Totten to Simon Cameron, November 23, 1861, *O.R.* Series III, Vol. I, p. 670-71.
96. *NARA, Drawer 11*, Sheets 18, 19, 20, 27.

97. C. St. J. Chubb, "The Fifteenth Regiment of Infantry," in Theophilus F. Rodenbough and William L. Haskin, *The Army of the United States, Historical Sketches of Staff and Line with Portraits of Generals in Chief*, Maynard, Merrell, and Co. New York 1896, p. 636. The best account is Mason Philip Smith, *Confederates Downeast, Confederate Operations in and around Maine* (Portland, 1985).

98. NARA, Drawer 10, Sheets 15A and 15B.

99. War Department, *Annual Report of the Chief of Engineers,* 1867, p. 5; 1868, pp. 8-9. Hereafter, *ARCE*, year, page(s).

100. *ARCE,* 1868, pp. 8-9.

101. NARA, Drawer 11, Sheet 45.

102. *ARCE*, 1869, p. 9.

103. NARA, Drawer 12, Sheets 22 and A.

104. "Defenses of the Northeastern Frontier, June 18, 1864," House Report No. 110, 36th Cong., 1st Sess., pp. 42-43. Seacoast Fortifications Conditions: Fort Preble, 1887, RG 77, Cartographic Branch, RG 77, NARA, College Park, MD. Hereafter: Condition of Seacoast Fortifications-Fort Preble, 1887.

105. Thom Served as superintending engineer of Ft. Gorges, July 21, 1865, to Aug. 5, 1868; Fts. Preble and Scammell, Nov. 8, 1866, to Mar. 14, 1867; and Nov. 18, 1867, to Aug. 5, 1868; of Fts. Popham and Knox, Nov. 18, 1867, to Aug. 5, 1868. Cullum, *Biographical Register*, Vol. 1, pp. 741-43. Drawer 12, Sheets 34, 48 (No.1), and 49 (No. 2), and Sheets A-E, RG 77, Cartographic Branch, NARA, College Park, MD.

106. *ARCE*, 1866, p. 418; 1867, p. 5.

107. *ARCE*, 1868, p. 8; 1869, p. 8.

108. *ARCE*, 1870, p. 13.

109. Call, *U.S. Military Reservations,* p. 118.

110. NARA, Drawer 13, Sheet 1, RG 77. Cartographic Branch, NARA, College Park, MD.

111. Ibid., Sheet 2.

112. Reports from the Engineer Department, November 22, 1858. pp. 637, 814.

113. Matthew L Adams, comp., *Designating US Seacoast Fortifications, War Department General Orders and Letters from the Adjutant General 1809-1950* (privately printed, 2000), cover.

114. Cullum, *Biographical Register*, Vol. II, pp. 113-15, 674-75. Report of the Engineer Bureau, November 14, 1860, p. 225.

115. Cullum, *Biographical Register*, Vol. II, 471-73, 674-75.

116. J.G. Totten to Simon Cameron, November 30, 1861, *O.R.* Series I, Vol. I, p. 686.

117. J.G. Totten to Simon Cameron, December 9, 1861, *O.R.* Series III, Vol. I, p. 732, Vol. IV, p. 504.

118. NARA, Drawer 13, Sheets 20, 23, RG 77. Cartographic Branch, NARA, College Park, MD.

119. *ARCE*, 1866, p. 417.

120. J.G. Barnard, *Notes on Seacoast Fortifications Consisting of Seacoast Fortifications, the Fifteen Inch Gun, and Casemate Embrasures* (New York, 1861), pp. 63-110, passim. Hereafter: Barnard, *Notes on Seacoast Fortifications.*

121. *NARA,* Drawer 13, Sheets 25, 26, 27, 30, 31, 35, RG 77.

122. *ARCE*, 1871, p. 8; 1872, p. 5; 1873, pp. 5-6; 1874, p. 7; 1875, pp. 7-8.

123. Call, *U.S. Military Reservations*, p. 124. Nelson H. Lawry, "The Kennebec Defended through a Dozen Wars," *Periodical, The Journal of the Council on America's Military Past*, Vol. 13 (May 1985) p. 8.

124. Report of the Board of Engineers, 1821.

125. Call, *U.S. Military Reservations*, p. 118.

126. Barnard, *Notes on Seacoast Fortifications*, pp. 63-110, passim. Willard B. Robinson, *American Forts: Architectural Form and Function* (Urbana, IL, 1977), p. 123. Hereafter: Robinson, *American Forts.*

127. Dunnack, *Maine Forts*, pp. 110-111, 132.

128. *ARCE*, 1867, p. 4.

129. *ARCE*, 1868, p. 7-8.

130. *ARCE*, 1869, p. 8.

131. *ARCE*, 1867, p. 4.

132. *ARCE*, 1870, p. 131

133. *ARCE*, 1871, p. 8.

134. *ARCE*, 1872, pp. 5-6.

135. *ARCE*, 1874, p. 7.

136. *ARCE*, 1875, p. 7; 1876, p. 8.

137. *ARCE*, 1886, p. 9. Leary, "History of Seacoast Fortifications," p. 204.

138. Call, *U.S. Military Reservations,* p. 125-26.

139. *ARCE*, 1876, p. 8.

140. Condition of Seacoast Fortifications-Fort Preble, 1887.

141. *ARCE*, 1881, p. 18; 1885, p. 8.

142. Condition of Seacoast Fortifications-Battery on Portland Head, 1887, RG 77, Cartographic Branch, NARA, College Park, MD.

143. *ARCE*, 1872, p. 6. Call, *U.S. Military Reservations*, p. 128-29. Porter, *Defenses of Portland Harbor*, p. 8. Condition of Seacoast Fortifications-Battery on Portland Head, Portland Harbor, ME, 1887.

144. Condition of Seacoast Fortifications-Battery on Little Hog Island, Portland Harbor, ME, 1887, RG 77, Cartographic Branch, NARA, College Park, MD.

145. Call, *U.S. Military Reservations*, pp. 121, 123.

146. Condition of Seacoast Fortifications-Batteries on Cow Island and for Great Hog Island, Portland Harbor, ME, 1887.

147. "Report of the Board of Engineers on the Condition of Fortifications...," November 30, 1881, *ARCE*, 1881, Appendix No. 2, pp. 415-16.

The Seacoast Defenses of Portland, Maine 1605-1946
Part II Modern Batteries 1885-1904

William C. Gaines

By the mid 1880s, the nation's seacoast defenses had become obsolete. Armed with muzzleloading rifles and smoothbore guns of limited range, the forts could scarcely be expected to compete with the larger, longer-range breechloading rifles that armed modern armored warships. The nation's dilapidated seacoast defenses were the frequent subject of articles in news and literary magazines during the 1880s. The situation was nearing a political crisis in 1885, when Congress directed President Grover Cleveland to establish a board to investigate the seacoast defenses of United States.(148)

Examination of the Seacoast Defenses

Secretary of War William C. Endicott formed the Board on Fortifications or Other Defenses, a committee of army and navy officers and civilians better known as the "Endicott Board." The board recommended a new system of defense for the nation's harbors and seaports - massive earth and concrete emplacements mounting large-caliber breechloading rifled guns and mortars, along with submarine minefields.(149)

The initial estimates for the entire program came to $126,377,800. Expenditures of that magnitude were beyond the nation's financial capability, or at least political reality, so priority was given to the first 11 of 27 coastal sites, ranked according to their importance. Initiation of the "Endicott System" of seacoast fortification was delayed until the early 1890s because of the need to develop the modern ordnance required and Congress' reluctance to advance such large sums.(150)

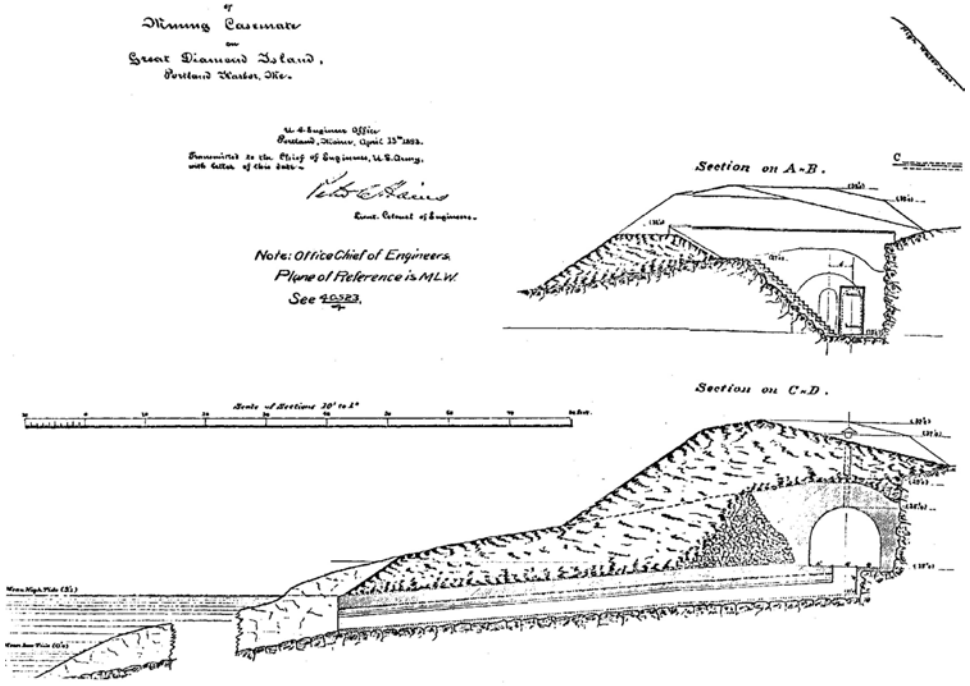
Between 1888 and 1900, a wide variety of 3 to 16-inch breechloading rifled seacoast guns and mortars was designed and manufactured. These new weapons were to be emplaced in massive batteries, poured concrete behind thick parapets of earth or sand. Many new pieces of ordnance would be mounted on the innovative disappearing carriage developed by ordnance officers Adelbert R. Buffington and William Crozier, which employed the gun's recoil to raise a counterweight as the gun dropped behind a parapet for reloading. Upon reloading and releasing the counterweight, the gun would rise into battery, ready to be fired over the parapet.(151)

Portland Harbor ranked tenth on the initial list of 27 harbors. The initial projected defenses were twenty 12-inch breechloading rifles (BLR), ten 10-inch BLR, and ten 8-inch BLR, as well as forty-eight 12-inch breechloading mortars (BLM). To supplement the gun and mortar batteries, submarine minefields containing 350 mines, or torpedoes as they were initially termed, were to be controlled from four operating stations. Searchlights would illuminate the minefield and enemy warships at night, while six torpedo gunboats would supplement the defenses.(152)

The construction cost of the Portland gun and mortar batteries was estimated at $2,296,000, not counting armament estimates of $2,371,000, mines at $122,500, mine operating rooms $60,000, and searchlights for another $96,000. "Torpedo gunboats" would add an estimated $360,000. The total estimate for Portland was $5,305,000, and by the early 1900s, $2,390,338.20 would be expended on 21 seacoast batteries, as well as for electric generator stations and submarine mine facilities. However, as guns became more powerful, fewer were needed, and instead of the 88 guns and mortars projected by the Endicott Board in 1886, only seven 12-inch guns, seven 10-inch guns, seven 8-inch guns, and twenty-four 12-inch mortars would complete the project in the early 1900s.(153)

The defenses planned by the Board of Engineers were the most ambitious ever undertaken for Maine's principal harbor. Nearly all existing military reservations were slated to play a role in the harbor's defense, and additional sites would be acquired. The primary line of defenses was to be advanced further to seaward. Modern batteries were to be built at the unfinished 1870s sites on Portland Head, the northeast point of Great Hog Island (now renamed Great Diamond Island), on Cow Island, and at Fort Preble. Even obsolete Fort Gorgas would be retained and used to store ammunition and submarine mines. Fort Scammell on the secondary line of defense, however, would play only a minor role in the modern defense.

By the early 1890s, the technology of modern breechloading ordnance and submarine mines had progressed sufficiently to enable the Corps of Engineers to develop prototype battery plans and to begin construction of mine operating rooms. The first two minefield control rooms, or mining casemates as they were termed, were to be built at Portland Head and at Fort Preble. The former would control the outer minefield, while Fort Preble would control the mines in the main ship channel. By 1893 a third casemate had been built on Great Diamond Island to operate a minefield in Hussey Sound.(154)



The 1893 protected mining casemate on Great Diamond Island. *NARA*

Cushing Island was considered an important link in the projected chain of harbor defenses, but it was not owned by the federal government and its civilian owners were disinclined to sell. The government's offer for the desired tract was rejected by Francis Cushing, the property owner, forcing the Corps of Engineers to exercise the right of eminent domain and enter into condemnation proceedings. In December 1893, the court established the value of the 34 acres initially required by the army at $112,240, a figure acceptable to the Engineer Department if not the civilian owners. Although a decree was rendered in favor of the government on March 1, 1894, the property owners appealed and it was not until August that title actually passed to the War Department. With ownership settled, a detailed survey of the new reservation was completed by November 16.(155)

By 1931, Cushing Island was largely a military reservation. *NARA*

Batteries "B" and "C" at Portland Head

As part of the overall plan for the defense of Portland, new battery plans, completed and approved by 1892, apparently called for six, later reduced to five, emplacements for 10-inch disappearing guns at Portland Head. Soon after the approval was received, the engineer in charge, Lt. Col. Peter C. Hains, was authorized to construct two initial emplacements, as well as a mine casemate to control the outer minefield. The sum of $110,000 was allotted for the pair initially designated Emplacements 4 and 5 of Battery "B."(156)

In April 1893, Colonel Hains' work gangs began excavating the granite ledge for the first two 10-inch disappearing gun emplacements at a site formerly occupied by a portion of the uncompleted 1870s barbette battery. Concrete pouring began the following spring, and by November 1894 the emplacements were essentially complete, requiring only finish work on the loading platforms related to mounting the gun carriages and other minor detailing. Work on the battery was suspended at the onset of winter in 1894, pending the arrival of the armament. At this point, the battery had cost $90,261.05. (157)

Battery "B" was still under construction when a third 10-inch disappearing gun emplacement was authorized, with $5,000 to be added to the $19,738.95 surplus from the allotment for Battery "B." The first of three emplacements projected for Battery "C" was about 100 feet to the left of and somewhat behind Battery "B" on the ledge. Construction began in 1894 and continued from spring

1895 until October, when funds were exhausted. When the project was suspended, the concrete was complete except for a portion of the top surface of the parapet and a small retaining wall. Some of the parapet's earth cover was also in place.(158) No work was carried out on Battery "B" during FY 1895/1896.

Colonel Hains had just begun Battery "B" in November 1894 when Lt. Col. David P. Heap succeeded him as engineer in charge. On October 19, 1895, Heap also was reassigned, succeeded by Lt. Col. Andrew N. Damrell, who received an assistant when 2nd Lt. George P. Howell arrived in the summer of 1896.

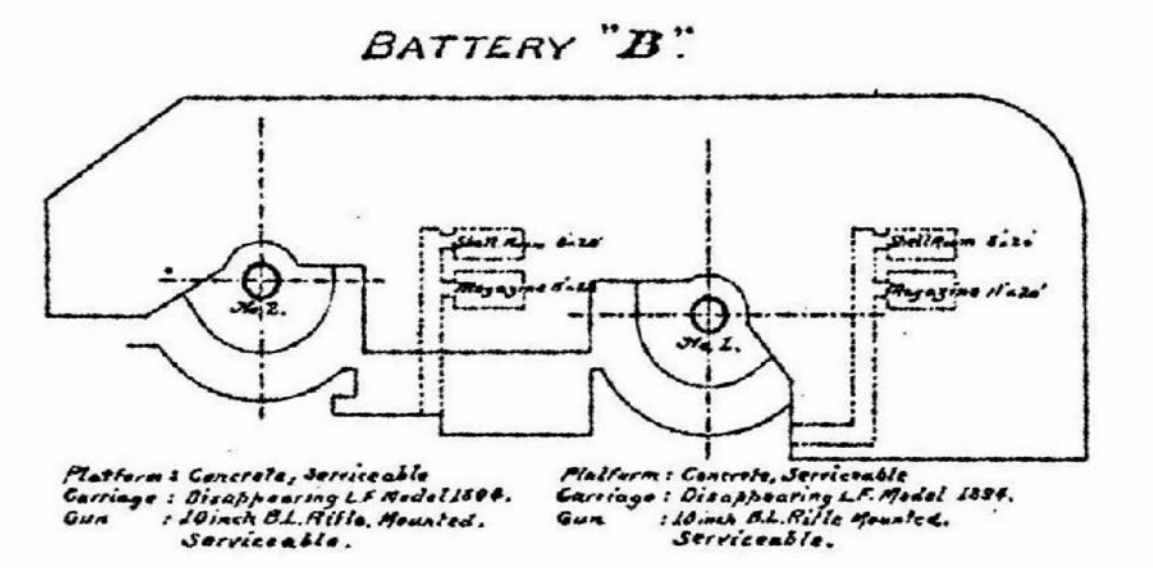
The Appropriation Act of June 6, 1896, provided funds for two more 10-inch emplacements in Battery "C," to the left of the initial emplacement. Lieutenant Howell was placed in immediate charge of construction. By January 1, 1897, Battery "C" was being rapidly advanced. Emplacement 1 was complete except for a portion of the concrete flooring of the shot room and a flight of stairs, and the excavation for Emplacements 2 and 3 was complete, while the basic concrete of the structure had been poured. Concrete work continued during the spring of 1897, and by the end of June, the battery was complete except for a portion of the ironwork that remained to be installed.(159)

At the end of June 1897, four 10-inch guns had been delivered by ship to the wharf at Fort Preble, along with two M1894 disappearing carriages. The carriages were transported to the battery site at Portland Head while the four gun tubes remained on the wharf until the carriages were installed. On February 19, 1898, Battery E, 2nd U.S. Artillery Regiment, took station at Portland Head and mounted the guns during the spring. The pace of preparation hastened in the early months of 1898 as tension increased between the United States and Spain over the latter's colonial policies. On June 8, 1898, the engineers transferred both 10-inch disappearing gun batteries to the garrison.(160) Battery "B"s No. 1 emplacement was armed with 10-inch BLR M1888M1 No. 32, manufactured by Watervliet Arsenal and mounted on M1894 Buffington-Crozier limited-fire disappearing carriage (DCLF) No. 9, manufactured by Kilby Manufacturing Co. Emplacement No. 2 was armed with 10-inch BLR M1888M1 No. 47, manufactured by Watervliet Arsenal and mounted on M1894 DCLF No. 18, manufactured by Pond Machine Tool Co.

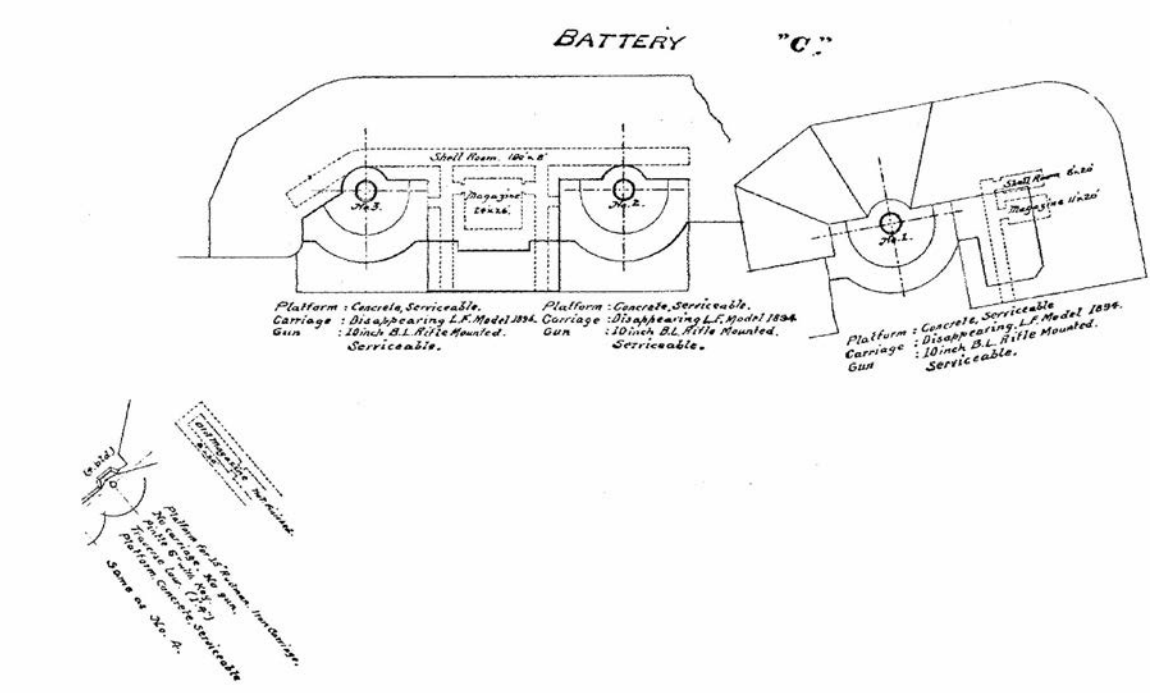
Battery "C"s Emplacement No. 1 was armed with 10-inch BLR M1888M1, No. 22, manufactured by Watervliet Arsenal and mounted on M1894 DCLF No. 16, manufactured by Pond Machine Tool Co. Emplacement No. 2 was armed with 10-inch M1888M1 BLR No. 50, manufactured by Watervliet Arsenal and mounted on M1894 DCLF No. 10, manufactured by Kilby Manufacturing Co. Emplacement No. 3 was armed with 10-inch BLR M1888M1 No. 34, manufactured by Watervliet Arsenal and mounted on M1896 DCLF No. 11, manufactured by Southwark F&M Co.(161)

By mid-summer, the necessary finish work associated with mounting the armament was complete. On August 26, 1898, Battery E proof-fired all the 10-inch disappearing guns without incident.

Both batteries were architecturally similar in some respects, of a design that became known as the two-story or horizontal-crest battery. Although designed for the same type of armament and built almost concurrently, the two batteries did have some dissimilar features. Both emplacements of Battery "B" and Emplacement No. 1 of Battery "C" were designed in accordance with the first standardized plan for 10-inch disappearing guns developed in 1894. The center and left emplacements of Battery "C," Emplacements Nos. 2 and 3, although the last two 10-inch emplacements constructed at Portland Head, were built in accordance with the prototype design developed in 1890. Consequently, Battery "C" incorporated both the prototype and standardized 1894 plans.

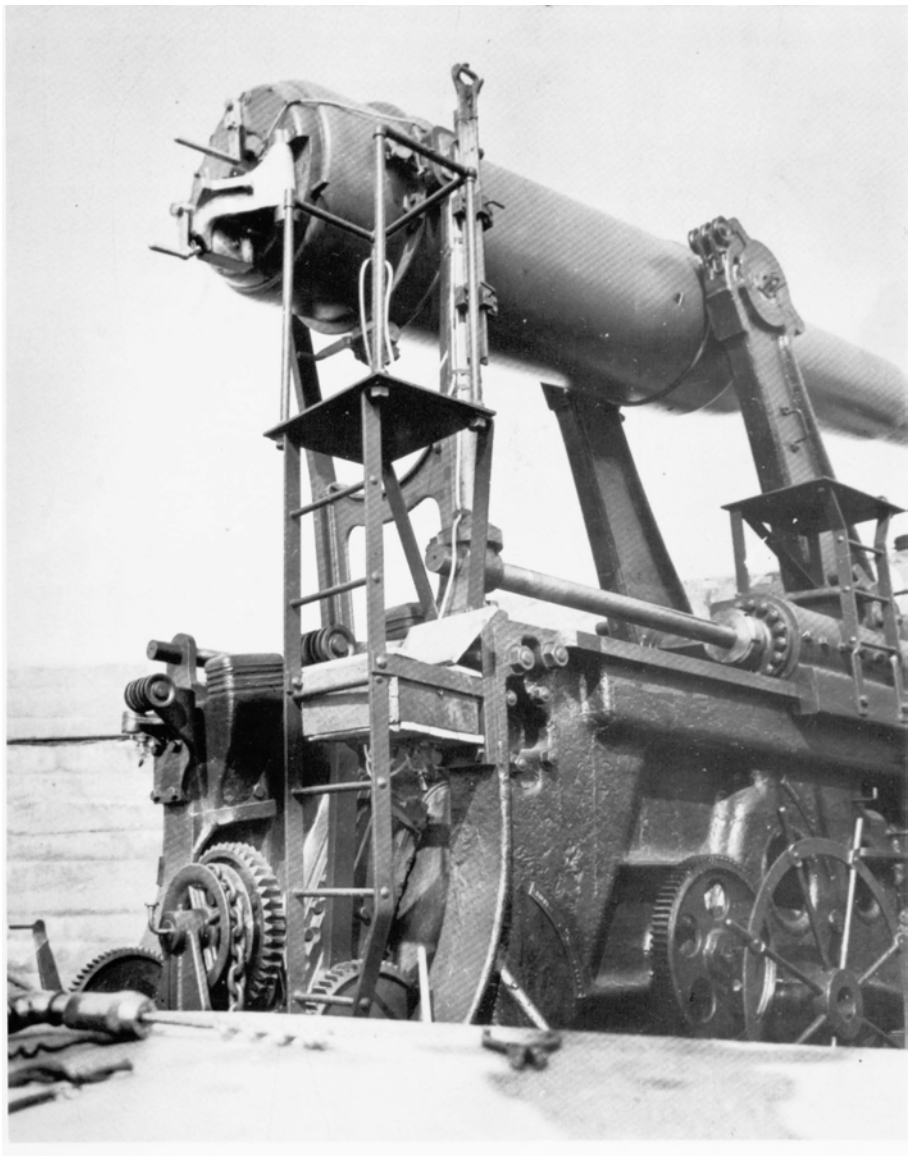


Battery B, later part of Battery DeHart. *NARA*



Battery C. The pair of emplacements at left was later named Battery Sullivan. *NARA*

Battery B and Emplacement No. 1 of Battery "C" had a powder magazine and one shot room for each emplacement. Emplacements 2 and 3 of Battery "C" shared a single powder magazine in the traverse separating the two gun platforms. It was 24 feet by 26 feet and had a vaulted ceiling some eight feet high at the crown of the arch. The shot room, beneath the parapet at the battery front, was an eight-foot-wide corridor or gallery extending the length of the battery front, some 190 feet. Like the powder magazine, it too had an eight-foot vaulted ceiling. Access to the shot room was by a six-foot wide and 60-foot-long gallery on each flank of the magazine that extended from the rear of the traverse

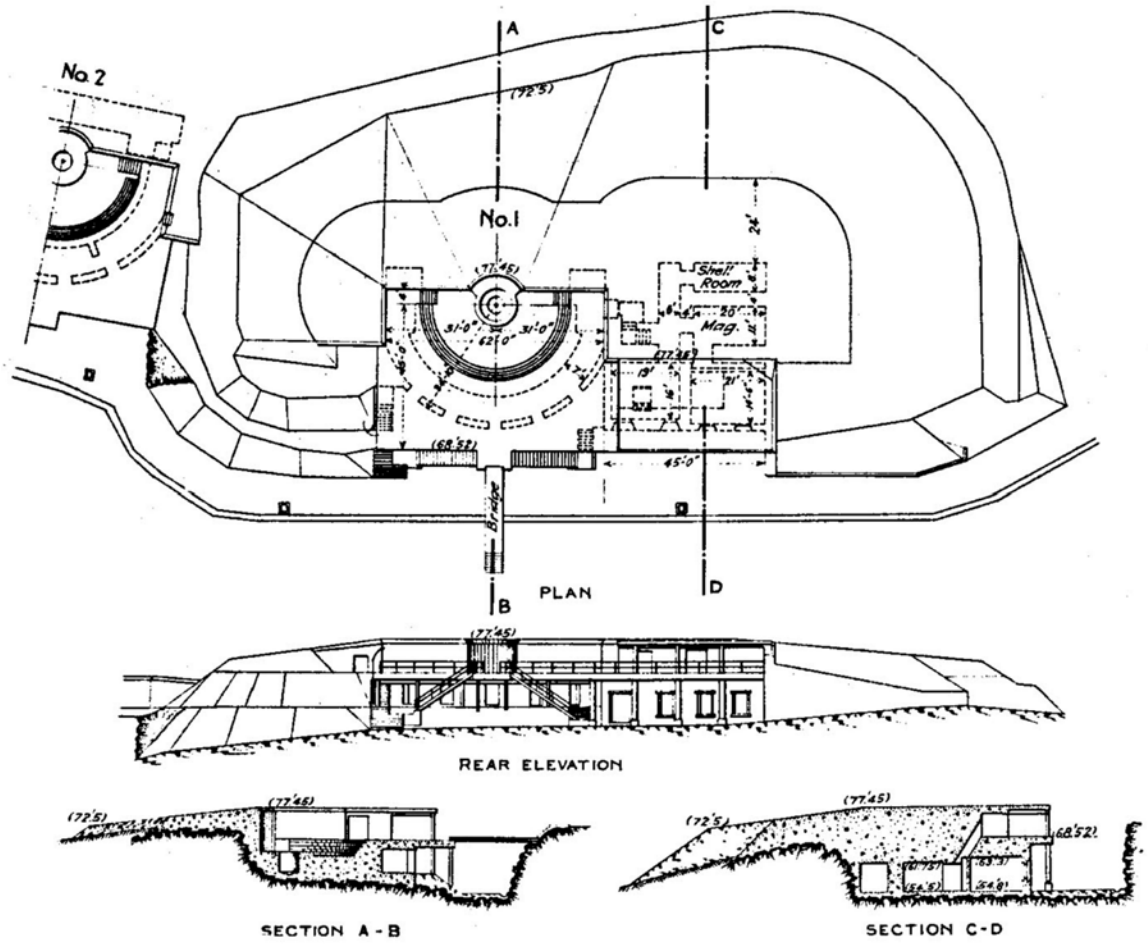


10-inch BLR on disappearing carriage. *Maine Historical Commission Collection*

through the traverse to the shot corridor. It also had an eight-foot headroom. A short gallery in the rear of the battery passed between the loading platforms through the sidewalls of the traverse.

Both emplacements of Battery "B" and Emplacement No. 1 of Battery "C" were built in accordance with the "1894 Type Plan." The traverse on the right of each emplacement contained the 8-foot-wide by 20-foot-long shot room, an 11-foot-wide and 20-foot-long powder magazine, a service gallery that extended some 60 feet to the rear of the traverse, and an ammunition hoist lobby.

As the magazine and shot rooms of the two batteries were a level below the gun platforms, the projectiles had to be hoisted to the gun platforms. The powder, being lighter, could be moved by hand. Moving the shells and powder charges from the magazines to the loading platforms was awkward and time consuming, and Taylor-Raymond back-delivery projectile hoists were installed in both batteries, between 1903 and 1907. Three Type-C powder hoists were later installed to lift the powder charges for Battery "C," but they were not transferred until October 14, 1912.(162)



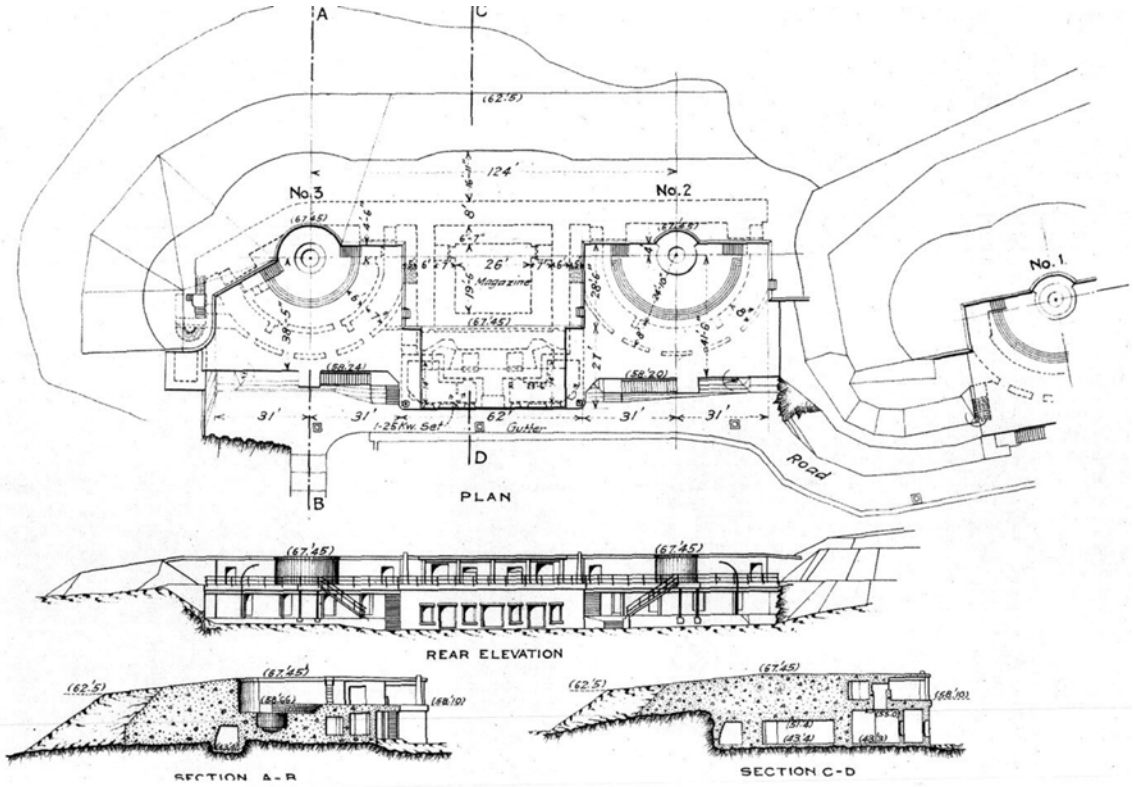
Emplacement No. 1, Battery Sullivan (Battery "C"). *NARA*

The five emplacements for 10-inch disappearing guns were known by their Corps of Engineers letter designations until the early 1900s, when the two emplacements of Battery "B" were named to honor Capt. Henry V. DeHart, 5th U.S. Artillery, who died July 12, 1862, of wounds incurred at the Battle of Gaines' Mill, VA, during the Civil War, and Battery "C" was named for Maj. Gen. John Sullivan of New Hampshire, a distinguished officer of the Continental Army who died January 23, 1795. (163)

Battery Hobart

The War with Spain prompted a demand for additional seacoast batteries on the Atlantic seaboard. Since the Ordnance Department had concentrated its limited appropriations on major-caliber guns and mortars, there were virtually no small or medium-caliber guns to defend the minefields in the protected harbors. The United States was forced to turn to Great Britain, purchasing eight 6-inch and thirty-four 4.7-inch Armstrong guns shortly before war erupted. One 6-inch gun (No. 12133) was emplaced at Portland Head with its shield and pedestal mount (No. 11159), to cover the outer minefield at the entrance to the main ship channel.(164)

Within a month after passage of the March 9, 1898, Act for National Defense, Major Hoxie received orders to begin a battery for a single pedestal-mounted 6-inch Armstrong quick-firing gun,



Emplacements No. 2 and 3, Battery Sullivan (Battery "C"). *NARA*

some 200 feet to the left of Battery Sullivan and slightly to its rear. Like the other batteries on Portland Head, this new emplacement was built on the remains of the 1870s barbette batteries at the left end of Front B. Construction advanced rapidly and by the end of June 1898, the emplacement was ready to receive its armament. The battery was completely finished by December 1898, but was not turned over to the artillery until January 6, 1900.(165)

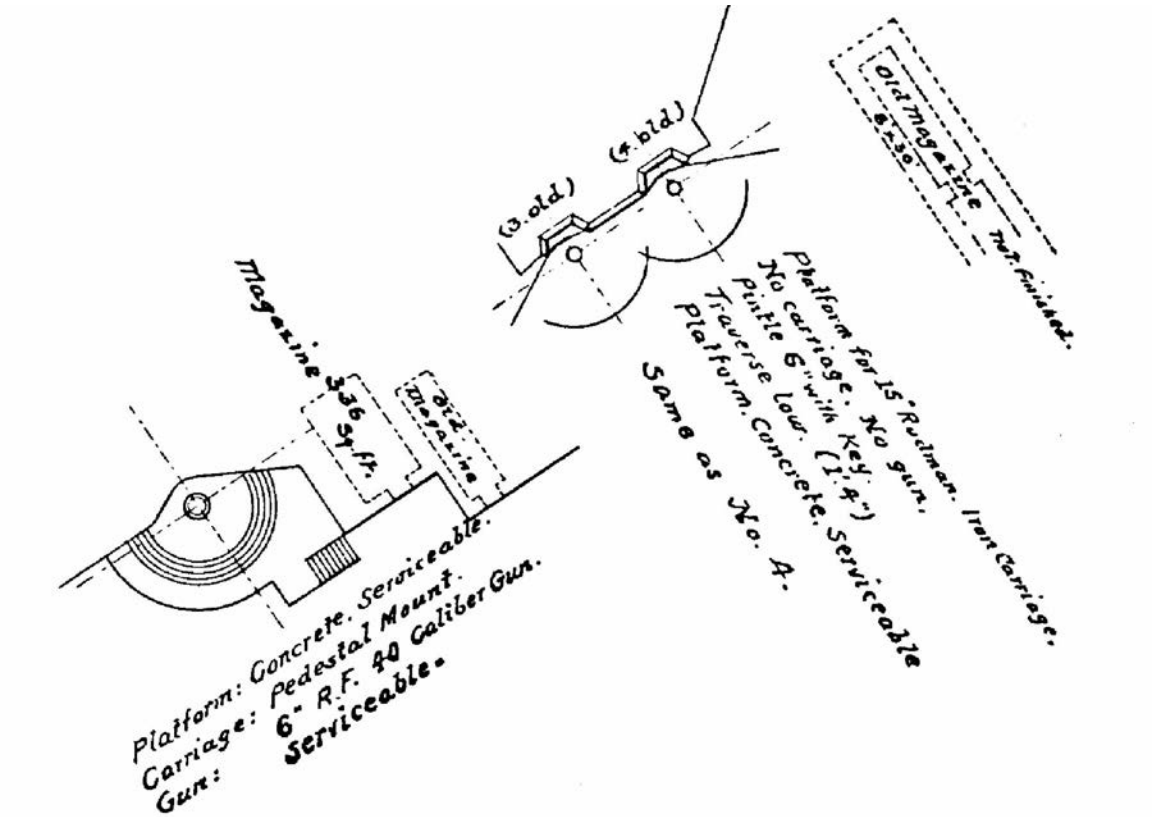
The emplacement was named for 1st Lt. Henry A. Hobart of the Regiment of Light Artillery, killed in the Capture of Fort George, Upper Canada, May 13, 1813, during the War of 1812.(166)

The battery was simple, a two-level concrete platform accessed by a short stairway in the rear of the structure. A low parapet wall extended across the circular front of the emplacement. The concrete magazine on the right side of the emplacement had an area of 336 square feet. The ammunition for the 6-inch gun was semi-fixed, that is, the projectile was loaded separately, followed by the powder, contained in a brass cartridge. No mechanical ammunition service was required. Adjacent to the magazine a 1870s traverse magazine was probably used as a storeroom and possibly as a personnel shelter, in addition to providing increased protection for the magazine.

War Department G.O. No. 71, April 13, 1899, named the batteries at Portland Head Fort Williams to honor Maj. Gen. Seth Williams of Maine. An officer in the 2nd U.S. Artillery, he had been brevetted during both the Mexican and Civil Wars, rising to the rank of brevet major general and serving as assistant adjutant general prior to his death on March 23, 1866.(167)

By the end of the 19th century, modifications were underway on the two 10-inch gun batteries. Galleries connected the emplacements of each battery. On November 8, 1900, $700 was allotted to provide telephone connections between the battery commander's stations and the two batteries and to install speaking tubes between the loading platforms and magazines.(168)

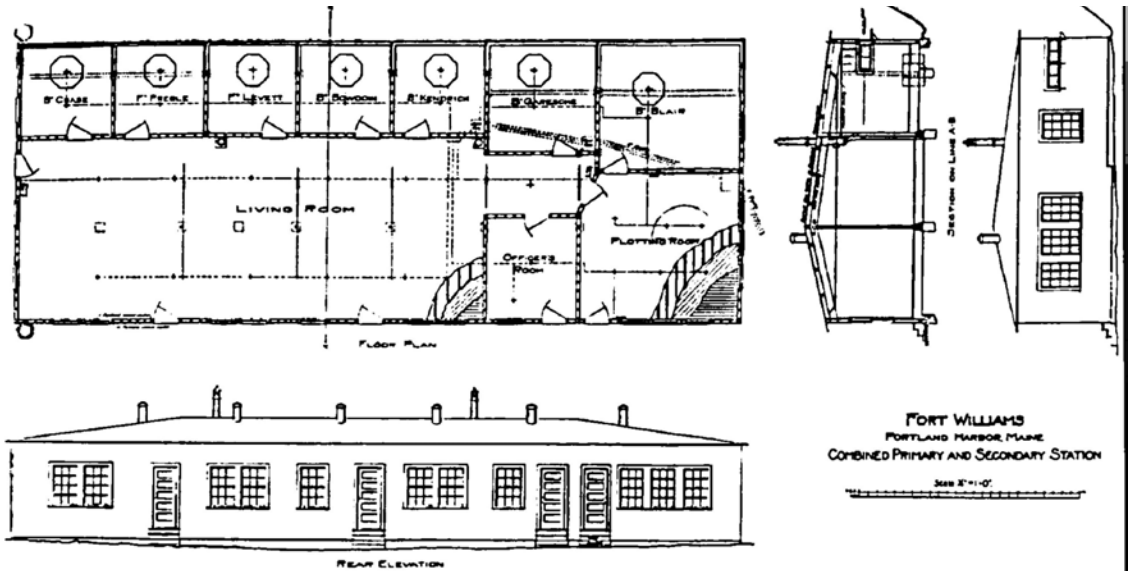
Additional acreage was now needed on Portland Head. On March 1, 1900, nine acres were pur-



Battery Hobart's emplacement built into the 1870s barbette battery. *NARA*

chased from Joseph D. Symonds, and on April 9, 1900, Georgiana Thompson, et al., conveyed 12.5 acres to the War Department.(169)

In 1900, six observation and range-finding stations were erected at Fort Williams, as well as battery commanders stations (BCS) for Batteries Sullivan and DeHart. The BCS for Battery Sullivan was at its left rear, about halfway between that battery and Battery Hobart. Incorporated into this structure were two observation stations and two plotting rooms for the mine defense. Battery DeHart's BCS was on the ledge above and about 50 feet to the rear of the battery's central traverse.(170)



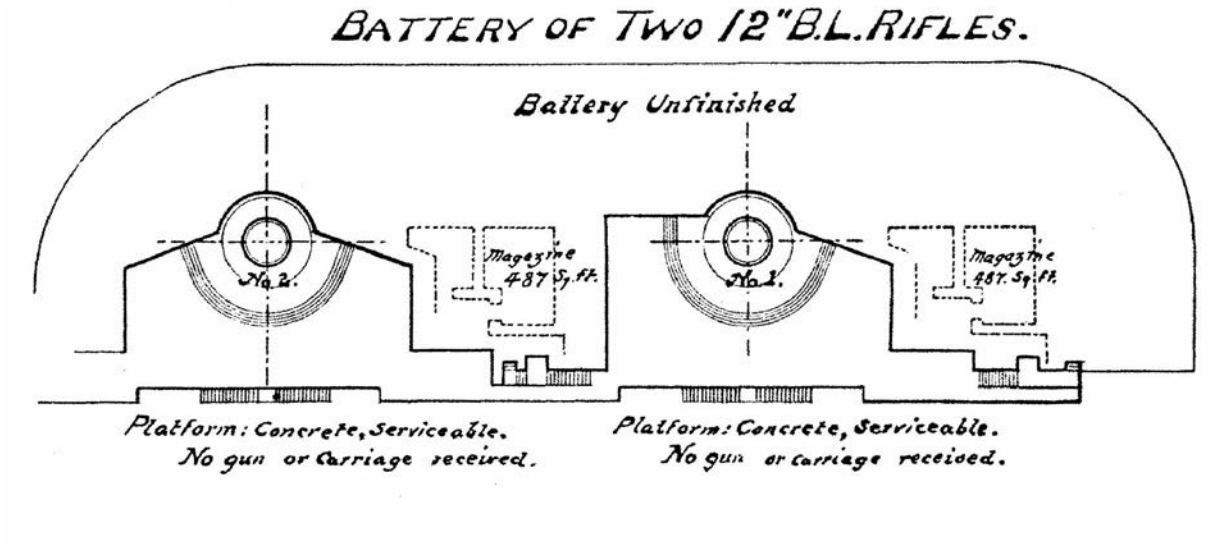
Combined primary and secondary fire control stations in the southwest corner of Fort Williams. *NARA*

Battery Blair

The FY 1900/1901 appropriation for gun and mortar batteries was passed May 25, 1900. On November 9, the chief of engineers allotted $130,000 from that appropriation as initial funding for two emplacements for 12-inch guns on disappearing carriages at Fort Williams. Construction of the battery was begun by year's end, about 200 feet to the right of Battery DeHart. Excavation of the rock ledge was well underway by spring 1901 and concrete pouring began at the end of June.(171) By the end of the work season in early winter 1901, Battery Blair was generally complete but remained unarmed until the spring of 1903.

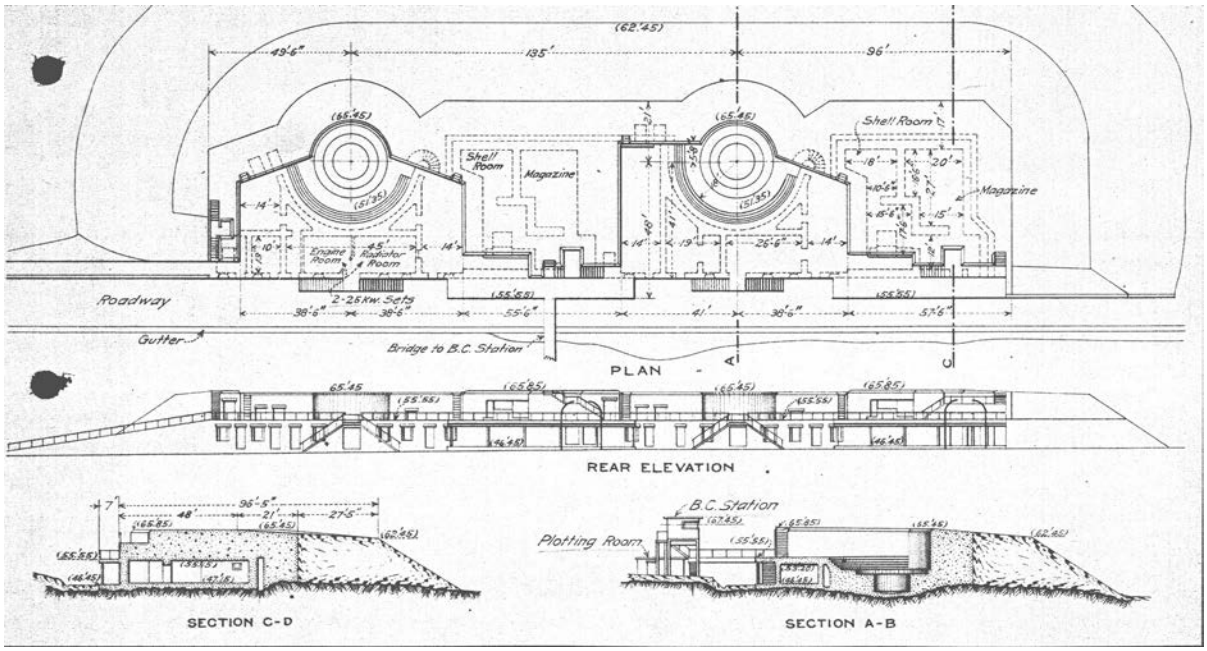
The two M1895 12-inch guns (Nos. 11 and 14) were shipped from Watervliet Arsenal in the spring of 1903 and mounted on M1897 disappearing carriages Nos. 32 and 33 that had been shipped from Midvale Steel on March 6 and April 11, as final details were completed at the battery structure. On July 31, 1903, the battery was turned over to the artillery garrison.(172)

The two 12-inch gun emplacements were named Battery Blair, honoring Maj. Gen. Francis P. Blair, Jr., a veteran of the Mexican War who rose to the rank of major general of Volunteers during the Civil War. He later represented Missouri in the U.S. Senate and died July 9, 1875.(173)



Battery Blair. *NARA*

Battery Blair was built in accordance with 1898 plans for 12-inch disappearing gun batteries, which incorporated a number of improvements over the 1896 design. Like the 10-inch batteries, Battery Blair was two story, with magazines on the lower level. As in Battery DeHart, the 487-square foot magazines were beneath the traverse to the right of their emplacements. Also inside the battery's lower level were shot rooms, storerooms, a guardroom, and the relocating (or plotting) room. Later, a power room was equipped with two 25 kW generators. Powder hoists were not provided, but two Hodges back-delivery hoists raised projectiles from the magazine level to the delivery table at the rear of the traverse on the working platform level. Projectiles were then moved by hand truck to the loading platform for ramming into the gun. Projectiles could also be raised by davit cranes rigged with double block and tackle. The Hodges hoists were later replaced with Taylor-Raymond back-delivery hoists, transferred April 15, 1919.(174)



Battery Blair. *NARA*

Another improvement in Battery Blair over the earlier battery designs was the provision of three "crow's nest" observation stations, one on each of the battery's flank traverses and one atop the traverse separating the two emplacements. A one-room BCS atop a 23-foot concrete structure behind the battery's central traverse was transferred February 3, 1909.(175)

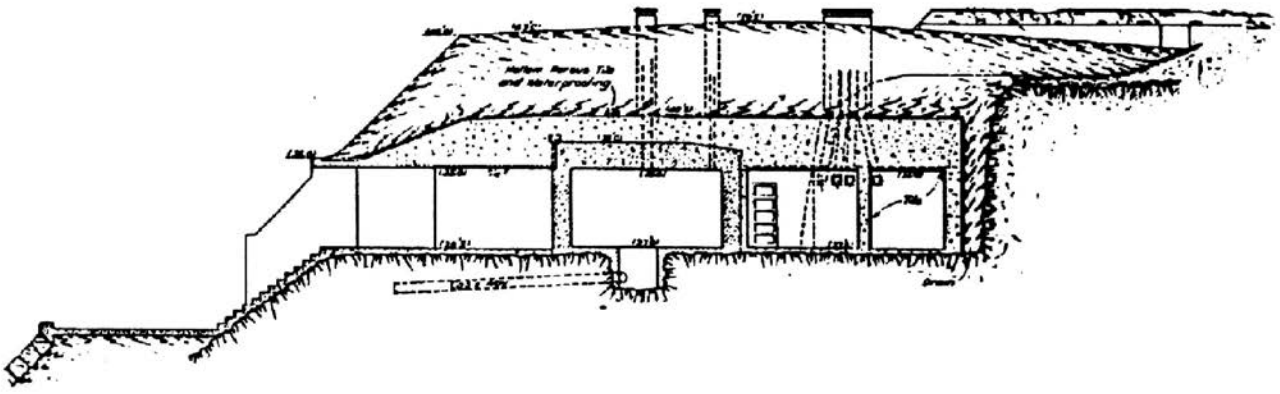
The army found concrete battery magazines so damp that "peace storage magazines" were built for peacetime powder storage. In 1901, a contract was let to the firm of F.W. Cunningham and Son of Portland to erect a large peace magazine at Fort Williams. Construction began in October 1901, a few hundred feet from the post's central power plant. The structure was built into the side of the rock ledge and by the end of June 1902, the magazine was complete except for the fence and two gates.

In order to coordinate the fire control of the batteries completed and under construction, a two-level fire commander's station was begun at Fort Williams in 1902 on the rock ledge behind the line of batteries near its centerline. The building with its fire direction equipment and telephone communications was completed in 1903.(176)

Submarine Mine Defenses

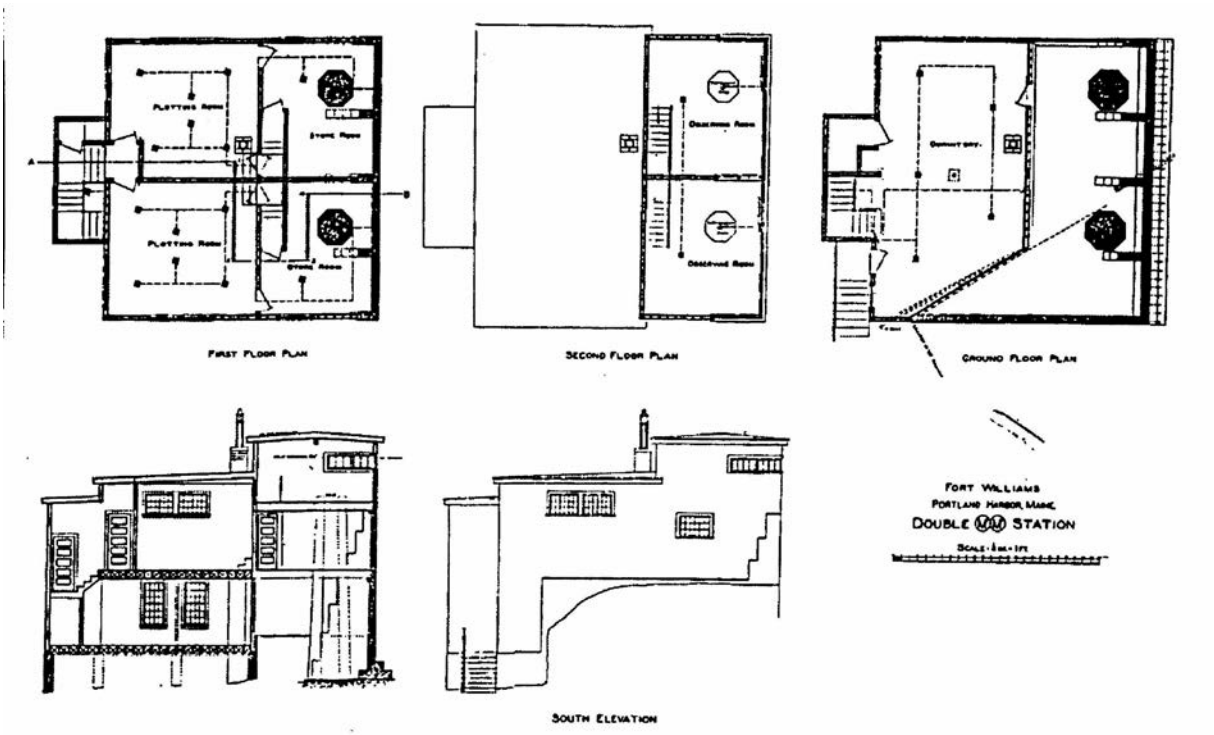
Fort Williams' second mine casemate was begun in July 1901 to replace the smaller, damper casemate built nearly a decade before. Construction was generally completed by the end of the summer of 1902, and it was transferred May 15, 1903. The new casemate, about 75 feet to the left rear of Battery Hobart, was a concrete and brick cut-and-cover building, lined with brick to reduce condensation. A steel stairway connected the casemate with the crest of the ledge near the left flank of Battery Hobart.

A board of officers presided over by Col. Arthur Murray studied the torpedo defenses of Portland in 1904 and recommended the project be doubled in size, with mine planting facilities at both Forts Williams and McKinley. This revised project was approved on March 22, 1905, and over the next five years, its various elements were placed in service.

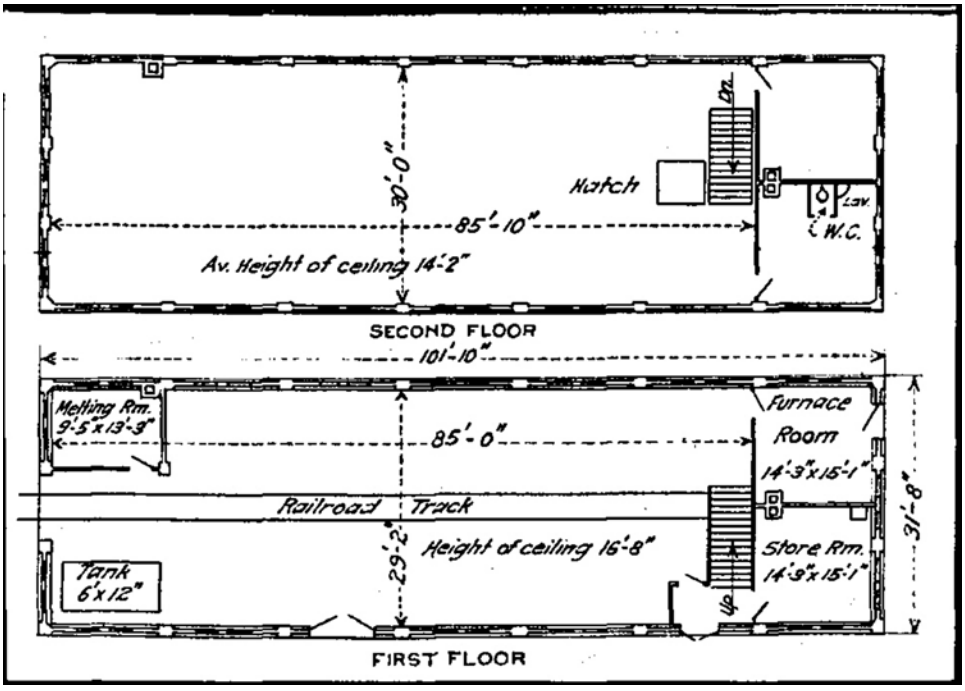


Improved mine casemate, Fort Williams. *NARA*

A series of new buildings were built at the head of Ship Cove between Battery Hobart, near the mine casemate, and Battery Keyes. An addition to the 1902 mine casemate was built between 1906 and 1907 and transferred to the garrison on April 17, 1907, along with a concrete mine loading room. A two-story reinforced-concrete "torpedo storehouse" to store mine cases was transferred on June 5, 1908. A seven-room double-primary mine command station was built to the right of Battery Hobart. The station was constructed of cement plaster on a wooden frame with a flat tar and slag roof. Two rooms were used as observation stations; two more served as plotting rooms; the remainder functioned as dormitories and latrines. A double-secondary mine station of the same construction but with only two observing rooms was built at the same time behind Battery Keyes. Also provided on the ledge along the south side of Ship Cove was a concrete wharf, connected with the mine loading room and torpedo storehouse by a 2,000-foot 3-foot-gauge tramway.(177)



Double-primary mine station near Battery Hobart. *NARA*



Torpedo storehouse at Fort Williams. *NARA*

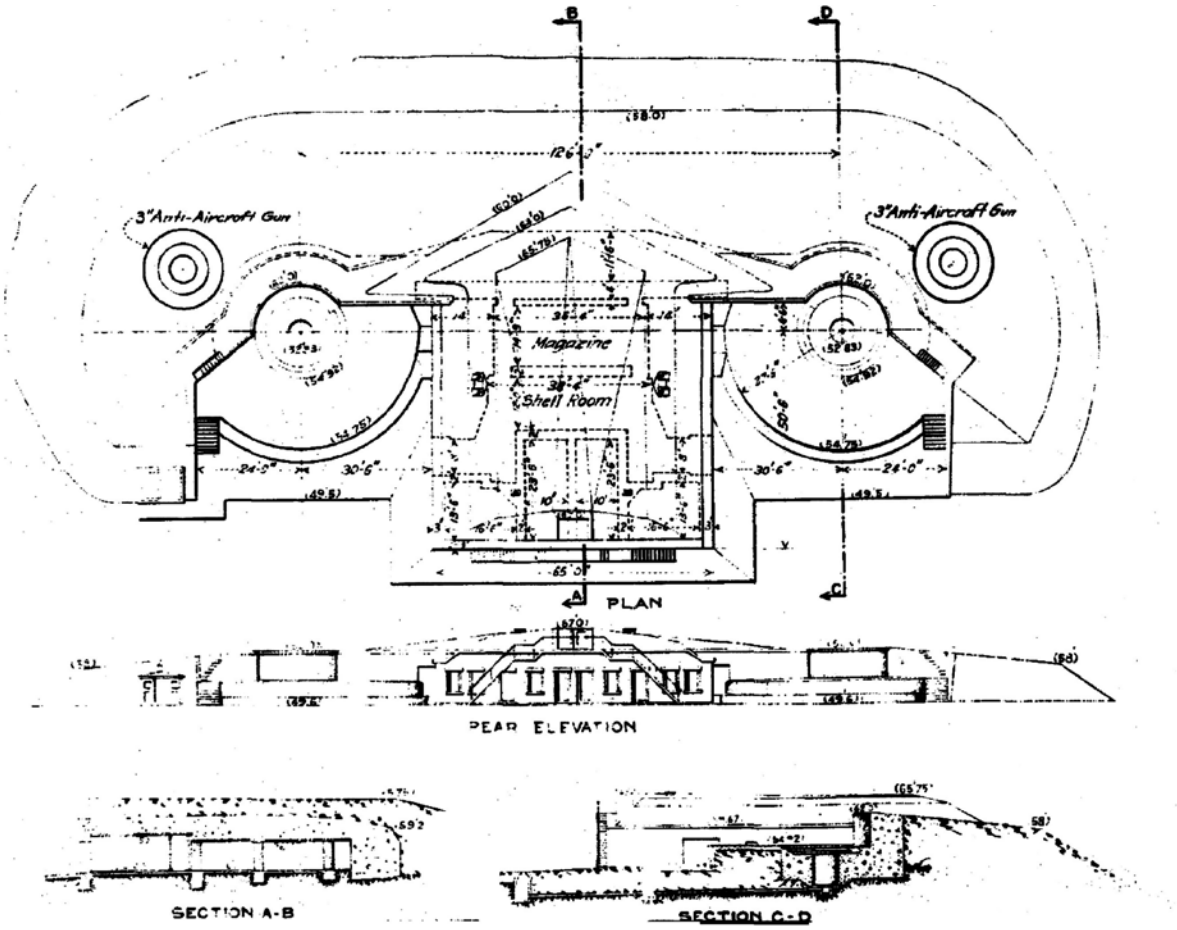
Battery Garesché

A second medium-caliber battery for Fort Williams was authorized in May 1900, some 300 feet to the right of Battery Blair. Initially the plans were for two 6-inch guns on disappearing carriages, but by fall 1901 the number of guns had been increased to three. This enlargement of the battery required expansion of the fort to the south. Negotiations with the owners of adjoining property for the purchase of the additional tract were unsuccessful, however, and these difficulties, along with War Department decisions to establish pairs of guns in batteries, resulted in a reversion to the original plan for a two-emplacement battery.(178)

Construction was finally begun in 1904 and completed two years later. Its two 6-inch M1900 guns (Nos. 45 and 46) were manufactured at Watervliet Arsenal. The two M1903 limited-fire disappearing carriages (Nos. 11 and 12) were manufactured by Morgan Engineering Co. and shipped to Fort Williams on March 15 and June 9, 1905. This was unusual, as M1903 guns were usually mounted on M1903 carriages.(179)

The battery was transferred to Fort Williams' garrison on October 16, 1906. It was named in honor of Lt. Col. Julius P. Garesché, 4th U.S. Artillery, killed at the Battle of Murfreesboro (Stones River), TN, December 31, 1862.(180)

Battery Garesché was built in accordance with the general 1903 plan for 6-inch disappearing batteries. The battery structure was of the "one-story" or "horizontal ammunition service" type, in which the central traverse, rising some six feet above the parapet crest, contained powder and shell rooms with a capacity of 500 shells and powder charges for each gun. A storage battery room, guardroom, storeroom, and battery office were along the rear of the central traverse, incidentally providing additional protection for the magazine. Shells and powder charges were moved by hand truck from the magazine through doors in the sidewalls of the traverse onto the truck platforms at the rear of the emplacements. There the projectiles and powder charges were passed up to the loading platforms and guns. An open-roofed BCS atop the rear of the central traverse was accessed from the battery parade by an iron double stairway.



Battery Garesché. *NARA*

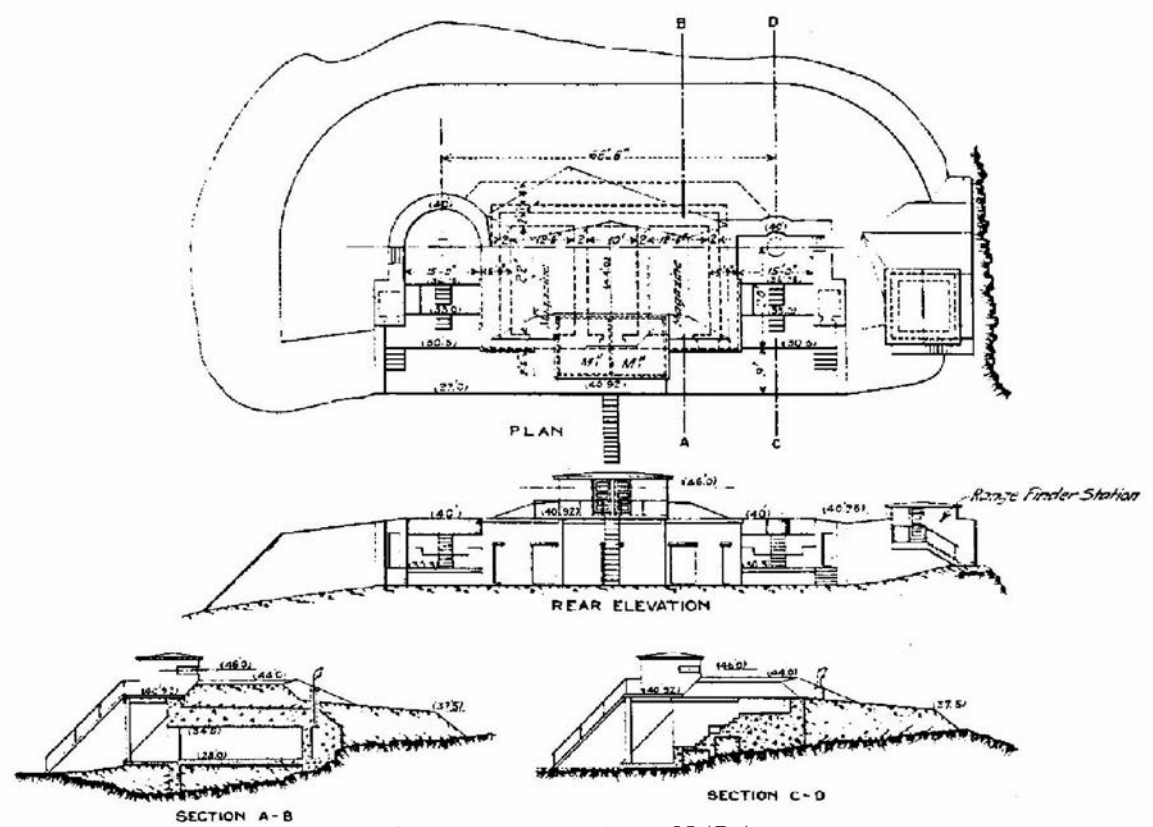
Battery Keyes

Between 1903 and 1905, Fort Williams' last Endicott-era seacoast battery was constructed, for two 3-inch rapid-fire (R-F) guns on pedestal mounts. The battery was provided with M1902 3-inch guns Nos. 4 and 36, mounted on M1902 barbette carriages Nos. 4 and 36. Both guns and carriages were designed and manufactured by Bethlehem Steel Co. The battery was turned over to the garrison on April 26, 1906.

The battery was positioned to protect the minefield in the main ship channel between Portland Head and Cushing Island and to prevent passage of small vessels. Relatively simple in design, the battery consisted of two concrete gun platforms 55 feet apart, separated by a central traverse containing two magazines and a storeroom. The fixed ammunition was light enough to be handled manually.(181)

On December 27, 1904, the battery was named for Maj. Gen. Erasmus Darwin Keyes, U.S. Volunteers, who died October 14, 1895. General Keyes was an 1832 U.S.M.A. graduate and served in the 3rd U.S. Artillery until appointed military secretary to Lt. Gen. Winfield Scott in 1860. He was brevetted brigadier general in the Regular Army for his service at the Battle of Fair Oaks, VA, in 1862. In May 1862, he was promoted to major general of volunteers, retiring May 6, 1864.(182)

Although new works had been projected seaward, at Portland Head and on Cushing Island, Spring Point still commanded the interior channel approaches to the harbor. Consequently, the Board of Engineers selected that site for modern breechloading gun and mortar batteries.



Battery Erasmus Keyes. *NARA*

Battery Kearney

Having selected Spring Point for a mortar battery, the Board of Engineers determined that the existing Fort Preble reservation was too small to accommodate a battery of 16 mortars. The Fortification Appropriation Act of June 6, 1896, provided $125,000 for construction as soon as title to additional land could be obtained. By July 1, 1897, the titles to five parcels had been transferred to the government for $13,202.50.

Second Lieutenant George P. Howell arrived at Portland on July 13, 1896, and as assistant engineer to Colonel Damrell he was assigned to supervise construction of the new mortar battery at Fort Preble as well as the 10-inch batteries at Portland Head. During the summer and fall of 1896, contracts were arranged for sand, cement, and the collection of other construction materials. Work at the site began November 30, 1896.

December 1896 was spent removing the earth from the rock ledge. By January 2, 1897, the excavation of the ledge was underway and continued into summer. On June 3, Lieutenant Howell put a second crew to work. The first shift worked from 4 a.m. until 1 p.m., when the second shift began work until 8 p.m. Not satisfied with the progress, Howell obtained two 2,000-candlepower Wells lights to extend the workday until 10 p.m. The excavation of the ledge was especially arduous. A substantial portion of the rock mass was tough black slate with pockets of quartz, and throughout the ledge, the excavators found hard bluestone granite. The project had been underway nearly a full year before they could begin pouring concrete. The first concrete was poured on October 1, 1897, but excavation was not completed before July 1898. The war with Spain added new impetus. The concrete floors and loading platforms of the four mortar pits were poured in early summer and by the end of June 1898, the base rings for the 16 mortar platforms had been set in place.

Work continued on the mortar battery until the end of June 1899. The concrete walls and arches of the magazines were formed and poured, and eight mortars were mounted, although work on the structure was still underway.(183) Lieutenant Howell was transferred to the Engineer Depot at Willet's Point on December 23, 1898.(184)

An electric power plant was built into the mortar battery by contract with the John P. Cushing Co. of Boston for $5,300. This part of the project was completed by July 1, 1899. In May, Cushing was awarded another contract to provide electric lighting services and fixtures for the battery. This was completed between August 6 and October 5, 1899.

During FY 1899/1900, the battery was brought to near completion. Two observation stations were built at the battery; the parapet was graded and sodded; final concrete work was carried out, and all of the mortars were mounted. The sole work remaining at the beginning of July 1900 dealt with water infiltration through the concrete of the magazines and shot rooms, and some minor finish work.

The moisture problem was finally solved in 1901 by lining the magazines and shot rooms with a hollow brick wall separated from the concrete wall by a layer of asbestos felt, and lining the roof with corrugated sheet metal. By the end of winter 1901, the battery was ready for transfer to the garrison. The BCS was begun in October 1900, and by July 1901, it was complete except for some painting, and finish work by the carpenters.

The M1896 mortar carriages were all manufactured by Robert Poole and Son Manufacturing, while Watervliet Arsenal, Bethlehem Iron Co., Builders Iron Foundry, and Niles Tool Works made the M1890 mortars. Delivery of the M1896 mortar carriages (soon upgraded to M1896M1) began in mid-May 1897, and all were on hand by November. As the threat of war with Spain increased in 1898, the swift completion of the battery was encouraged and as soon as the M1890M1 mortars began arriving at Fort Preble it became possible to begin mounting a portion of its armament. By the late summer and early fall of 1898, eight M1890M1 12-inch breechloading mortars were mounted on their spring-return mortar carriages. This continued until all 16 weapons were emplaced.

By December 1898, all but one of its 16 mortars were mounted. Emplacement No. 4 of Pit "A" had a broken racer and the mortar had been removed pending its repair.(185)

The arrangement of the 16 mortars was as follows:(186)

Pit A
Emplacement 1, Mortar No. 10, Carriage No. 32
Emplacement 2, Mortar No. 24, Carriage No. 43
Emplacement 3, Mortar No. 38, Carriage No. 14
Emplacement 4, Mortar No. 34, Carriage No. 30
Pit B
Emplacement 1, Mortar No. 36a, Carriage No. 33
Emplacement 2, Mortar No. 44, Carriage No. 38
Emplacement 3, Mortar No. 45, Carriage No. 49
Emplacement 4, Mortar No. 47, Carriage No. 31
Pit C
Emplacement 1, Mortar No. 17, Carriage No. 57
Emplacement 2, Mortar No. 19, Carriage No. 77
Emplacement 3, Mortar No. 20, Carriage No. 73
Emplacement 4, Mortar No. 36, Carriage No. 40

Pit D
Emplacement 1, Mortar No. 20, Carriage No. 36
Emplacement 2, Mortar No. 33, Carriage No. 69
Emplacement 3, Mortar No. 36b, Carriage No. 72
Emplacement 4, Mortar No. 37, Carriage No. 78

Fort Preble's mortar battery was named Battery Kearny on May 25, 1903, to honor Bvt. Maj. Gen. Stephen Watts Kearny, a hero of the Mexican War who died October 31, 1848, at St. Louis, MO. He had been appointed first lieutenant in the 13th U.S. Infantry March 12, 1812. Serving with the 2nd, 1st, and 3rd Infantry Regiments, Kearny transferred to the 1st Regiment of Dragoons in 1833 as its lieutenant colonel. Promoted to colonel of dragoons in 1836 and to brigadier general in 1846, Kearny was brevetted major general for gallant and meritorious conduct in New Mexico and California, and in the December 6, 1846, Battle of San Pasqual.(187)

When final repairs and finish work on the battery were completed in 1901, the engineers transferred the battery to the fort commander on March 8, 1901.(188)

During the latter part of 1901, the 16 mortars of Battery Kearny were fired for the first time to test their installation and accuracy, as well as to determine any weaknesses in the construction of the battery. A total of 203 shots were fired, including five salvos from one pit. The other 184 shots were from single mortars in each of the pits. The only structural defect found was blast damage to the doors of the magazines.(189)

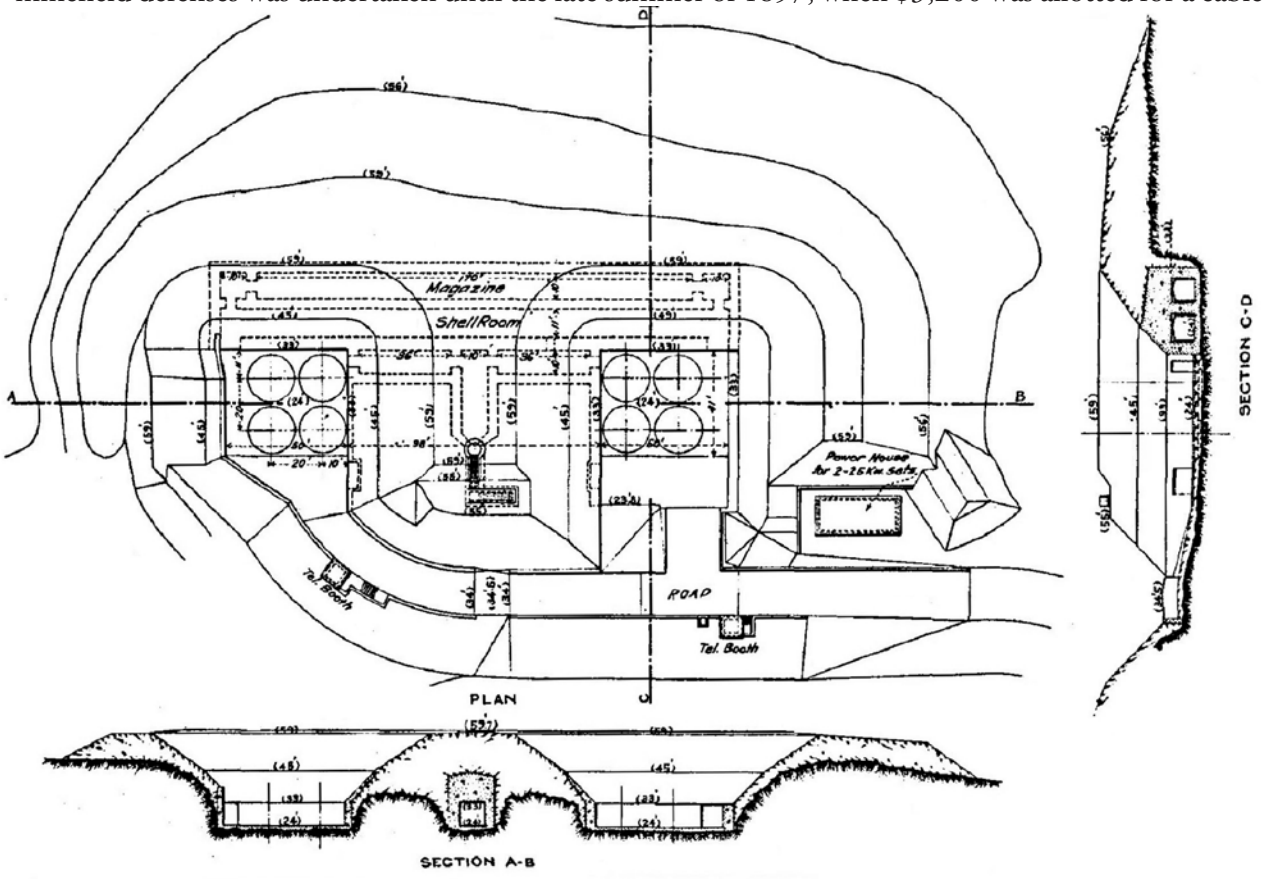
Battery Kearny's four pits occupied much of the central portion of Fort Preble. *NARA*

Prior to construction of the mortar battery at Fort Preble, these high-trajectory weapons had been emplaced in four pits, formed into a rectangle in accordance with plans adopted in 1892. In 1894, a new plan placed the four pits in a line, side by side, with their capital facing the primary target area. Battery Kearny's design was apparently an evolutionary one between these two early designs. While still conforming to the original rectangular design, this battery's pairs of pits were staggered, the rear pits being slightly to the right rear of the forward pits.(190)

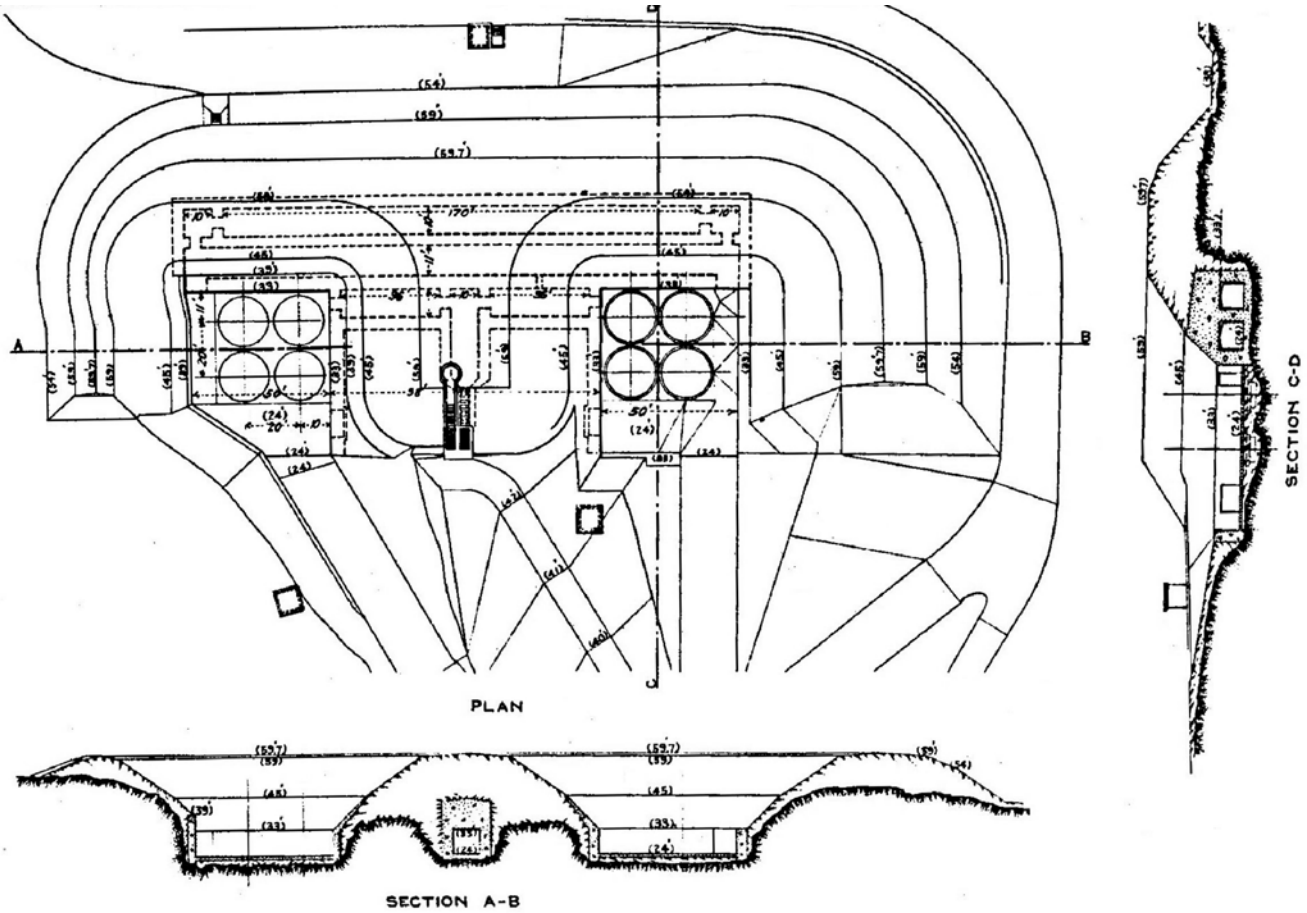
Battery Kearny's design reflected a number of features of the 1894 type plan while retaining the chief characteristic of the 1892 plan - one pair of pits in front of the other pair. The powder magazines and shot rooms extended across the battery front, parallel to one another within the rampart. Each was a long gallery, the forward one 170 feet long and 10 feet wide, the shell room 198 feet long and 11 feet wide. Double doorways in the front parapet wall provided access. In the left-most pit of each pair, the door was in the right front corner. There were two 36-foot magazines in the central traverse of each half of the battery. Each was about eight feet wide and had a vaulted, arched ceiling. As noted, the interior wall of these rooms was of hollow brick to aid in moisture control. At the mid-point of the traverse between the two magazines was the relocating room, or plotting room as it was later named.

Submarine Mine Facilities

Concurrent with the development of the torpedo (submarine mine) defenses at the entrance to the main ship channel off Portland Head, another mining casemate was established at Spring Point, most likely using one of the 1870s traverse magazines of North Battery. Little further work on the inner minefield defenses was undertaken until the late summer of 1897, when $3,200 was allotted for a cable



Battery Kearny's forward pair of mortar pits. *NARA*



Rear pits of Battery Kearny. These pits were renamed as Battery Chase in 1906. *NARA*

tank on the northwest shore of Spring Point near the foot of the Fort Preble wharf, to store and test the submarine cable used to connect the mines with the casemate. This building, 47 feet long by 26 feet wide with a capacity of 36 reels of submarine cable, was transferred to the garrison on September 30, 1901.

The tank at Fort Preble apparently fell out of use prior to World War I. On July 23, 1914, the commander of the Coast Defenses of Portland requested that the old cable tank at Fort Preble be placed in serviceable condition and on August 18, 1914, the chief of coast artillery concurred and requested the engineers prepare the tank. The project then began to grow. On September 12, the district engineer noted that a new crane and track would be required, along with two flat cars, and a railroad connection between the cable tank and the wharf. He estimated the cost of the project at $4,000. Ultimately, the projected cable tank became two tanks and the project was included in the 1917 budget estimates. (191)

By 1903, two additional batteries were planned for Fort Preble to cover the approaches to the inner harbor through both White Head and the Main Ship Channels. These were the last Endicott-era batteries built at Spring Point.

The battery for two 6-inch disappearing guns was in the center of the 1808 Fort Preble. The principal powder magazine built in 1868 in the middle of the old Washington Star was demolished along with the last remnants of the scarp on the south and west fronts of the 1808 fort. In their place, a battery similar to Fort Williams' Battery Garesché was built.

Submarine mine facilities at Fort Preble at the foot of the wharf in the lower right corner. *NARA*

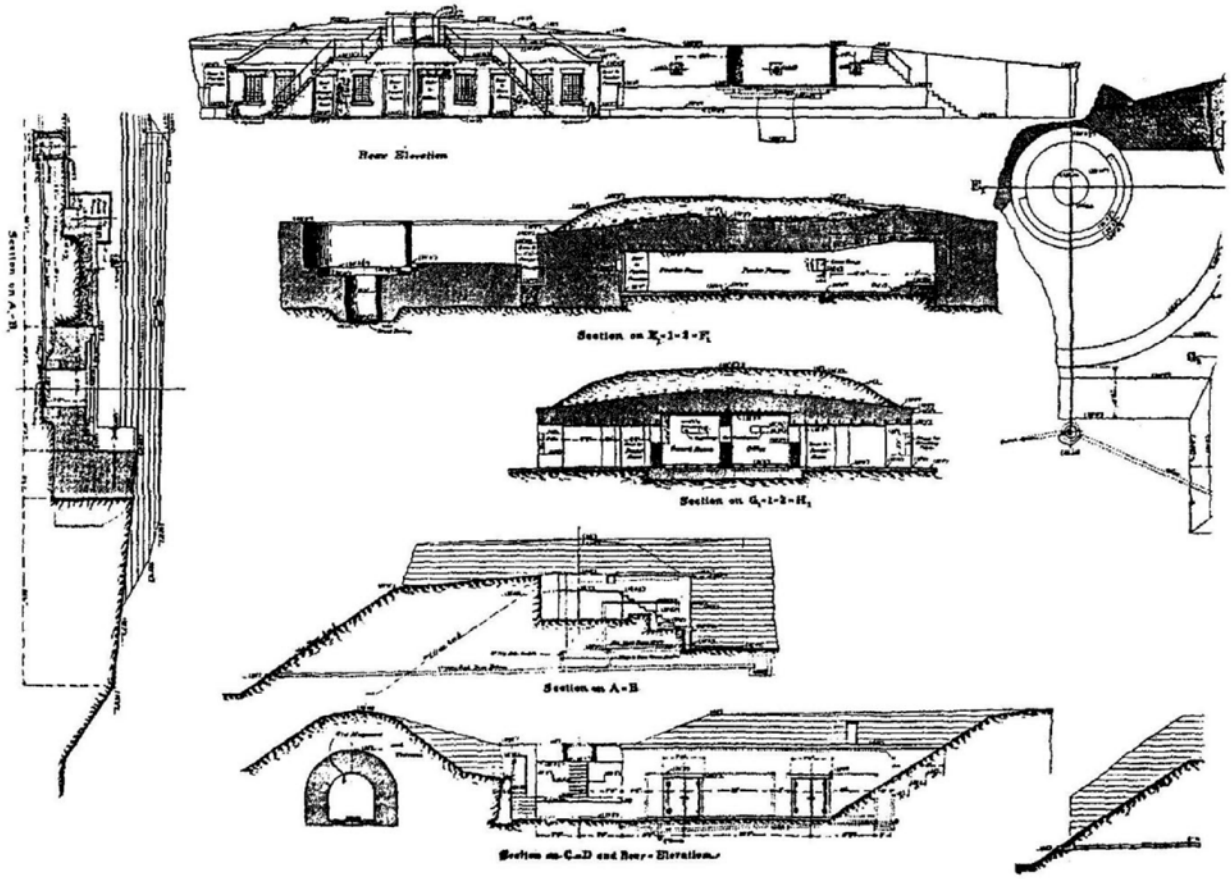
When finished in 1905, this 1903-type battery was armed with M1903 6-inch guns Nos. 8 and 40 manufactured by Watervliet Arsenal. The M1903 disappearing carriages (Nos. 39 and 40) were shipped to Portland from Watertown Arsenal on December 29, 1905, and January 6, 1906. The guns were mounted during the spring of 1906 and transferred to the garrison on May 16.(192)

As the battery neared completion at the end of 1904, it was named on December 27 for Maj. John Jacob Ulrich Rivardi, of the 1st Regiment of Artillerists and Engineers. Rivardi, a native of France, came to the United States in the early 1790s, one of several French engineers employed by Secretary of War Henry Knox in 1794 to plan and construct fortifications at Baltimore, MD, and Alexandria and Norfolk, VA, as part of the First National System of Seacoast Fortifications. Rivardi was appointed a major of engineers on February 26, 1795, and served as an engineer officer until he was "deranged" in 1802 and honorably discharged. Rivardi died January 4, 1808.(193)

The second gun battery at Spring Point was a single 3-inch R-F gun on a pedestal mount, at the right end of the old 1870s North Battery. As with Battery Rivardi, this required removing a portion of the 15-inch gun platforms in the North Battery. The plan was that developed by the Corps of Engineers for 3-inch R-F guns in 1903. Begun in 1903, the battery was to prevent sweeping the field of contact mines that would be planted in White Head Passage in wartime.

Upon completion, the battery was named for 1st Lt. Phillip D. Mason, 1st U.S. Artillery Regiment, who died July 18, 1864, of wounds incurred at the Battle of Trevillian Station, VA, during the Civil War.

Battery Philip Mason's single emplacement mounted 3-inch M1902M1 R-F gun and barbette carriage No. 2, manufactured by Bethlehem Steel Co. The gun and carriage were delivered by early 1906, and Battery Philip Mason was transferred to the garrison along with Battery John Rivardi on May 16, 1906.(194)



Emplacement No. 1 and central traverse of Battery Rivardi. *NARA*

Emplacement No. 1 of Battery Rivardi. *Author*

Fire Control Switchboard Room

Originally, the post and fire control switchboard room was housed in the post headquarters. In 1907, it was moved to a new three-story Sewell-type structure that also contained a primary fire control station and a storage battery room, as well as both officers' and enlisted latrines. This building, however, was unprotected, and by 1910 that lack of protection, coupled with its conspicuous appearance, had drawn unfavorable attention. On August 13, 1912, the chief of coast artillery requested the engineers develop plans and estimates for fire control-related structures in the Coast Defenses of Portland (CD of Portland). One of the structures was a protected switchboard room at Fort Preble. By February 1915 the plans were approved for a new protected switchboard room in the North Battery, between the incomplete 1860s Fort Preble and the post wharf.

The new switchboard room was "a typical one-story, wood frame cement plaster building...constructed on a concrete foundation...," in space formerly occupied by a pair of 15-inch Rodman gun emplacements, protected on three sides by earthen traverse magazines of the old 1870s barbette battery. Access to the switchboard room was through one of the magazines in the parados behind the battery.

While its protection from enfilade and flat-trajectory gunfire was improved, it was still subject to aerial bombardment and to the increasingly common high-angle naval gunfire. By early in World War I, plans were to provide overhead protection, with thick concrete walls and roof around the 1915 building. "The plans were revised on April 2, 1918, and again on June 1, 1920. When the project was completed, it was the only one of its type in the CD of Portland."(195)

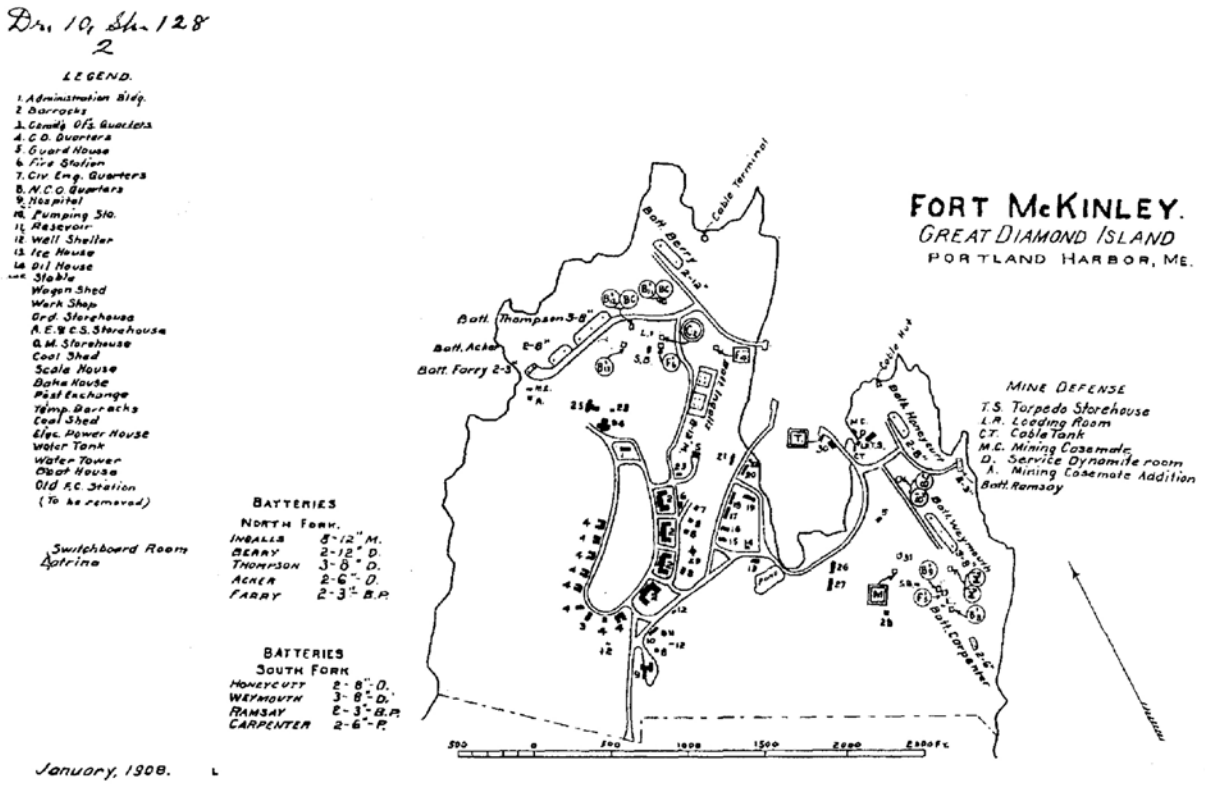
Great Diamond Island – Fort McKinley

With modern batteries underway at Portland Head and Fort Preble, measures were taken to cover the approaches to the harbor from Casco Bay and Hussey Sound passing between Long and Peaks Island and the waters west of Great Diamond. The Board of Engineers projected the old 1870s reservation at the northeast end of Great Diamond Island for modern emplacements, and a survey of the reservation was completed in March 1896.(196)

Unable to acquire by purchase the additional acreage required for the modern batteries on Great Diamond Island, the government resorted to eminent domain to obtain the property from the Great Diamond Island Association, et al. The federal court rendered a favorable ruling on June 19, 1901, and the required tracts were conveyed to the War Department.(197)

The defenses on the island were known as the Great Diamond Island Military Reservation until February 14, 1902, when the War Department named the reservation Fort McKinley in honor of William McKinley, the 25th President of the United States who had died at Buffalo, NY, on September 14, 1901, of wounds from an assassin.(198)

The first modern emplacements were authorized in 1896 and bids were advertised for construction of two emplacements for 12-inch disappearing guns that would cover the waters of Casco Bay. On February 27, 1897, a contract was entered into with William Morgan and Co., of Trenton, NJ, who had bid $92,933.20. The work was to start by early April 1897 and be completed by December 1. Morgan began the project in April, but the work advanced slowly and the excavation of the site was far from complete at the end of June. Although work continued for the next six months, the rate of progress was far from satisfactory. Morgan was given an extension, but by June 1898, he had abandoned the job and on July 7, the Corps of Engineers annulled the contract.



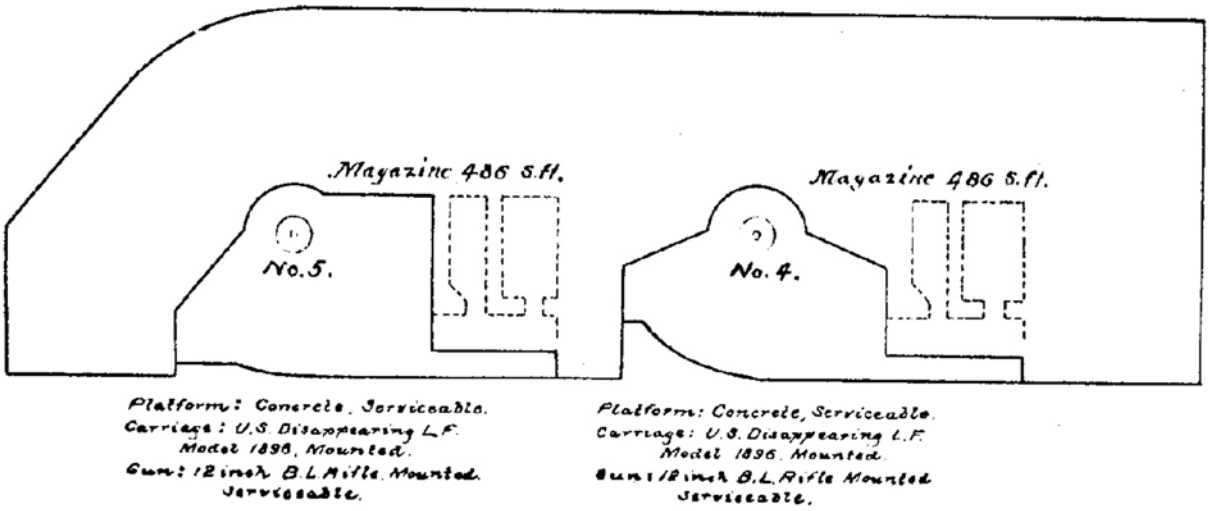
Fort McKinley, 1908. *NARA*

Maj. Richard L. Hoxie, who assumed his duties as superintending engineer at Portland Harbor on April 20, 1897, quickly decided to continue the battery's construction using day labor and material purchased on the open market.(199) Under Hoxie's oversight, the battery project, made urgent by the War with Spain, continued through the remainder of the summer and into the fall of 1898, although Hoxie was reassigned as secretary of the Lighthouse Board on October 18, 1898. Two 12-inch M1888 guns (Nos. 1 and 2) were received from Bethlehem Iron Co., while M1896 DCLF No. 5 was shipped from Watertown Arsenal on June 25, 1898, and No. 7 from Bethlehem on September 23, 1898. The guns and carriages were mounted during autumn, although finish work continued until April 16, 1901, when the battery was finally turned over to the garrison.(200)

On April 4, 1900, the War Department named the battery in honor of Maj. Gen. Hiram George Berry, U.S. Volunteers, killed in the Battle of Chancellorsville, VA, on May 3, 1863. A native of Maine, he had served as colonel of the 4th Maine Volunteer Infantry from June 15, 1861, until promoted to brigadier general of volunteers on March 17, 1862, and major general of volunteers on November 29, 1862.(201)

Battery Berry was constructed in accordance with the initial 1896 design for 12-inch disappearing gun batteries. The centers of the gun wells were 150 feet apart. The battery was of the two-story type, with its powder magazines and shell rooms on the lower level of the traverse on the right of each emplacement. Initial ammunition service was by davit cranes at the rear of the loading platforms, but two Taylor-Raymond back-delivery ammunition hoists were installed at the rear of the magazines and transferred in 1903 and 1908. No powder hoists were provided; the charges were carried up to the guns by hand. There was initially no communication between the loading platforms of the two emplacements, requiring soldiers to descend to the battery parade in order to go to the adjacent emplacement.

In addition to ammunition storage, the lower level of the battery had spaces for storage batteries, relocating (plotting) room, guardroom, and storerooms. A crow's nest observation station was atop the right flank traverse.



Battery Berry. *NARA*

In response to the War with Spain, the National Defense Appropriations of 1898 added new impetus to the construction on Great Diamond Island. The Hussey Sound approach was still unprotected by modern ordnance and the engineers addressed this concern the spring of 1898.

Funds were used to erect two temporary emplacements for 8-inch converted ML rifles on the island's South Fork, to cover the minefield in Hussey Sound. These two rifles were mounted on modified iron carriages designed for 15-inch Rodman guns**.** The gun platforms were timber, as were the magazines, which were covered with earth to render them more bombproof. In addition, two 15-inch smoothbore guns at Fort Scammell were reconditioned for service.(202)

8-inch Disappearing Batteries for Great Diamond Island

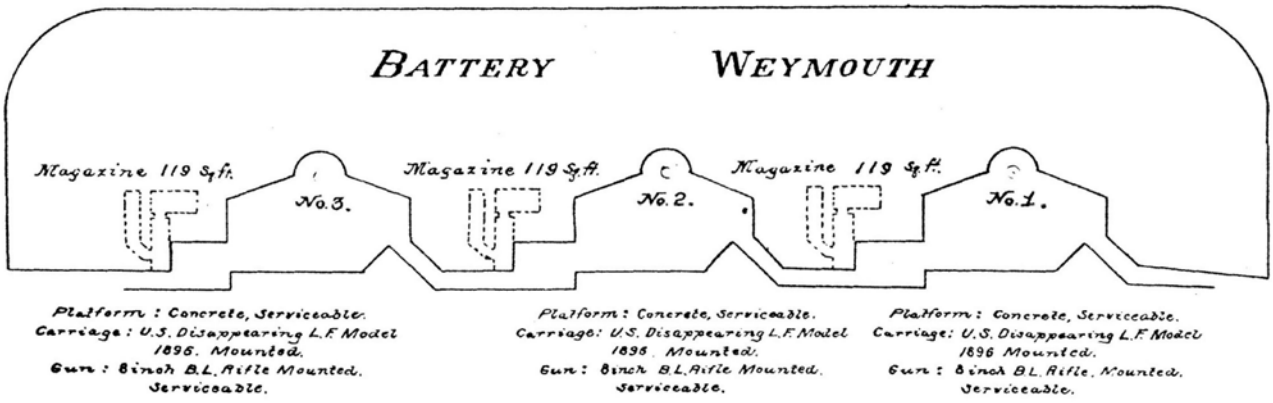
Funds were allotted from the March 1898 appropriation for national defense for six emplacements for 8-inch disappearing guns on Great Diamond Island. While Major Hoxie was developing plans, site clearing and collection of building material was begun, and work gangs began setting up the construction plant. During spring and early summer of 1898, Hoxie's men worked two eight-hour shifts a day to expedite the project. When the regular FY 1898/1899 appropriation for gun and mortar batteries was passed on May 7, 1898, it included funds for two more 8-inch disappearing guns on the island.

By early summer 1898, Major Hoxie's plans for the three new batteries were approved and work had commenced. Two emplacements (Battery Honeycutt) on the extremity of the South Fork would cover the waters east of Great Diamond. Three hundred feet to the right, three more emplacements (Battery Weymouth) would also cover these waters. Across Great Diamond Cove on the island's North Fork, the third 8-inch battery (Battery Thompson), three more emplacements behind (west of) and at a right angle to Battery Berry, would cover Casco Bay north of Great Diamond Island. Immediate supervision was provided by W.F. Robinson, a civilian assistant engineer who had assumed his duties on April 10, 1898. Construction of the three 8-inch batteries continued until they were nearly com-

pleted in the summer of 1899, pending arrival of their armament. Battery Thompson was delayed, in part by the addition of two emplacements for 6-inch guns on the left flank, and it was 1900 before it was ready for its armament.

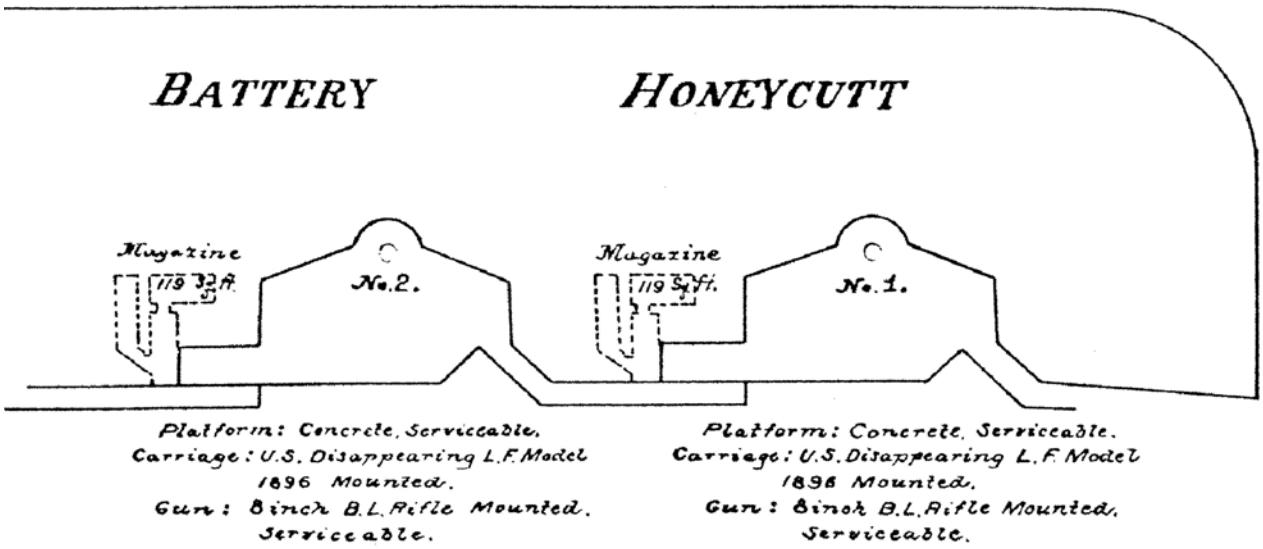
Shipment of Watertown Arsenal M1896 DCLF for the 8-inch gun batteries began in August 1898. The first battery to receive its guns in 1900 was the three-gun Battery Weymouth on the South Fork -- 8-inch M1888M2 guns Nos. 14, 17, and 22 manufactured by Bethlehem Steel Co. on M1896 DCLF Nos. 17, 16, and 33.

The next battery to be armed was Battery Honeycutt's pair of emplacements at the end of the South Fork - M1888M1 guns Nos. 19 and 21, also manufactured by Bethlehem Steel, on M1896 DCLF Nos. 21 and 24. Battery Thompson was the last 8-inch battery to receive its ordnance. Its three 8-inch M1888M2 Bethlehem Steel guns and Watertown Arsenal M1896 DCLF were not installed until 1901.(203)

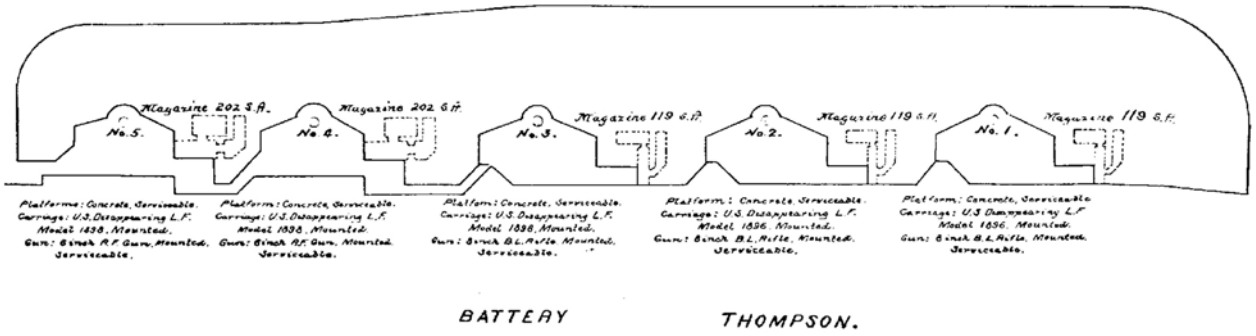


Battery Weymouth. *NARA*

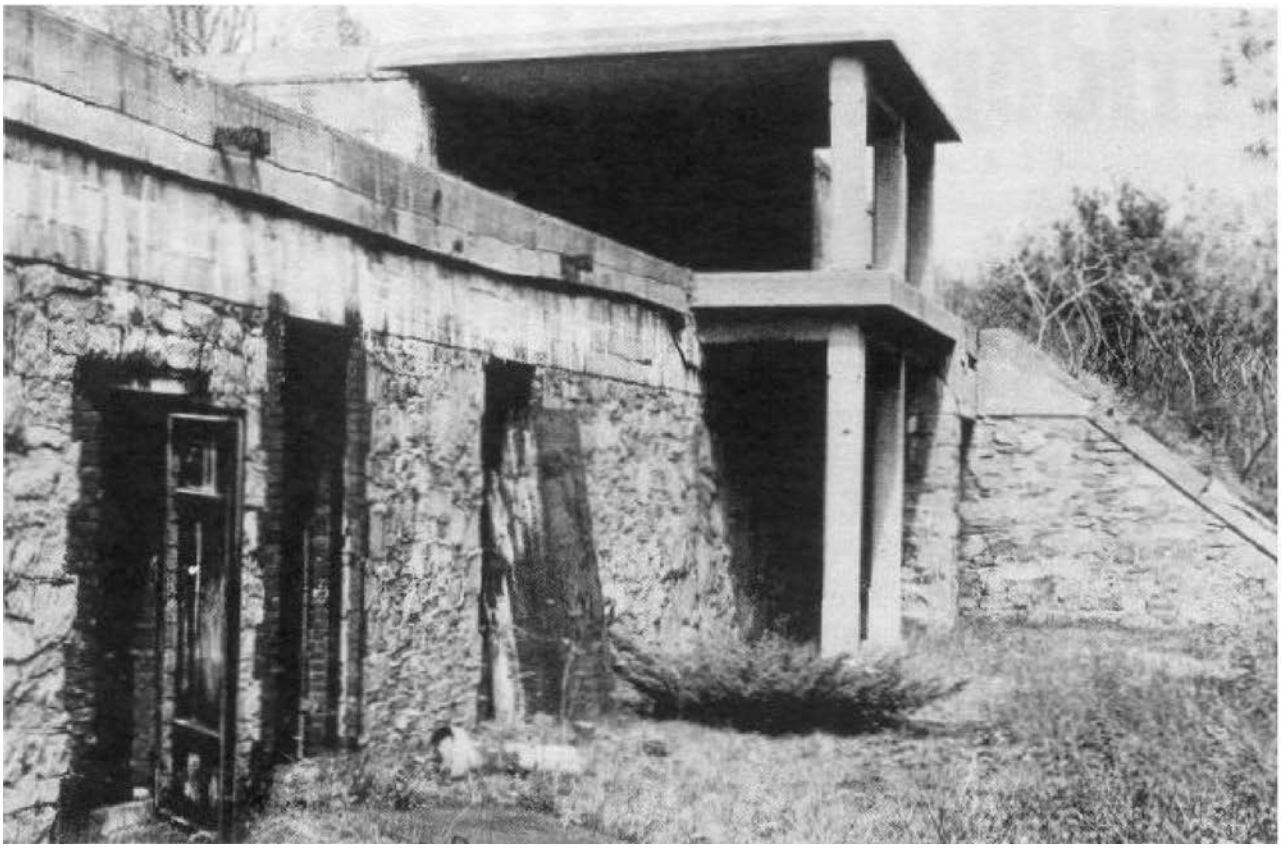
In April 1900, the War Department named the three 8-inch batteries. The three-gun battery on the South Fork was named for 16th century explorer Capt. George Weymouth, credited with discovering Casco Bay. The pair of emplacements on the end of South Fork was named in honor of Capt. John Thomas Honeycutt, 6th U.S. Artillery Regiment, who died October 7, 1898, of typhoid fever



Battery Honeycutt. *NARA*



Batteries Acker (left two emplacements) and Thompson (right three emplacements). *NARA*



Portions of Battery Thompson were constructed with a facade of native stone. *Author's Collection*

contracted on duty. The three emplacements on the North Fork were named in honor of Lt. Col. Samuel Thompson of the Massachusetts Militia, credited with capturing Capt. Henry Mowat, RN, who commanded "certain British vessels in the Harbor of Falmouth and thereby averted for the time being the destruction of that town...in October, 1775."(204)

Batteries Honeycutt and Weymouth were transferred to the garrison on January 22 and April 16, 1901, and Battery Thompson not until December 11, 1902.(205)

Battery Ingalls

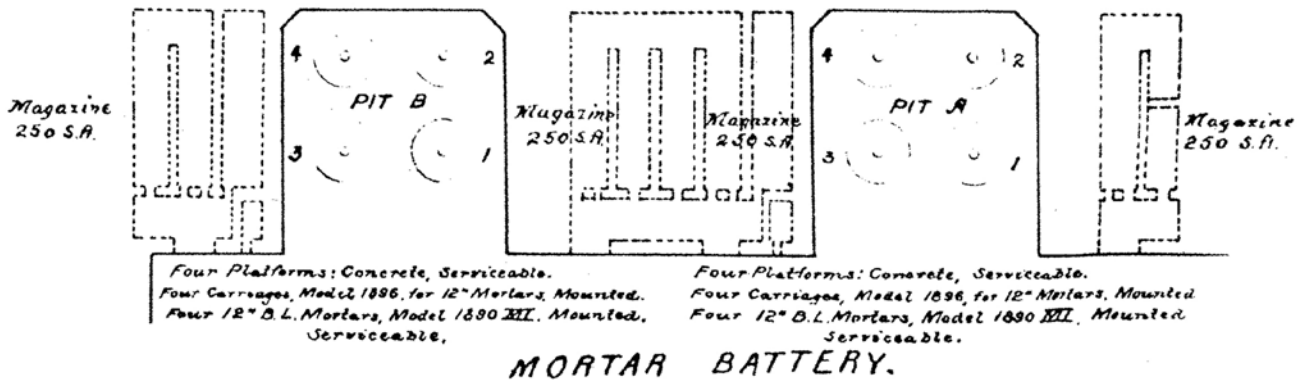
In addition to the gun batteries authorized in the spring of 1898, the regular appropriations passed in May called for a battery of eight 12-inch mortars on Great Diamond's North Fork overlooking

Great Diamond Cove. Although preliminary work began in the summer of 1898, the project did not really get started until 1899. In 1903, the battery was pronounced complete.(206)

Upon the completion of the battery, it was named in honor of Maj. Gen. Rufus Ingalls, a native of Maine. After graduation from U.S.M.A. in 1843, he served with the Rifle Regiment and the 1st Dragoons during the War with Mexico and in the Quartermaster Department. A major general of volunteers during the Civil War, in 1882 he was named quartermaster general. General Ingalls died January 15, 1893.(207)

As the battery neared completion in 1902, it was provided with mortars and carriages. Shipment of the carriages commenced in September 1899 and continued until June 1900. The battery was composed of eight M1890M1 mortars and M1896 carriages in two pits. Watervliet Arsenal provided mortar tubes Nos. 70, 71, 79, 83, 116, 120, 121, and 129. Builders Iron Foundry manufactured carriages Nos. 164 and 165; Columbus Machinery Co. produced carriages Nos. 204, 205, 206, and 207, while Watertown Arsenal provided carriages Nos. 228 and 229.(208) The M1896 mortar carriages were soon modified into M1896MI. More than a year would pass, however, before the battery was actually turned over to the garrison, on January 18, 1904.(209)

Fort McKinley's mortar battery was different from that built at Fort Preble some years before. The new mortar battery was built in accordance with the improved 1898-type plans**.** The magazines and support facilities were in the traverses. In the right flank traverse, space was provided for a 25-kilowatt electric power dynamo and a storage battery room, as well as a relocating or plotting room. In the left flank traverse were powder magazines and shell rooms for the left pair of mortars in Pit "B." The powder magazine and shell rooms for the right pair of mortars of Pit "B" and the left pair of mortars of Pit "A" were in the central traverse that separated the two mortar pits. The magazines and shell room for Pit "A"'s remaining pair of mortars were in the right flank traverse. In the rear of each traverse was an ammunition truck corridor where the men could shelter from the blast of the weapons. Firing booths for each pit were across the road behind the battery. Atop the flank, traverses were crow's nest observing stations accessed by concrete stairways at the rear of the traverses.

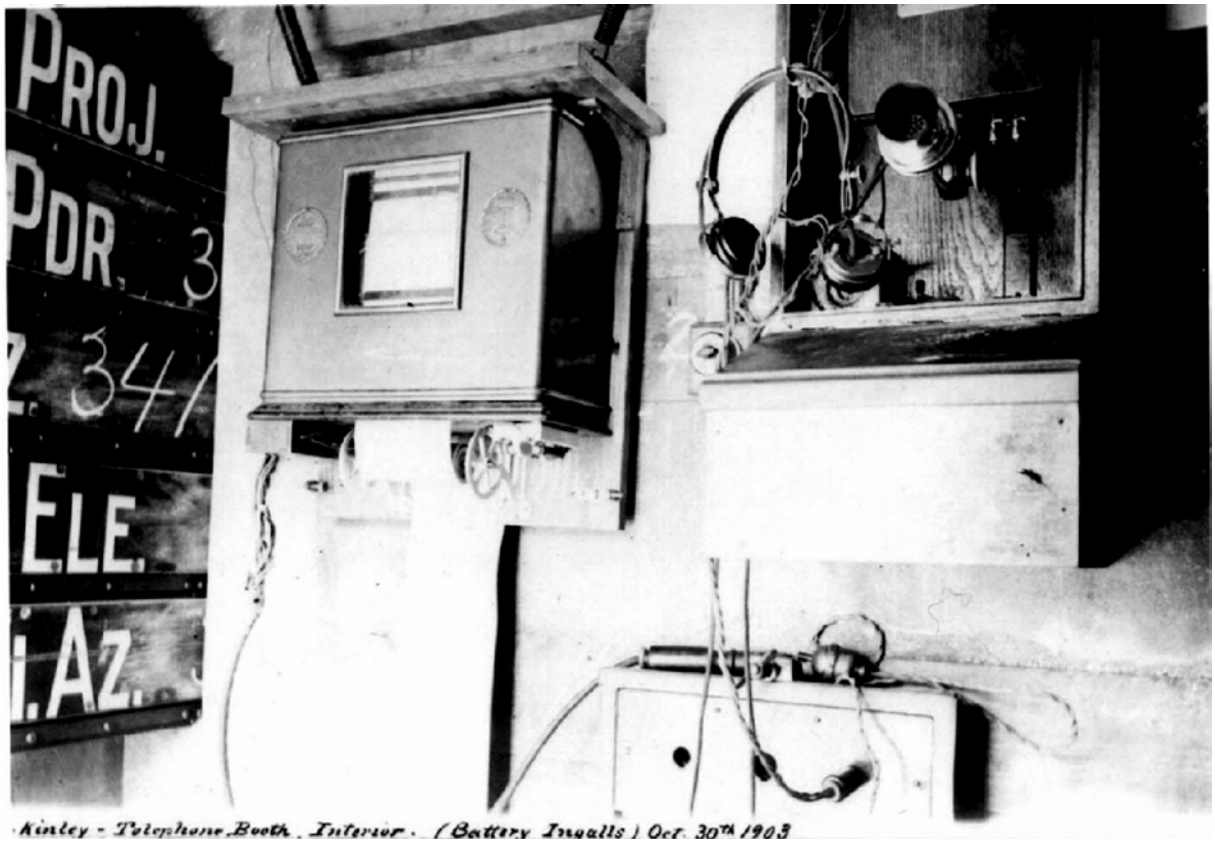


Battery Ingalls. *NARA*

Batteries to Protect the Minefields

The initial emphasis had been on heavy gun and mortar batteries. As these projects began to wind down in 1899, the first allotments for light and medium-caliber gun emplacements were made.

On March 17, 1899, $56,000 was allocated for a pair of 6-inch guns on disappearing carriages on the North Fork to the left of and contiguous to Battery Thompson, covering the interior passage from Casco Bay into Portland Harbor.



Interior of Battery Ingalls' telephone booth. Note the firing data board at left. *NARA*

Soldiers on one of Battery Ingalls' 12-inch mortars, ca. 1924. *Maine Historical Preservation Commission*

One of Battery Acker's M1897 6-inch guns on its M1898 DCLF. *Author's Collection*

Construction began by early summer 1899 and progressed slowly but steadily into 1902, when it was finally completed. Two 6-inch M1897M1 guns (Nos. 5 and 19) were mounted on M1898 DCLF Nos. 20 and 21. Carriage No. 20 was produced by Watertown Arsenal and shipped on June 27, 1901. Carriage No. 21, manufactured by Philadelphia Engineering Works, was shipped May 28, 1901. On December 11, 1902, the battery was transferred to the garrison.(210)

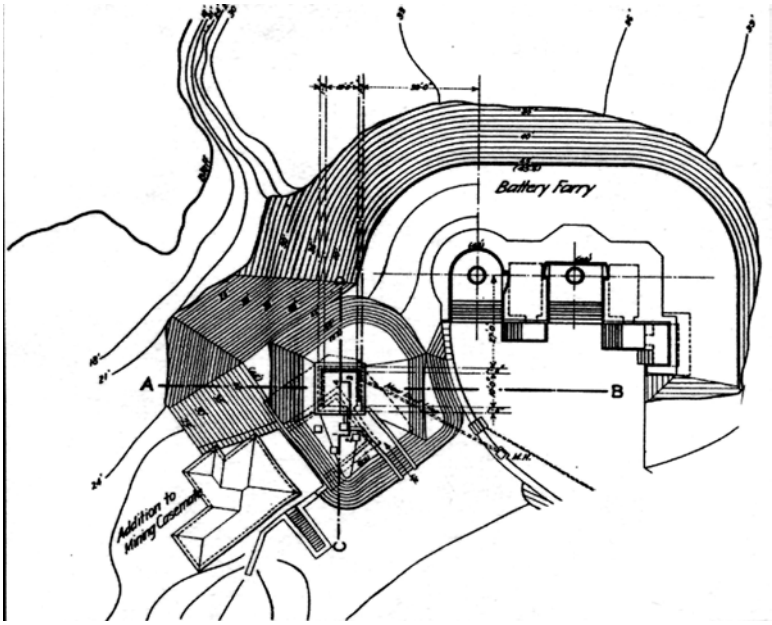
The battery was named for Capt. and Bvt. Maj. William Henry Acker, 16th U.S. Infantry Regiment, killed at the Battle of Shiloh on April 7, 1862, and posthumously brevetted major for gallant and meritorious service in that battle.(211)

Along with Battery Acker, a battery for two R-F 3-inch (15-pounder) guns was planned for the North Fork. The emplacements were authorized March 27, 1899, with $10,000 from the Appropriation for Gun and Mortar Batteries Act of July 7, 1898. The emplacements were begun to the left of Battery Acker during the summer of 1899 and continued until 1902, when its M1898 Driggs-Seabury 3-inch R-F guns Nos. 49 and 51 were finally mounted on M1898 Driggs-Seabury masking-parapet carriages Nos. 49 and 51. The battery was transferred to the garrison December 11, 1902.(212)

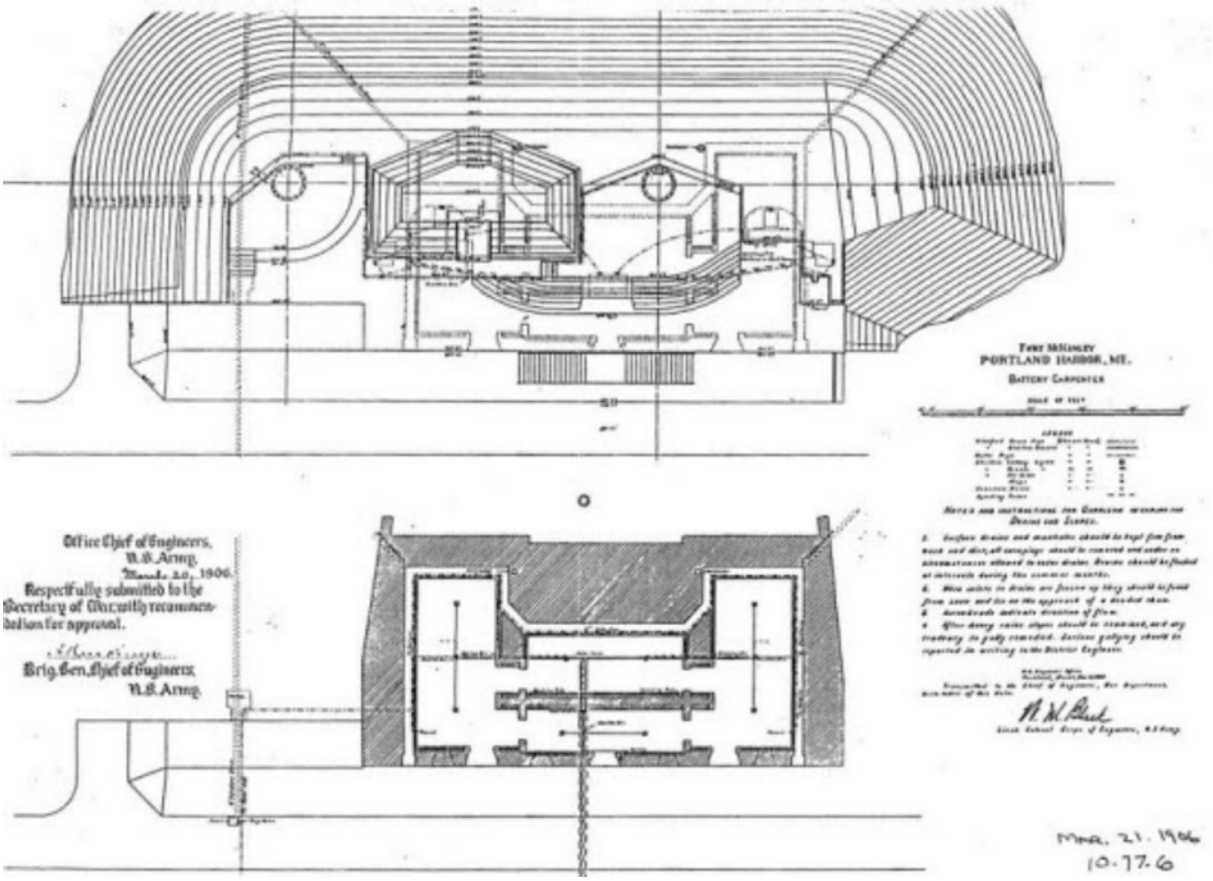
The battery was named for 1st Lt. Joseph Francis Farry, 3rd U.S. Artillery Regiment, killed September 8, 1847, at the Battle of Molina del Rey, Mexico. Farry served with the 4th and 3rd U.S. Artillery.(213)

On June 26, 1901, $25,000 was allotted from the Appropriation Act of March 1, 1901, for two more 6-inch guns at the site of the temporary emplacements for 8-inch converted rifles south of Battery Weymouth, some 40 feet above the shoreline near the southeast corner of the reservation. These two pedestal-mounted R-F guns covered the minefield in Hussey Sound between Long and Peaks Island. The chief of engineers approved plans for the new battery at the end of June 1901, and construction began during the summer. By the end of June 1902, the battery structure was well advanced toward completion.(214)

The still unarmed battery was named in 1903 for Bvt. Col. Stephen Decatur Carpenter of Maine, who served in the 1st U.S. Infantry Regiment until May 1861, when he was appointed major of the



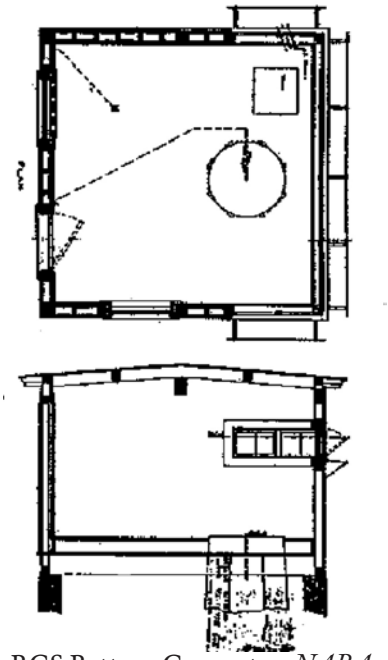
Battery Farry and adjacent mine casemate. An addition to the casemate was made in 1929 along with a co-incidence range finder (CRF) atop the casemate. *NARA*



Battery Carpenter. *NARA*

19th U.S. Infantry. He was brevetted colonel for gallant and meritorious service at the Battle of Stones River, TN, where he was killed December 31, 1862.(215)

Although the battery was generally complete by the end of 1903, the two 6-inch guns had not been received. M1900 pedestal carriages Nos. 3 and 4 were not shipped from Watertown until February 9 and March 11, 1905. M1900 6-inch R-F guns Nos. 9 and 10 from Watervliet Arsenal were not mounted on their carriages until late 1905 or early 1906. A pair of Hodges back-delivery hoists for the projectiles provided ammunition service, but powder was handled manually. The battery was turned over to the coast artillery May 26, 1906.(216)

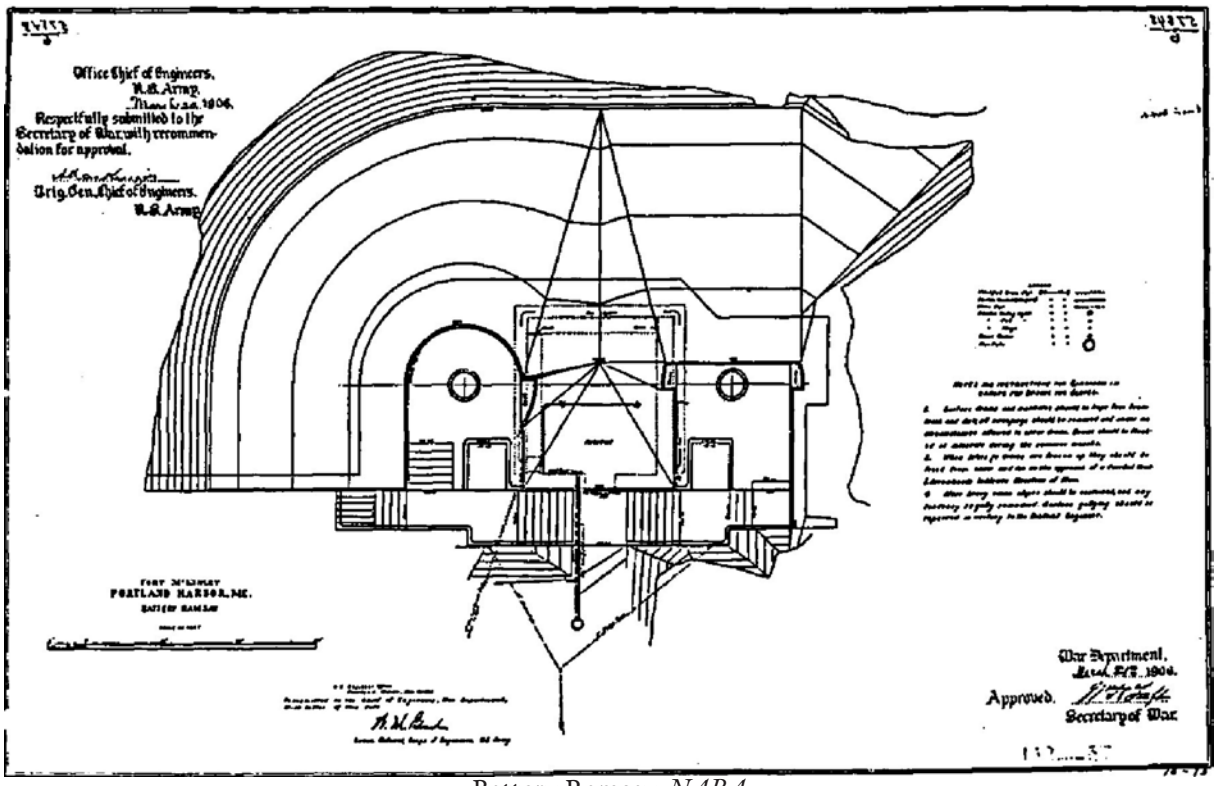


BCS Battery Carpenter. *NARA*

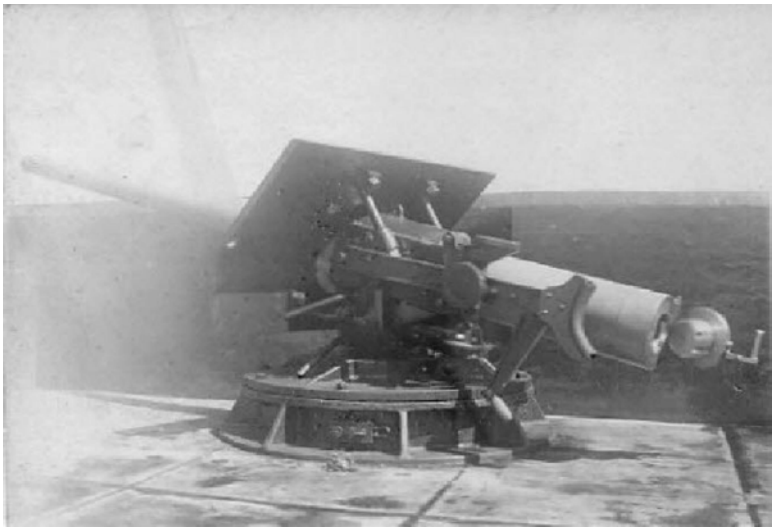
The second 3-inch battery, and the last battery built on Great Diamond Island, was authorized November 9, 1900, to cover Hussey Sound and its minefields. Work commenced in April 1901 and excavations for the two emplacements were complete by the end of June except for installing iron handrails on the rear of the battery and paving the roadway behind the battery.(217)

The battery was on a small spit of land on the island's South Fork, near the water's edge about equidistant in front of and between Batteries Honeycutt and Weymouth. The battery remained unarmed until late 1905, when it was provided with two 3-inch Driggs-Seabury M1898 R-F guns and masking-parapet mounts, Nos. 113 and 114. The battery was not transferred to the garrison until May 26, 1906.(218)

In May 1903, the War Department named the unarmed battery to honor Brig. Gen. George Douglas Ramsay, who first served in the Regiment of Light Artillery but transferred to the 1st U.S. Artillery in the June 1821 artillery reorganization. He transferred to the Ordnance Bureau in 1835 and on September 15, 1863, he was promoted to brigadier general and chief of ordnance. Brevetted major general, March 13, 1865, "for long and faithful services," General Ramsay retired on September 12, 1864, and died on May 23, 1882.(219)



Battery Ramsay. *NARA*

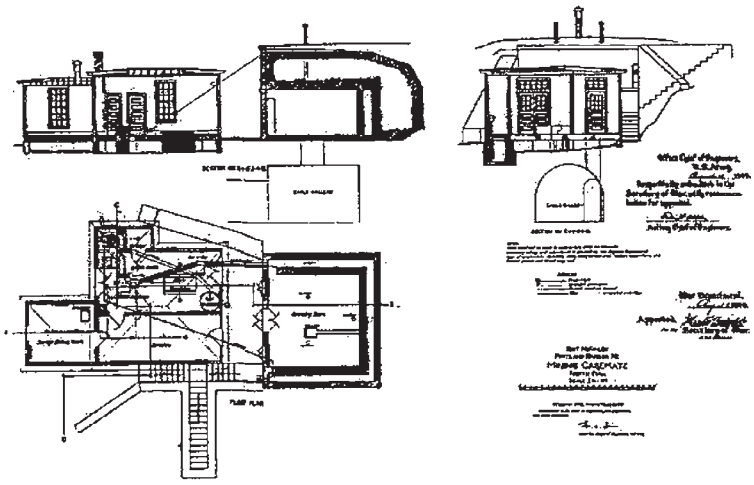


R-F 3-inch M1898 Driggs-Seabury gun on M1898 masking-parapet mount. *Author's Collection*

Fort McKinley's Mine Facilities

In 1905, the Murray Board recommended enlarging the mine casemate on the North Fork of Great Diamond Island that was transferred December 11, 1902. The addition, of cement plaster on a wooden frame, was completed by 1909 and transferred on August 30. Another casemate was authorized for the South Fork. Work commenced without inordinate delay, and on April 17, 1907, the new casemate was transferred. Funds were allotted on January 9, 1918, for bomb proofing both additions.

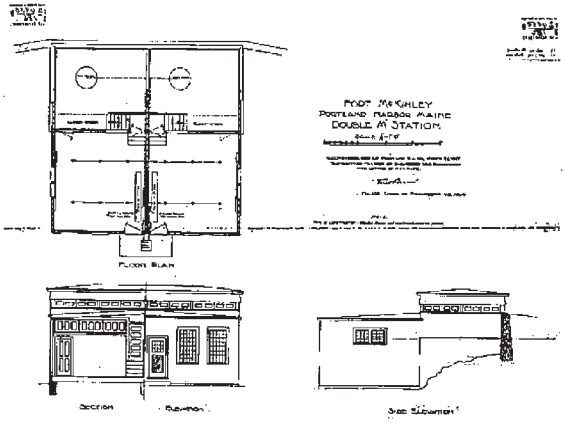
A cable tank, loading room, torpedo storehouse, mine wharf, and tramway were also authorized for the South Fork shore of Diamond Cove. The concrete loading room and cable tank were transferred on



Enlarged mine casemate on the North Fork. *NARA*

April 17, 1907; the storehouse on June 12, 1908. The old wharf of wooden piles was remodeled with a 3-foot-gauge tramway for moving the mining materiel.

The two mine control stations were constructed of cement plaster on wooden frames, with tar and slag roofs. The double-primary station, transferred on April 17, 1907, was on the South Fork to the right of Battery Weymouth, while the secondary station, transferred January 29, 1909, was at the rear of Battery George Bayard at Fort Lyon, on Cow Island.(220)



Double-primary mine station, Fort McKinley. *NARA*

Cushing Island

After the government exercised its right of eminent domain against Francis Cushing, et al., the property was conveyed in 1894. The engineers surveyed the 33.75-acre tract in November, but nearly three and a half years would pass before construction would be initiated. Almost from the beginning, the acreage within the reservation was insufficient for military requirements, and the War Department sought to increase the acreage of the new reservation. One of the tracts considered was the old Cushing Island Hotel. The large old summer hotel to the immediate rear of the projected batteries was subject to considerable damage when the guns were fired, while the proposed barracks for the garrison were a considerable distance from the batteries.(221)

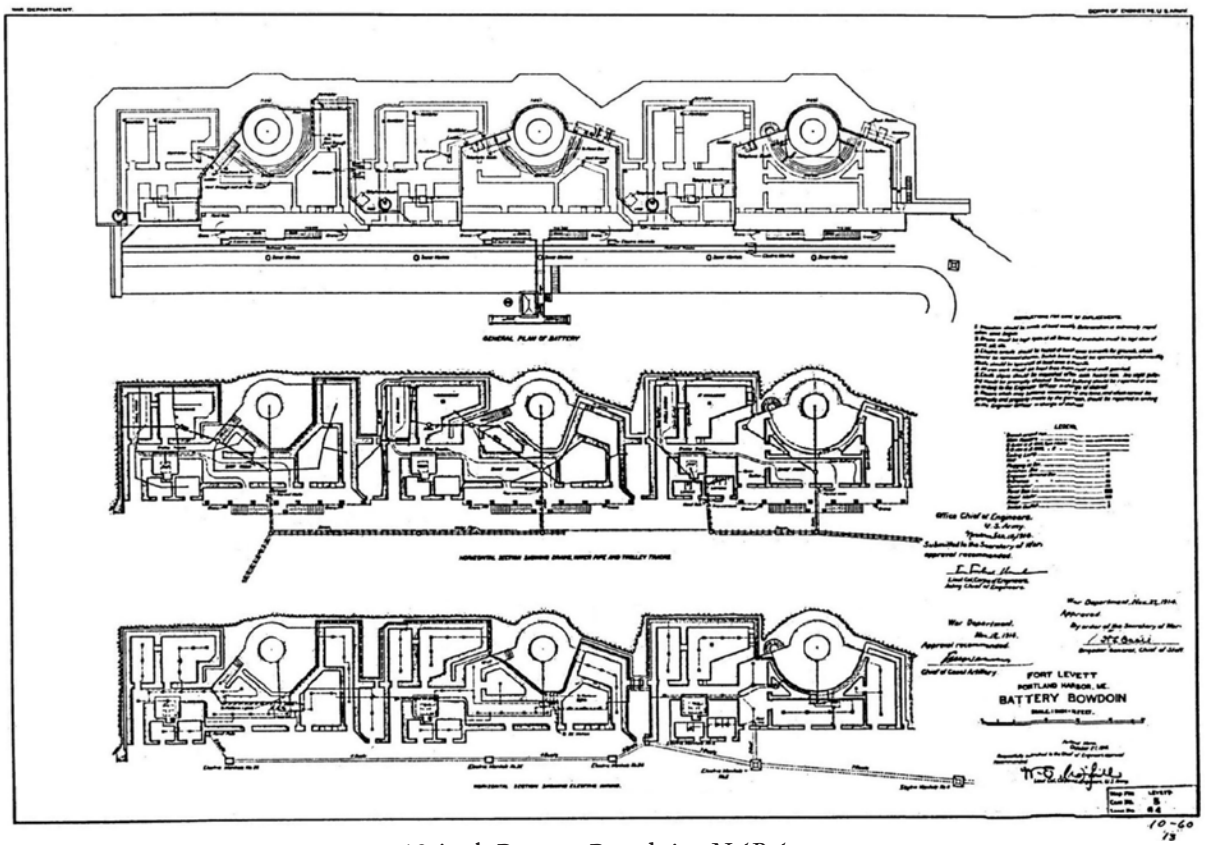
The fortifications on the island were referred to as the Cushing Island Military Reservation until April 4, 1900, when they were named Fort Levett in honor of Christopher Levett, who had explored the harbor in 1623 and established the initial settlements in the vicinity, as well as being credited with building the first defensive works in Casco Bay.(222)

10-inch and 12-inch Batteries

Soon after the decision to fortify Cushing Island, the development of the necessary plans and estimates began. Four emplacements for 12-inch guns, two for 10-inch guns, and two batteries of R-F guns were projected for the island. On July 13, 1898, the chief of engineers allotted $110,000 from the May 7, 1898, Appropriation for Gun and Mortar Batteries for the first pair of 12-inch disappearing gun emplacements. On July 25, 1898, a second allocation was made for a pair of 10-inch disappearing gun emplacements from the gun and mortar appropriation of July 7, 1898.

A small work party under civilian overseer H.F. Hill commenced clearing the west side of the reservation for the four emplacements on August 1, 1898. Hill's work force increased steadily and by September 130, men were engaged on various tasks. One group cleared and graded a railroad bed to connect the site with the wharf that was also under construction, while other gangs erected the construction plant.

The site clearing and other preparations preliminary to construction were suspended during the winter, but were resumed in the spring of 1899. Second Lieutenant Thomas H. Jackson reported for duty at Portland in March 1899 and the superintending engineer, Maj. Solomon W. Roessler, assigned the 1899 U.S.M.A. graduate to supervise the projects on Cushing Island.

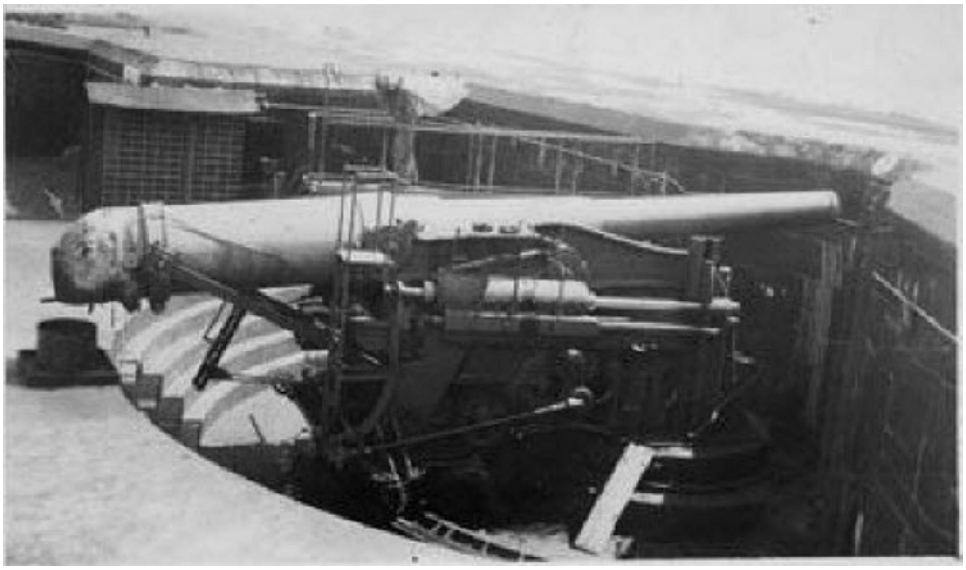


12-inch Battery Bowdoin. *NARA*

By the end of June 1899, the sites for the two batteries were cleared and more than 30,000 cubic yards of earth and rock had been excavated. The narrow-gauge railroad connecting the wharf with the site was complete and a 539-foot artesian well insured fresh water for mixing the concrete. About the time the site was cleared a third emplacement for the 12-inch battery was authorized, and on May 23, 1899, $52,000 was allotted from the March 3, 1899 Appropriations Act.

Work advanced steadily through the summer and fall of 1899 on the two batteries. The 12-inch battery was on a 100-foot hill about 350 feet to the left of and some 20 feet higher than the two 10-inch emplacements. By June 1900, excavation had been completed and drains laid. Concrete pouring began in the summer of 1900 on the first two 12-inch emplacements and on both 10-inch emplacements.

By the end of June 1901, Emplacement No. 4, the left emplacement of the projected four-gun 12-inch battery, was complete, and its gun and carriage mounted. Emplacement No. 3 was completed the following month and armed. Work continued on Emplacement No. 2 until mid-summer of 1902, when it too could be provided with its ordnance, until then in storage at the site.

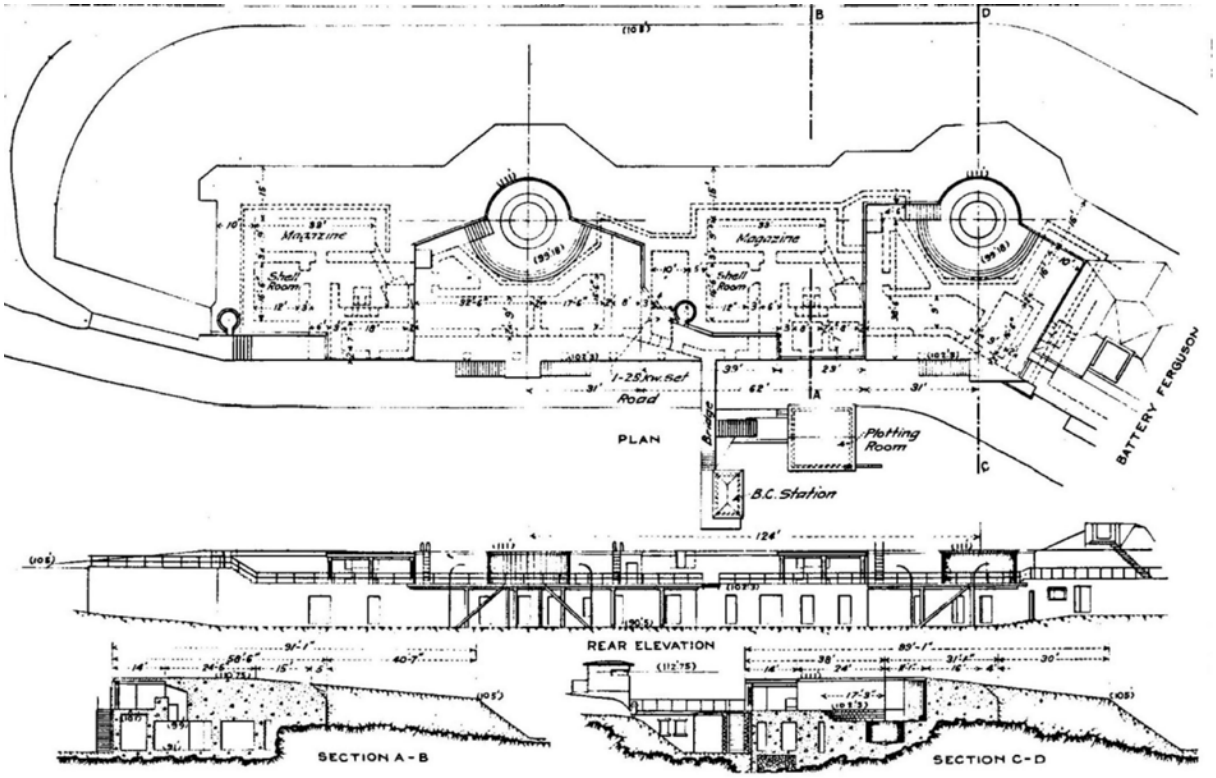


M1895 12-inch rifle on M1897 DCLF, Battery Bowdoin. *Author's Collection*

As Emplacement No. 2 was being completed in the summer of 1902, the project was modified and the fourth or right-most emplacement that would have been Emplacement No. 1 was deleted. The three existing emplacements were renumbered one through three, beginning with old Emplacement No. 2.

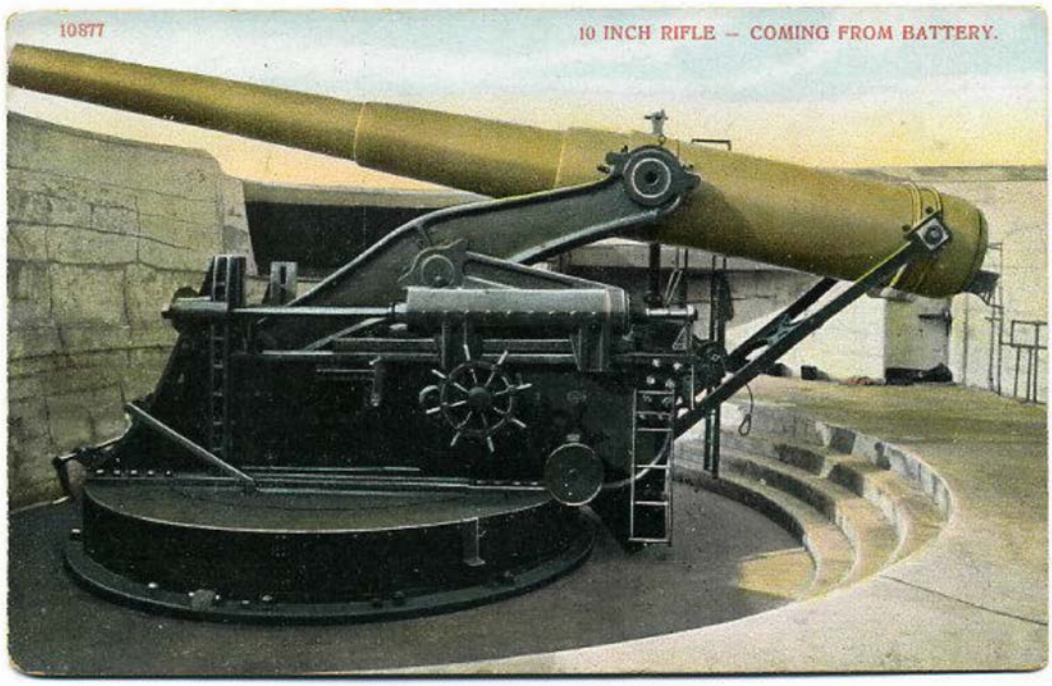
The progress of the 10-inch battery roughly paralleled that of the 12-inch battery until June 1901, but when the structure was nearly complete it was temporarily halted until plans for a battery of four 6-inch guns could be finalized. This new battery was projected for the immediate right of 10-inch Emplacement No. 1. With the coming of spring 1902, the two 10-inch emplacements were armed.(223)

The 12-inch emplacements were provided with M1897 DCLF Nos. 13 and 18, one shipped from Morgan Engineering Co. on December 19, 1899, the other shipped October 29, 1900, from Bethlehem Steel. M1895 12-inch rifles Nos. 28 and 13 were shipped from Watervliet Arsenal in the early summer of 1901. Gun No. 4 was shipped from Watervliet in early 1903, and carriage No. 23 for Emplacement No. 1 was shipped from Watertown Arsenal May 12. The gun and carriage for Emplacement No. 1, the same models as the other two emplacements, were finally mounted later in 1903.



Plan, elevation, and sections of Battery Kendrick. NARA

Both 10-inch emplacements were armed with M1895 10-inch Watervliet guns (Nos. 17 and 19) on M1896 DCLF manufactured by the Walker Co. While the carriages had been shipped in September and November of 1899, the gun tubes were not finally on hand until the summer of 1902.



M1895 10-inch gun on M1896 DCLF. *Author's Collection*

On April 4, 1900, the 12-inch battery was designated Battery Bowdoin in honor of James Bowdoin, Governor of Massachusetts 1785-86. The 10-inch emplacements were named in honor of Henry Lane Kendrick, Professor of Science at the U.S.M.A. from 1857 to 1880. Kendrick served as an infantry officer before transferring to the 2nd U.S. Artillery in June 1836. In the Mexican War, he was brevetted major for his gallant and meritorious defense of Pueblo, Mexico. Appointed professor at West Point March 3, 1857, he retired on December 13, 1880, and died May 24, 1891. Both batteries were transferred to the garrison on April 23, 1903.(224)

Both batteries were built in general accordance with the 1896 standard plans for 12-inch and 10-inch horizontal-crest batteries. Battery Bowdoin was in many respects similar to Battery Blair at Fort Williams and Battery Berry at Fort McKinley, but had three emplacements rather than two.

Battery Kendrick was similar to Battery DeHart at Fort Williams, but was structurally connected to Battery Ferguson on its right flank. As Battery Ferguson was angled slightly to the rear, the right traverse wall of Kendrick's Emplacement No. 1 was refused more than usual, contracting the loading platform at its rear. This narrowed space was somewhat alleviated in the early 1900s by extending the loading platform to the rear.

Magazines, shell rooms, and the five Hodges back-delivery projectile hoists of the two batteries' emplacements were located in the traverses on the left of the emplacements. No powder hoists were initially provided for either battery, but a pair of Type-C powder hoists were later transferred at Battery Kendrick on October 14, 1912. The storage battery rooms, shot rooms, and guardrooms were all below the rear portions of the loading platforms.(225)

R-F Batteries for the Main Channel Minefields

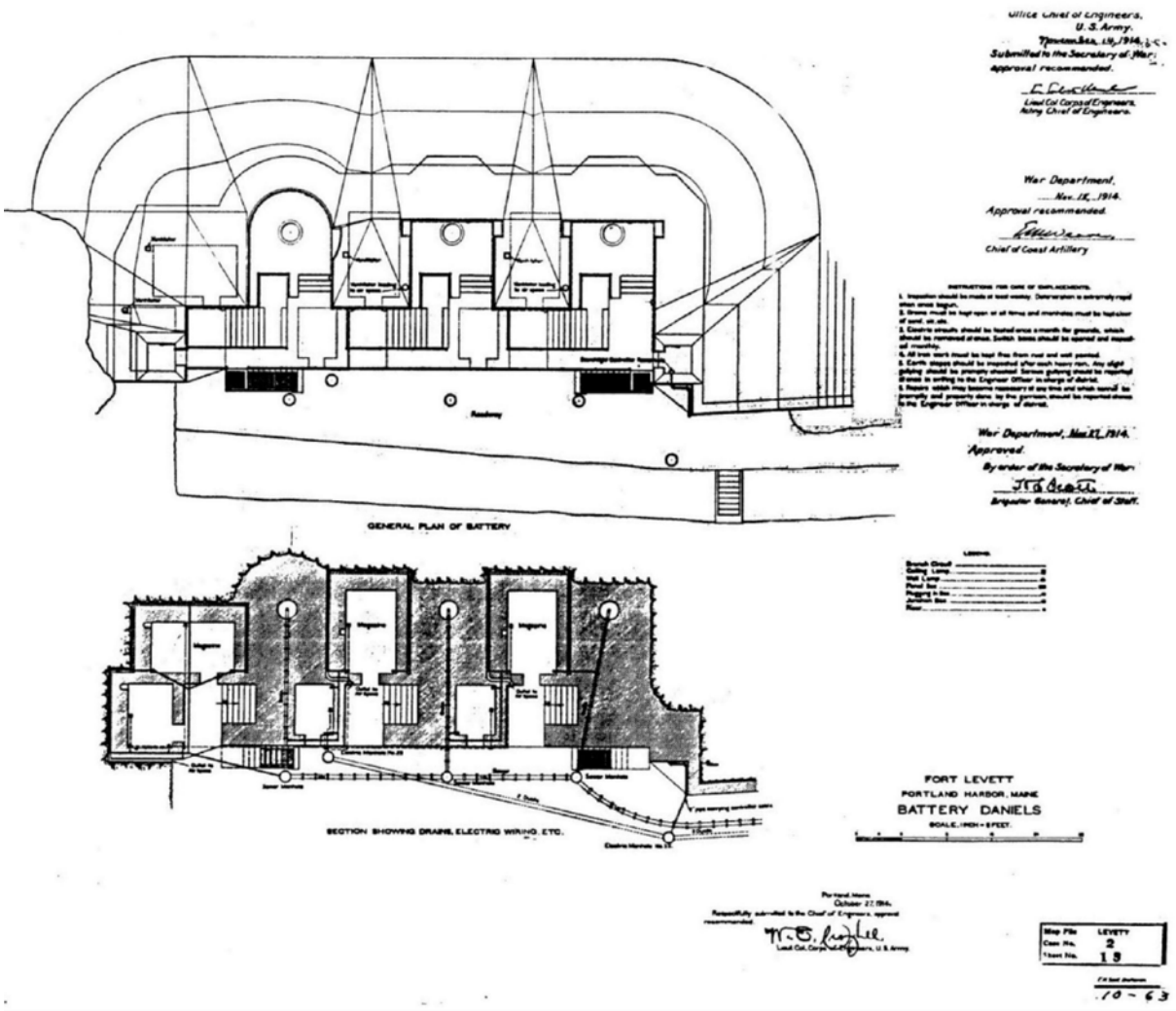
As the large-caliber batteries were advancing, the submarine mine defenses were being planned. The 3-inch R-F and 6-inch medium-caliber guns protected the minefields from enemies attempting to sweep them. Two batteries of these weapons were contemplated for Cushing Island, both guarding the controlled minefields at the entrance to the main ship channel.

On February 1, 1899, the first of several batteries of 3-inch guns slated for Portland was funded with $13,000 allotted from the Gun and Mortar Battery Appropriation Act of July 7, 1898. This new battery for three emplacements was about 700 feet in front of Battery Kendrick, near the edge of the rock ledge some 50 feet above the shore.

The project began on September 14, 1899, when the narrow-gauge railroad from the 10 and 12-inch batteries was extended to the site and excavation began. The railway was completed by November 11 and between November 1899 and May 30, 1900, 2,000 cubic yards of rock was excavated. The concrete magazine floors and walls were poured in June through the fall of 1900. By June 1901, the battery was complete, awaiting delivery of the its ordnance.(226)

In mid-summer 1901, three M1898 3-inch R-F guns and M1898 masking-parapet mounts Nos. 46, 47, and 48 were shipped to Fort Levett and mounted. The battery was transferred to the garrison on April 23, 1903.(227) It was named in honor of 1st Lt. Napoleon H. Daniels, who had served as an enlisted man in the 18th Indiana Volunteer Infantry Regiment during the Civil War. Commissioned a lieutenant in the 18th U.S. Infantry on February 23, 1866, he was killed July 21, 1866, in action with Indians at Crazy Woman's Fork, on the Powder River, Dakota Territory.(228)

Battery Daniels was typical of 1898 3-inch R-F batteries, with magazines in the traverses that separated the three emplacements. Ammunition service was manual, and the BCS was atop the left-flank traverse.



Battery Daniels. *NARA*

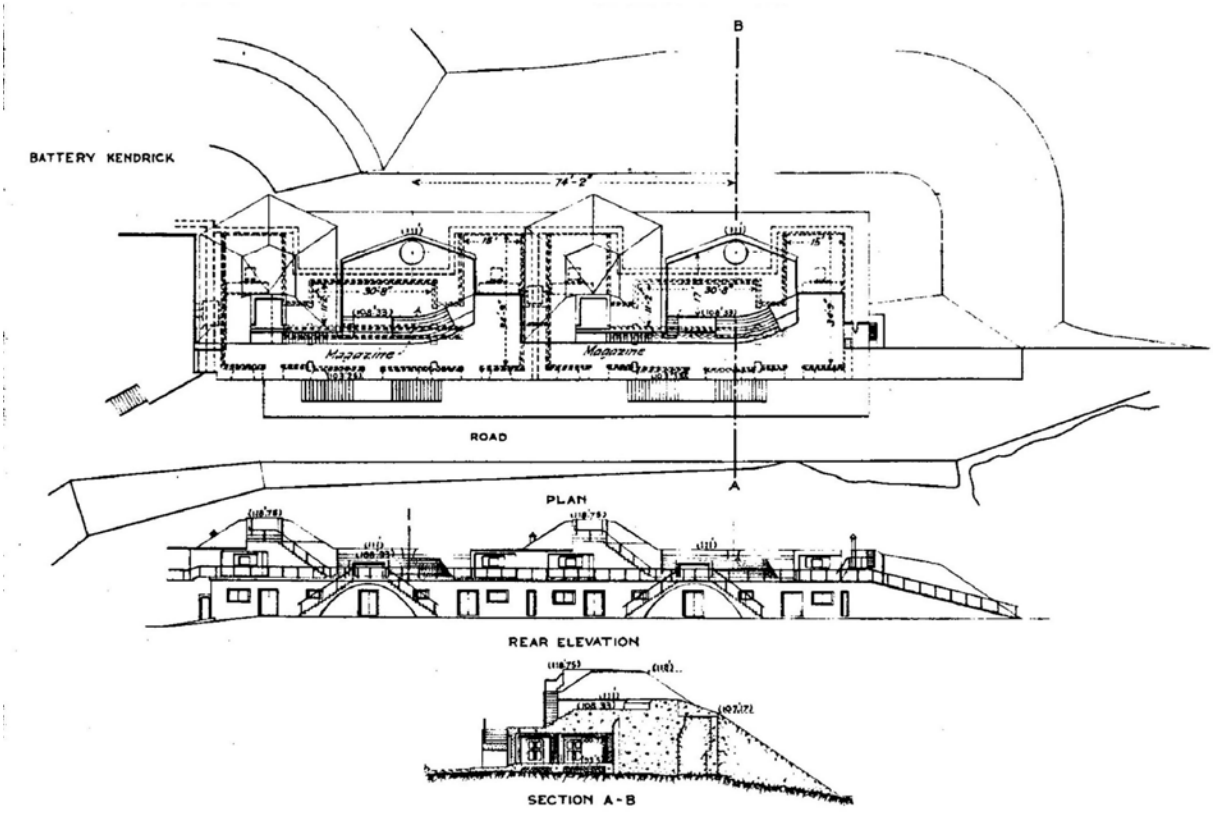
On February 3, 1902, $55,000 was allocated from the Appropriations for Gun and Mortar Batteries of May 25, 1900, for the first two of four projected emplacements for 6-inch R-F guns. Construction commenced March 24, 1902, and by the end of June, excavations were underway and concrete had been poured up to the floor level of the magazines.(229)

The initial project called for two pairs of 6-inch R-F guns on pedestal mounts, each pair to occupy a single emplacement. But in late summer of 1902, work was suspended pending revision of the battery plans with a more traditional approach, one gun for each emplacement, reducing the number of guns for the battery by half, to two guns. Provision was made, however to add a third emplacement on the right flank of the battery or to construct a separate battery for two more 6-inch guns if additional fire power was required.(230)

Once the plans were revised, construction resumed. Work continued until the two emplacements were completed in 1904. Both gun carriages were forwarded from Watertown Arsenal on March 11, 1905. Watervliet Arsenal M1900 6-inch R-F Guns Nos. 7 and 16 were mounted on M1900 barbette carriages Nos. 5 and 6 by early 1906.(231)

In May 1903, before the battery was completed, it was named in honor of Maj. William Ferguson**,** U.S. Artillery Bn. Ferguson, a native of Ireland, had served as a Captain-Lieutenant in the 4th

Continental Artillery during the American Revolution and then as captain of artillery until retiring on January 1, 1783. He returned to service as a captain in the Artillery Bn. on October 20, 1785, and on March 4, 1791, was promoted to major commandant of the U.S. Artillery Bn. He was killed near Fort Recovery, OH, on November 4, 1792, by Indians during St. Clair's defeat. The battery was transferred to the garrison June 22, 1906.(232)



Battery Ferguson. *NARA*

M1900 6-inch R-F gun mounted on M1900 barbette carriage. *Author's Collection*

The need for additional land at the reservation was clearly seen as early as 1896. When attempts to purchase the needed tracts proved unsuccessful, the government again exercised its right of eminent domain in federal court. On February 1, 1904, the court ordered Francis Cushing, et al., to convey an additional 91.68 acres to the War Department, increasing the size of the fort to 125.68 acres.(233) In the months that followed, permanent barracks for 117 enlisted men, five sets of married officers' quarters, and a 20-bed hospital were built.

As the four batteries on Cushing Island were completed, funds were allocated for BCS and a fire commander's station. The BCS for Batteries Bowdoin and Kendrick were similar in design and construction, built on the slope midway along the rear of their respective batteries. The concrete and brick structures had glass and concrete roofs. Battery Ferguson's open-roof BCS was atop the rear of the central traverse. In addition, it also served as the battery's primary fire control station (B'), equipped with a depression position finder (DPF).

The B's for Batteries Bowdoin and Kendrick were at Whitehead Point on Cushing Island in a two-room cement-plaster building on a wooden frame, with a tar and slag roof. The secondary stations (B") occupied rooms in a 10-room Sewell-construction fire control center near the southwest corner of the Fort Williams reservation.

Maine National Guard Coast Artillery Corps tent camp at Fort Levett, ca. 1905.
Kenneth E. Thompson Jr. Collection

Fort Lyon on Cow Island

Fortifications had been projected for 22-acre Cow Island off Great Diamond's North Fork as early as 1879. It was not until the latter months of 1900, however, that plans were finally implemented to fortify this brush-covered rock-ledge isle to cover the entrance to Casco Bay through Hussey Sound and the interior waters of the bay to the north.

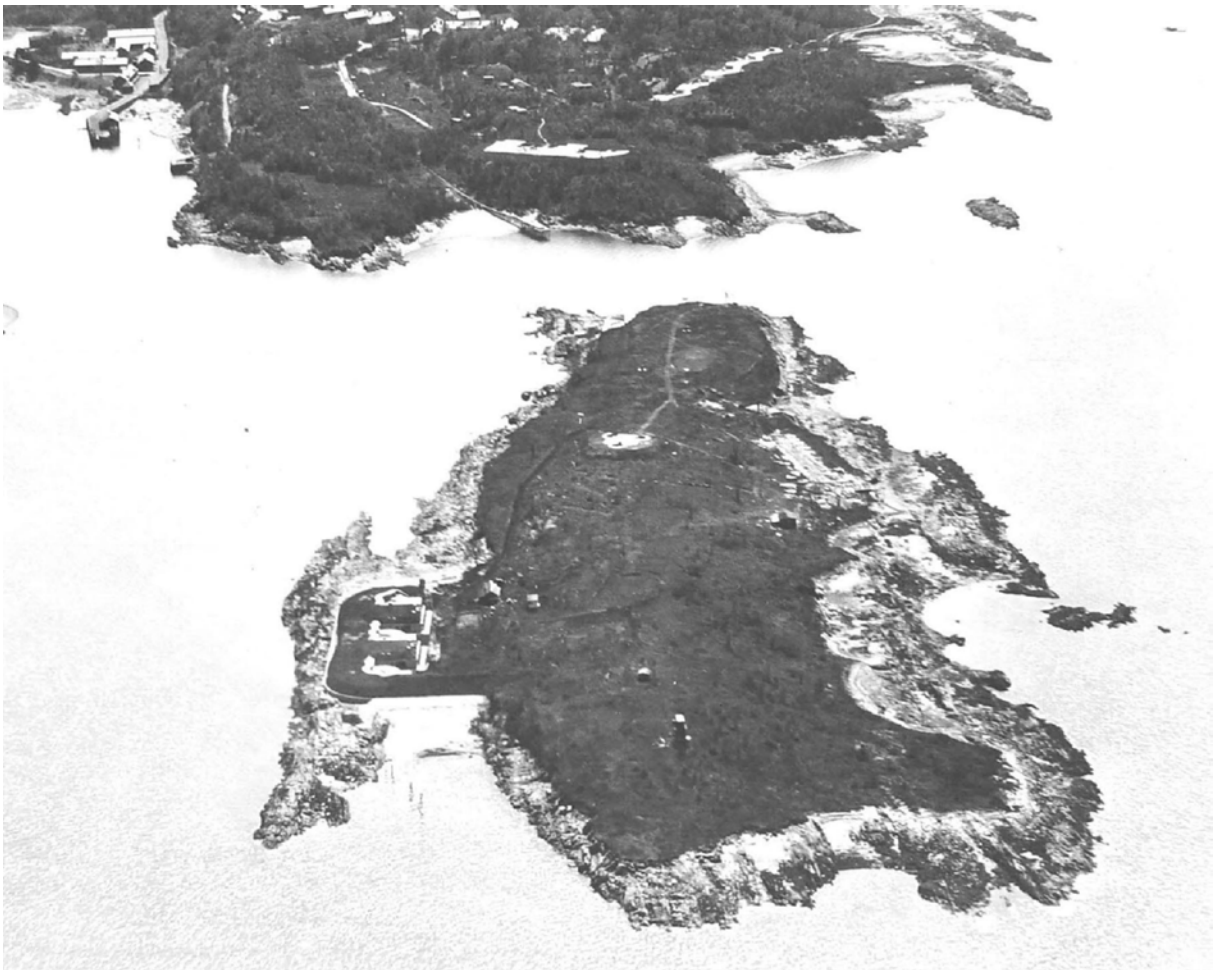
Charles P. Williams, civilian assistant engineer and inspector for the Corps of Engineers at Portland, carried out preliminary work, clearing the site in the fall and early winter of 1900. A wharf was

begun and a water pipe was laid to the projected battery site. In January 1, 1901, civilian overseer Charles R. Hall assumed charge of the project, erecting the construction plant during the summer of 1901.

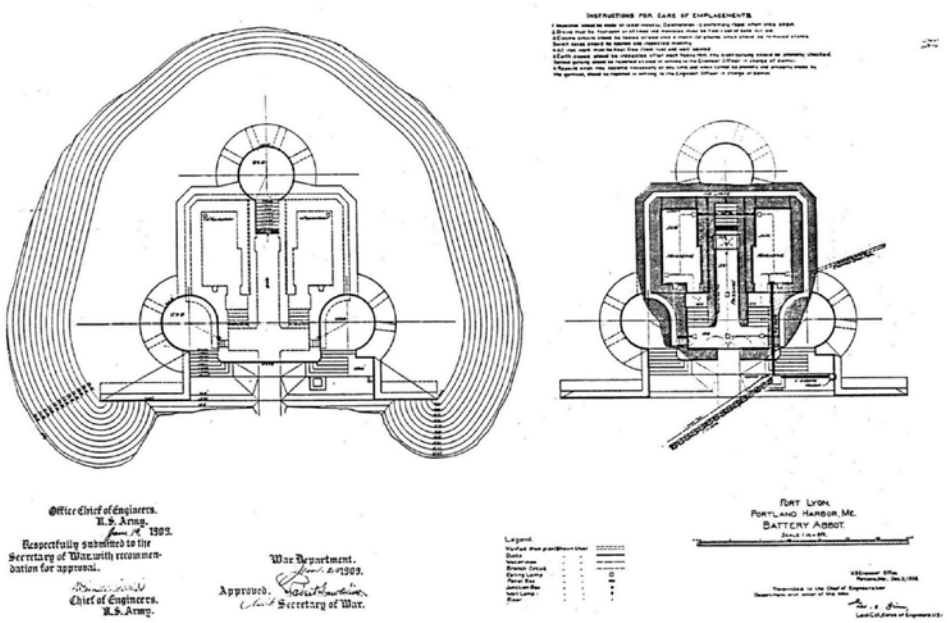
On July 3, 1901, the chief of engineers allotted $18,000 from the Gun and Mortar Battery Appropriations Act of March 1, 1901, for a battery of three 3-inch R-F guns on Cow Island. Excavation began in late summer and continued through the remainder of the year.(234) Work resumed in the spring and by the end of June 1902, excavation had been completed and foundations were being prepared. Concrete pouring began in earnest during the latter part of the summer and proceeded rapidly. By the onset of winter, the concrete portion of the battery was completed.

Although ready to receive its three 3-inch R-F guns by the summer of 1903, mounting the ordnance was delayed. Initially planned for masking-parapet carriages, a new pedestal mount was being designed. Until it was adopted, arming the battery and completing the final concrete finishing work associated with the mounting the guns were deferred.

On May 25, 1903, as the battery approached completion, it was named for 1st Lt. and Bvt. Capt. Edward Stanley Abbot, 17th U.S. Infantry. Abbot, initially a private and then sergeant in the 17th Infantry, had been promoted second lieutenant November 10, 1862, and first lieutenant April 27, 1863. Mortally wounded July 2, 1863, at the Battle of Gettysburg, he was brevetted captain for gallant and meritorious service at Gettysburg, and died of his wounds July 8, 1863.



Cow Island is separated from Great Diamond Island's North Fork by a narrow channel. Fort Lyon's batteries, searchlights, and fire control stations are clearly visible in this photo, ca. 1920. *NARA*



Battery Abbot. *NARA*

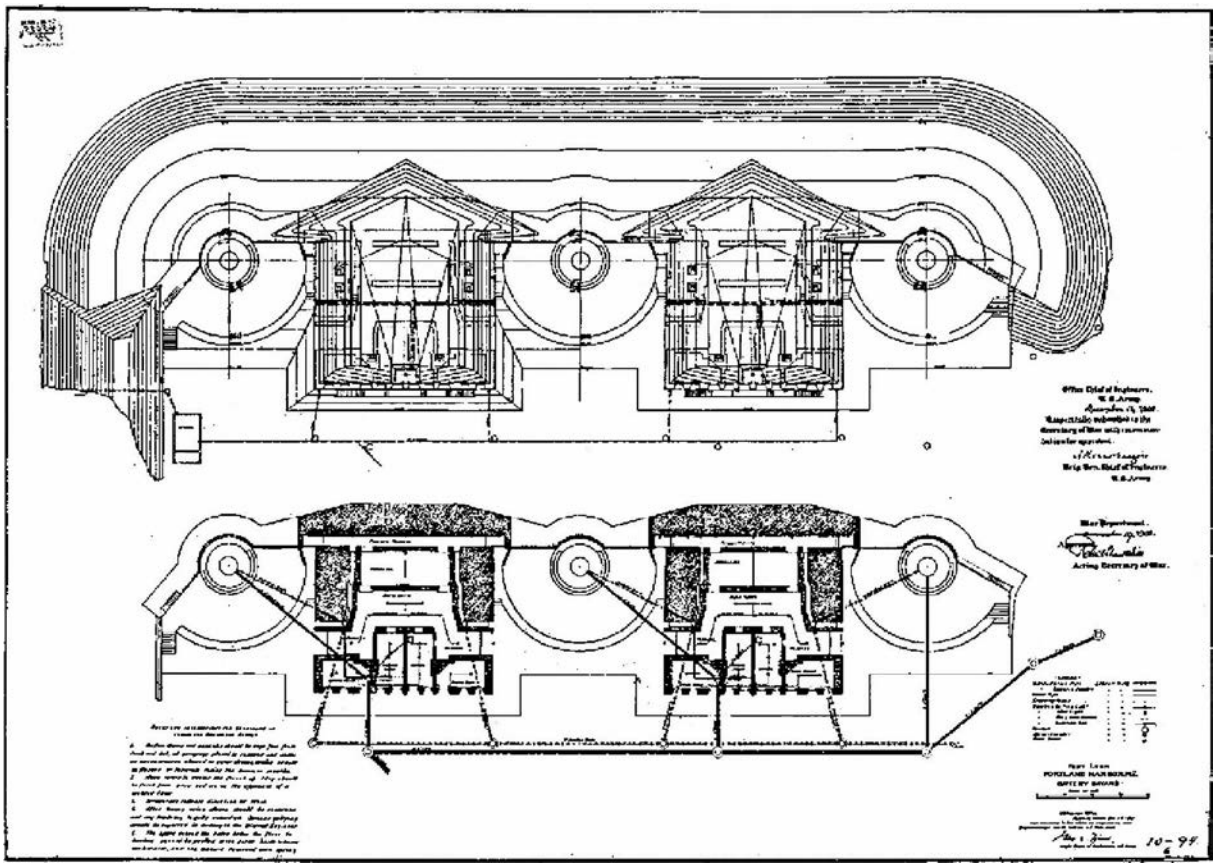
The Ordnance Department finally adopted their pedestal mount in 1903, but the emplacements on Cow Island were not armed until late in 1908. M1903 pedestal carriages Nos. 26, 27, and 28 were shipped from the American and British Manufacturing Co. on December 9, 1907. Near the end of 1908, 3-inch M1903 R-F guns Nos. 20, 40, and 51 were received and soon afterward mounted. On January 29, 1909, the battery was transferred to the Fort McKinley garrison.(235)

Because of Battery Abbot's mine-defense mission, its three emplacements were laid out in a unique triangle instead of the usual linear arrangement. This enabled the battery to cover both the Hussey Sound minefield and the northeastern part of Casco Bay. Emplacement No. 2 was at the apex of the triangle, some 30 feet in advance of Emplacements Nos. 1 and 3. Communication with Emplacement No. 2 was down through the traverse separating Emplacements No. 1 and No. 3 to the rear of Emplacement No. 2. The emplacements utilized an adaptation of the 1898-type battery design. Two magazines were in the traverse between the two rearward emplacements and ammunition service to No. 2 gun was through the communication gallery.(236)

The second battery authorized for Cow Island was for three 6-inch guns on disappearing carriages, also covering the approaches through Hussey Sound. The project, authorized in late 1902, commenced in the spring of 1903 and was generally complete by the end of 1904.

The battery was on an anvil-shaped projection on the island's southeast shore, about 10 feet above sea level. Although M1903 disappearing carriages Nos. 64, 65, and 66 had been shipped to Portland by the end of July 1905, the completed battery was unarmed until 1907, when M1903 6-inch guns Nos. 9, 12, and 16 were received and mounted. The battery was transferred to the coast artillery on December 27, 1907.(237)

The battery was named on December 27, 1904, for Brig. Gen. George Dashiell Bayard, U.S. Volunteers. He had served in the 1st and 4th U.S. Cavalry Regiments and was promoted to captain in August 1861. He was appointed colonel of the 1st Pennsylvania Volunteer Cavalry Regiment until he was promoted to brigadier general of volunteers. General Bayard died of wounds incurred in the Battle of Fredericksburg, VA, on December 14, 1862.(238)



Plan of Battery Bayard. *NARA*

As construction was winding down in the latter part of 1904, the War Department named Cow Island military reservation Fort Lyon for Brig. Gen. Nathaniel Lyon of Connecticut. Lyon had served with the 2nd U.S. Infantry Regiment. Brevetted captain for gallant and meritorious conduct in the battles of Contreras and Churubusco, Mexico, in August 1847, he was appointed brigadier general of the 1st Brigade of Missouri Volunteers and on May 17, brigadier general of U.S. Volunteers. On August 10, 1861, General Lyon was killed at the Battle of Wilson's Creek, MO.(239)

Between 1908 and 1910, a double-secondary mine station was built on the ledge above the rear of Battery Bayard and in 1911, a wooden tower was built for a 60-inch searchlight at the east end of the island's ridgeline. Prior to World War I, the 37th Co., CAC, a mine company from Fort McKinley, conducted regular target practices with Battery Abbot.

During the first two decades of the 20th century, seacoast defense technology advanced rapidly. Portland was one of the nation's most important seaports and many refinements and technological innovations in seacoast defense were initiated at Portland. Experience in the 1890s and new technological development pointed out numerous areas for improvement. Between 1900 and 1920, the defenses in Portland Harbor labored to keep pace with the advances of the new age.

During these two decades, many improvements were made to the harbor forts. Electric power was provided; as new batteries were planned and built, older structures were modernized and updated to prolong their life. Newer and better methods of ammunition service were installed; improved and more centralized fire control systems were instituted, made possible by better means of communication. Searchlights were provided to illuminate targets. New guns of greater range came into service and

older and obsolete batteries were disarmed and deleted from the harbor's defense system, increasing the overall efficiency of the defenses. Technological advances in mine defenses further enhanced the protection of the harbor.

The armament still in place in the old Third-System forts at the end of the Spanish-American War was left in the charge of ordnance sergeants. Fort Preble near the turn of the century was typical of Forts Scammell and Gorgas. Of the 32 gun positions for older ordnance at Fort Preble, there were only 22 platforms. For these, 16 pieces of ordnance were available, but only nine pieces were actually mounted. The other seven guns lay on the platforms or parapets of the old barbette works.

The inventory of old ordnance at Fort Preble showed:

Five 15-inch Rodman SB guns mounted, 11 unmounted
One 10-inch Rodman SB gun, unmounted
Four 8-inch converted ML rifles mounted

Soon after the Spanish-American War, watchmen were left in charge of Forts Gorgas and Scammell, and by the early 1900s, much of the old armament had been condemned and salvaged, although some of the 8-inch converted rifles were retained as late as the fall of 1903 and used during the army-navy joint maneuvers of August 1903.

Electrification

Construction of central power plants began at Forts Preble and Williams in 1900. In 1902, a plant was built at Fort Lyon and in 1905 at Fort Levett. By 1910, a central power plant was erected at Fort McKinley.

Although electricity for non-tactical buildings was provided from commercial mains, a power plant at Fort Preble to supply electricity for the batteries, transferred March 8, 1901, was the first military power plant built in Portland Harbor. In a traverse of Battery Chase, it consisted of one 20-h.p. Hornsby-Akroyd oil (kerosene) engine and a 10 kW 110-volt Maine Electric Co. generator. This plant lit Batteries Chase, Kearny, Rivardi, and Mason. In August 1917, the Hornsby-Akroyd oil engine, generator, and all its accessories were transferred to Fort Baldwin and reinstalled in Battery Cogan. A 20-ampere, 60-cell storage battery in Battery Rivardi was used for short-term lighting of Batteries Rivardi and Mason. By 1912, the battery's life expectancy had declined to about three years and it could no longer be relied on.

In 1913, as part of an overall electrical installation project for Portland Harbor, a new reinforced-concrete powerhouse in the rear of Battery Kearny's right flank traverse was proposed for two 25 kW General Electric gasoline generator sets. This proposal was reduced to a single 43-h.p. GE gasoline engine coupled to a 25 kW 125-volt DC generator. The new power plant furnished current for the batteries and the Signal Corps storage battery, but the general post lighting was supplied by the public service mains. The plant was transferred to the garrison April 15, 1916.(240)

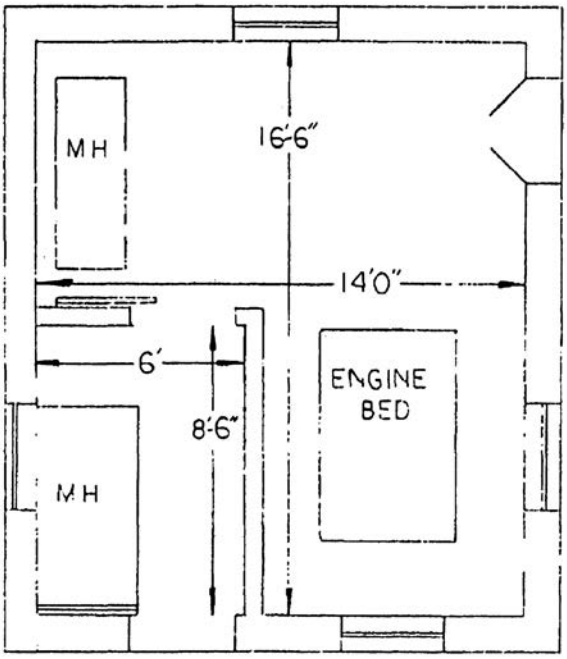
In addition to the central plants, small generator sets were installed in the larger batteries. In the 10 and 12-inch batteries, storage battery rooms were planned on the lower or magazines levels. At Fort Williams, Battery DeHart's two 25 kW generator sets in the left traverse of the battery also supplied Battery Sullivan. After the central plant was placed in service, one of these 25 kW sets was removed. Battery Blair's two 25 kW generator sets beneath the loading platform of the No. 2 Emplacement also supplied power to Battery Garesché.

The need for a central source of electric power at Fort Williams was met in the May 1900 appropriations, and a central electric power plant was begun in the spring of 1901. The plant was completed in 1905 at a secure location behind the line of batteries, protected by the 60-foot-high rock ledge that bisected the reservation. The outer wall of the structure was of rubble masonry one and a half to two feet thick; the splinterproof concrete roof was three feet thick. The electricity for the gun batteries and the post was generated by two 89 h.p. coal-fired Heine (water tube) boilers that fed 93 and 105 h.p. Westinghouse steam engines, which in turn drove two 50 kW 125-volt DC Westinghouse generators. In addition, a 68-cell 100-ampere Electric Storage Battery Co. battery was installed for when the engines were not being run. The electrical conduits to the batteries were buried, while the garrison area was served by overhead wires on poles.

The central plant lit the entire post (except the officers quarters), all gun emplacements and accessories, powered seven ammunition hoists and two retraction motors, one 30-inch and one 60-inch searchlight, as well as charging the Signal Corps storage batteries. The plant was transferred to the garrison on June 30, 1905. In 1912, the output of the central plant was increased when a G.E. 50 h.p. four-cylinder gasoline engine to power a 25 kW 115-volt G.E. generator was transferred September 27.

In November 1913, additions to the Fort Williams power generating capacity were proposed. Two 25 kW gasoline sets were installed in 1918 in a room in Battery Blair's left flank, to supply power to Batteries Blair and Garesché and a group of stations near the primary station of the Fort Williams fire command, with the second set in reserve. They were transferred to the coast artillery on October 14, 1918. At Battery DeHart, a 25 kW set beneath Emplacement No. 2 would serve that battery.

Between 1921 and 1935 two 25 kW sets at Battery Sullivan were moved to a powerhouse erected between Emplacements No. 1 and No. 2. These sets supplied Batteries Sullivan, Hobart, and Keyes, as well as a group of stations near Battery Sullivan's BCS, the primary and secondary mine stations, and the mine defense installations. All of the foregoing plants were interconnected with each other and the central plant.



Fort McKinley power plant. *NARA*

The batteries at Fort McKinley were served by the central power plant until about 1920, when generators were installed at locations on the reservation to provide reserve or emergency power. In some cases, the plants were established in separate structures away from the batteries. In others, the power plants were built next to the batteries. Some of these plants also supplied electricity to neighboring batteries, searchlights, and fire control stations.

The reinforced concrete central power plant for Great Diamond Island was on the South Fork, dug into the northwest side of the rock ledge that extended along the midline of the fork. The apparatus consisted of three 116 h.p. Heine safety water-tube boilers, each connected to a Westinghouse compound vertical single-acting 105 h.p. steam engine, with one 35 kW 125-volt DeLaval turbo-generator and three 50 kW, 230-volt DC generators. This plant provided lighting for all emplacements and buildings accessory to the defenses. The 35 kW steam turbine supplied power for 60-inch Searchlight No. 12.

As part of the 1913 upgrading, six secondary or reserve power sets were built and installed between 1920 and 1935. Three were on the North Fork: One 25 kW gasoline motor set in the powerhouse in the rear of the right flank of Battery Berry supplied the battery and its primary station. The second 25 kW set, in the powerhouse at the rear of Battery Ingalls' right flank traverse, served the mortar battery and the primary stations of the 6th Fire Command. This was finally installed in 1920 and transferred to the coast artillery on December 15, 1920. The third North Fork power plant, a 25 kW set in the powerhouse behind Battery Thompson's Emplacement No. 1, was to supply Batteries Thompson, Acker, and Farry, as well as primary fire control stations and the mine casemate, but apparently was not built.

There were three sets on the South Fork. One about 200 feet southwest of Battery Honeycutt's Emplacement No. 2 to serve Batteries Honeycutt and Ramsay and the mine structures was built and installed between 1921 and 1935. Two 25 kW sets were planned for the powerhouse in the rear of Battery Weymouth's Emplacement No. 1 to serve Batteries Weymouth and Carpenter, the group of primary fire control stations of the 5th Fire Command, and the Primary Mine station, with a set in reserve. This power plant is not believed to have been built, and power to these elements continued to be supplied by the Central Power Plant.

Several improvements were projected for the central plant. An epaulement was to be formed on the exposed front of the power plant building; the heights of the stacks were to be increased, and latrines and septic tanks were to be built. The 35 kW turbo-generators were to be removed and Searchlight No. 12 was to be supplied from the main generators. It was further recommended that the central plant be interconnected to the units on the South Fork. An additional 116 h.p. Heine safety water-tube boiler and Westinghouse compound vertical single-acting 50 kW steam-driven generator set were to be installed in the central plant, but it is not known if this was accomplished.

Electric service at Fort Levett was provided by a small reinforced-concrete central plant at Whitehead, on the northeast side of the island. The generating apparatus consisted of three 116 h.p. Heine safety water-tube boilers, each connected to a Westinghouse compound vertical single-acting 105 h.p. steam engine and a Bullock Electric Manufacturing Co. 50 kW 120-volt DC generator. This plant supplied electricity to all gun emplacements, two groups of secondary fire control stations some 500 feet northeast of the plant, a 30-inch searchlight, and other tactical buildings. The plant was transferred to the garrison on June 30, 1905. In 1911, a new and much larger central plant was built about 500 feet to the rear of Battery Bowdoin at the southwest corner of the reservation near the garrison area. The new plant provided electricity to Batteries Bowdoin, Kendrick, Ferguson, and Daniels, as well as for general post use.

The original plant at Whitehead was provided with two 50-h.p. four-cylinder GE gasoline engines and two 25 kW 115-volt DC generators, to serve 60-inch Searchlights Nos. 6 and 7.

In 1913, additional reserve generating sets were proposed, for Batteries Bowdoin and Kendrick. Battery Bowdoin was to have two 25 kW generator sets in the lower level of Emplacement No. 1 to supply the battery and all defensive works at Whitehead. This was finally installed in 1918 and transferred to the coast artillery on October 14. Battery Kendrick's power plant, a single 25 kW set in the battery's central traverse, supplied Battery Kendrick, Ferguson, and Daniels, as well as the primary fire control stations group. These reserve power plants were linked so either plant could provide electricity to the other. (241)

Electricity for all Cow Island installations was provided for on July 31, 1901, when $6,600 was allotted for a central power plant. Work commenced on April 15, 1902, and on August 26, an additional $15,000 was allotted to complete the project by late 1903. The power plant consisted of a 60 h.p. Almy water-tube boiler and two 55 h.p./35 kW DeLaval 125-volt turbo-generators.

Additional electric power was proposed for Cow Island in 1913. A second Almy boiler was to be installed in the central plant at a cost of $2,300. A 25 kW gasoline motor-generator set was authorized for Battery Bayard at an estimated cost of $5,400. This auxiliary plant was to be able to supply power to the 60-inch searchlight as well as the island's other installations, but is not believed to have been built.(242)

The Army Acquires Additional Land

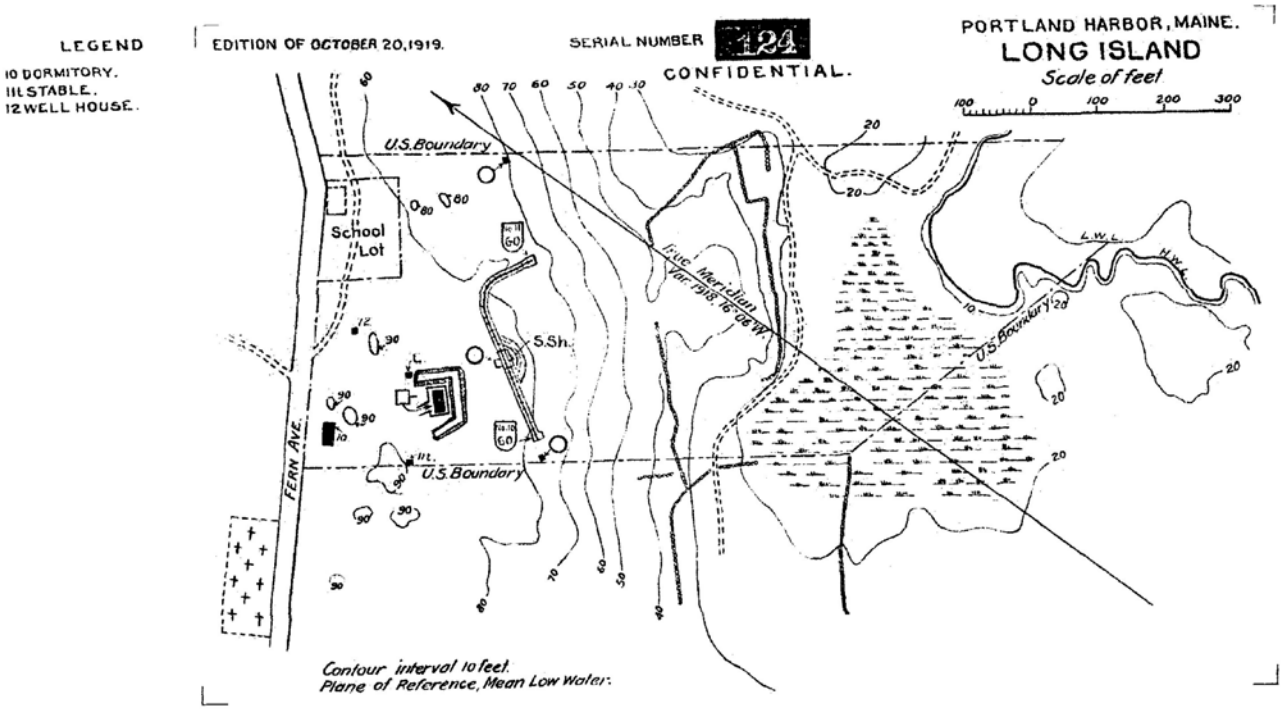
Between the turn of the century and World War I, the army made several land acquisitions, enlarging existing holdings and establishing new reservations. Fort Williams was expanded to 90.45 acres. On March 1, 1900, Joseph D. Symonds conveyed nine acres to the government and on April 9, an additional 12.50 acres with "the buildings thereon" were purchased from Georgiana Thompson, et al. In 1901, attempts to extend the boundary of the reservation further to the south were unsuccessful and a proposed doubling of the size of Battery Garesché was abandoned.

At Fort Preble, Charles W. and Adelaide M. Bary conveyed land to the government in 1900 and 1901, increasing the post to 30.75 acres. Fort McKinley also was enlarged when the government took additional tracts of land from the Diamond Island Association on June 18, 1901, by condemnation, when all other efforts failed. Fort Levett was increased when the U.S. Circuit Court issued another decree of condemnation, ordering Francis Cushing, et al., to convey 92.28 acres, increasing Fort Levett to 127.28 acres and making it the largest military reservation in Portland Harbor, a distinction it would retain until World War II, when almost all of Peaks Island was acquired.

Need for increased protection for the approaches through Hussey Sound into Casco Bay prompted the War Department to purchase additional sites on Long Island and Peaks Island in Casco Bay, as well as on Sabino Head, near the mouth of the Kennebec River east of the bay. While most of these tracts were for searchlight sites and fire control stations, some would be utilized for additional gun batteries.

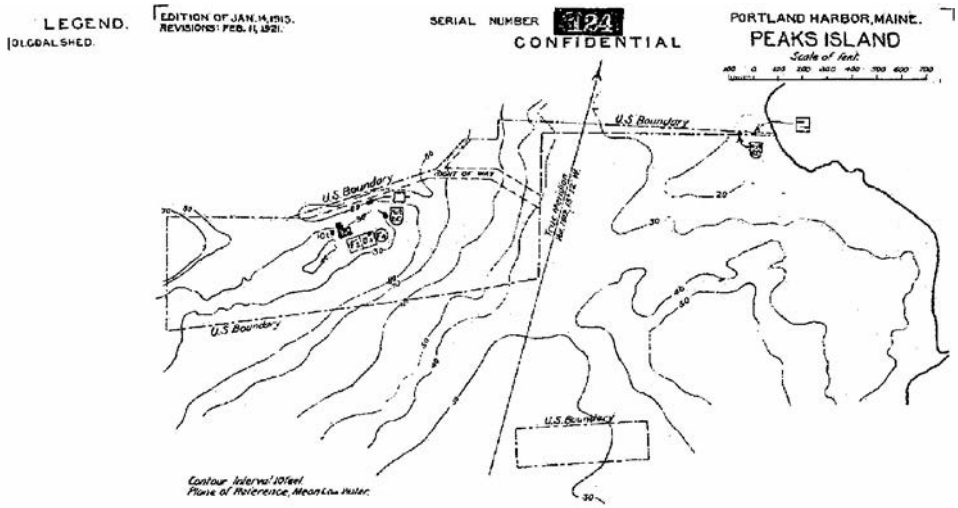
In 1903, a 9.594-acre tract on Long Island was purchased through a decree of condemnation from Jeremiah M. Johnson, et al. This 80-foot-high site provided good observation of the approaches to Hussey Sound.(243) Two 60-inch Sperry searchlight projectors (Nos. 10 and 11) were emplaced on the heights about 250 feet apart. These 600 million-candlepower searchlights could be moved on railway carts along a narrow-gauge track that connected the two installations. Midway along the track, the shed that housed the two searchlights was protected on its seaward side by a semicircular earthen revetment. Three searchlight controller booths were also built, one at the northern boundary of the small reservation, a second at the southern boundary, and the third just behind the searchlight

shed. One hundred feet to the rear of the shelter was an electric power plant with two 25 kW gasoline motor-generators, delivered in September 1915 with the searchlights. Both the lights and their power plant were installed by June 1, 1917, and transferred to the coast artillery on June 16. Near the western boundary of the small reservation, a small dormitory that fronted on Fern Avenue housed the small searchlight detachment.



Searchlight installation on Long Island. *NARA*

Three years after the searchlight position on Long Island was purchased, the first land was acquired on Peaks Island, initially 19.76 acres for searchlights on the east side of the island. A 36-inch light was installed and transferred on December 26, 1905, and on June 19, 1909, a 60-inch light was transferred to the coast artillery.(244)

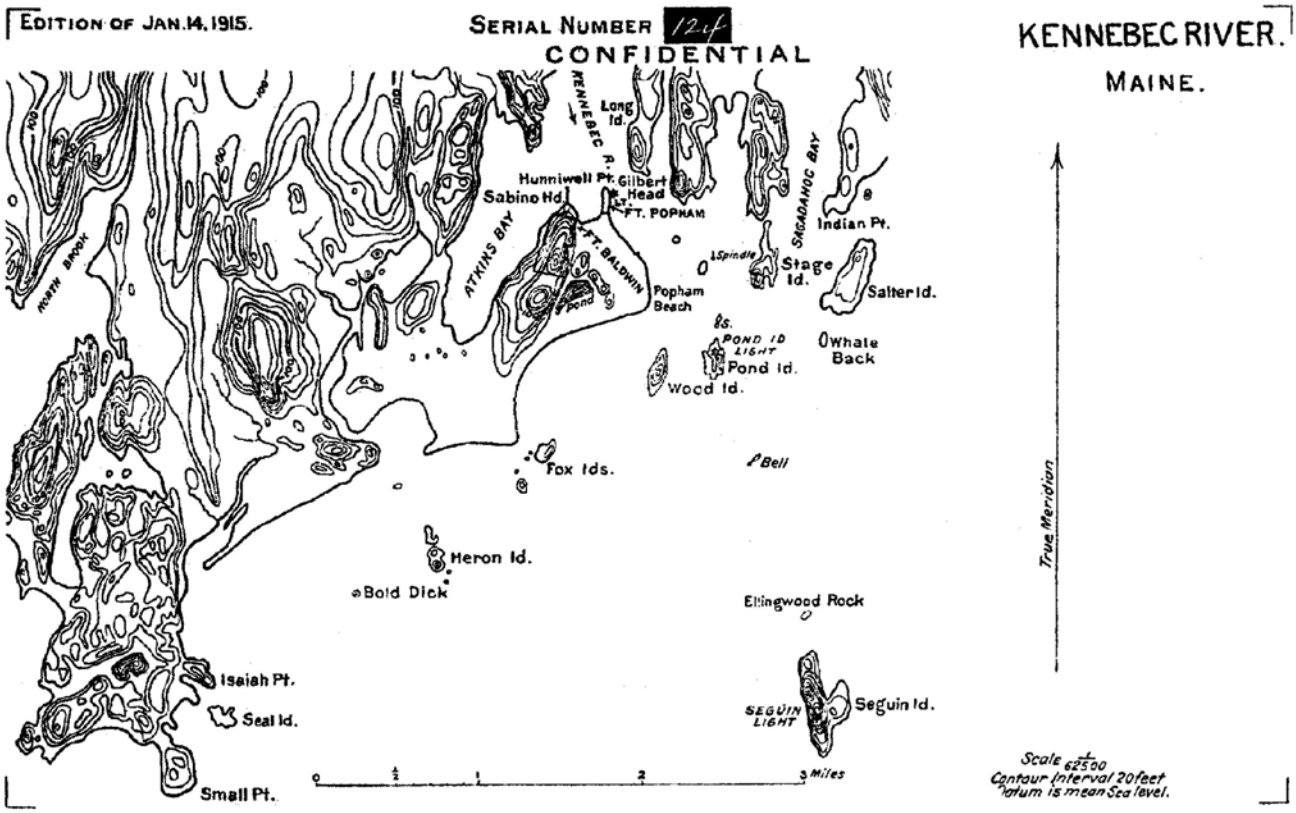


Searchlight and fire control installations on Peaks Island. *NARA*

An additional 2.2-acre site was acquired on Hussey Sound. Undeveloped Crow Island, purchased in 1913, lay off the east end of Great Diamond Island, just south of Cow Island.

Kennebec River

Just before the Civil War, the United States began construction of Fort Popham at the entrance to the Kennebec River, about 16 miles east of Portland Harbor. Fort Popham was never completed, as the war proved its vertical masonry walls obsolete. Nevertheless, the unfinished fort was retained by the government and during the War with Spain in 1898, the river entrance was defended by a minefield and a hastily constructed temporary battery for an 8-inch breechloading rifle on a modified 15-inch Rodman carriage. Sources disagree as to whether this gun was moved to Fort Levett in 1900 or was still at Fort Popham as late as 1910.(245)

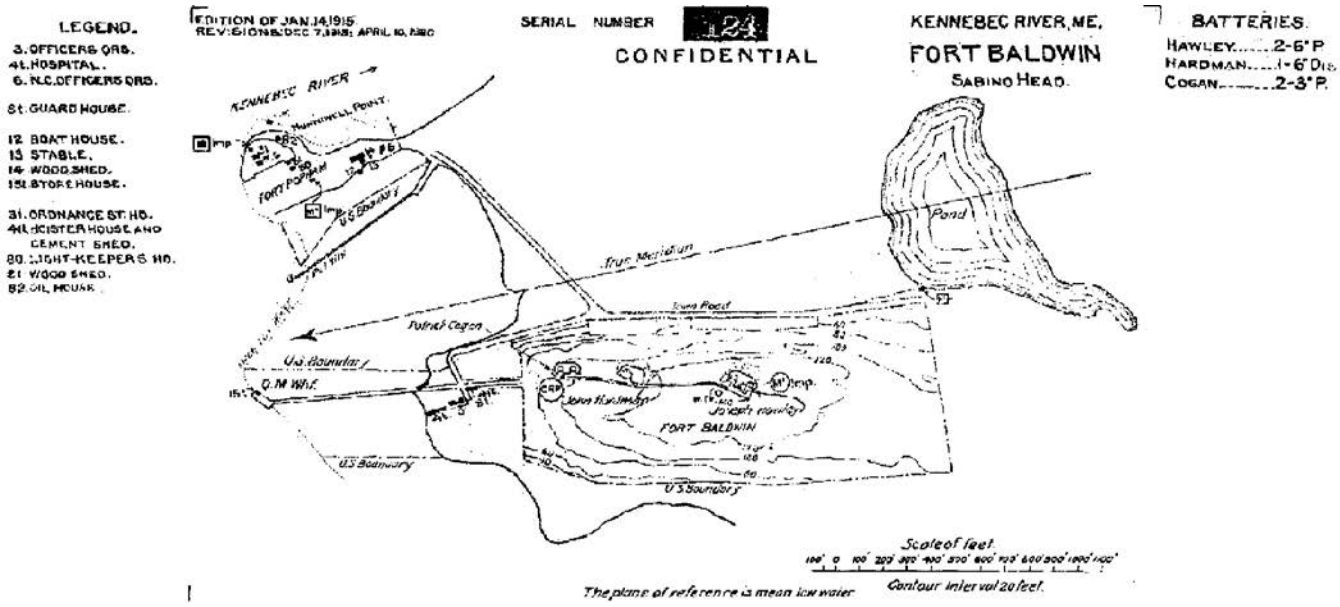


Approaches to the mouth of the Kennebec River. *NARA*

During the 19th century, the Kennebec was not considered important in the defense of Portland, except very indirectly. However, by the early 1900s the increased range of naval guns increased the need to secure the eastern flank of Portland's coastal defenses.

Several hundred yards to the rear of Fort Popham was an elevation known as Sabino Head (or Hill). This ridge, some 120 feet above sea level, commanded Hunniwell Point occupied by Fort Popham and the temporary Spanish-American War battery, as well as the entrance to the Kennebec River. Shortly after the turn of the century, the engineers decided to erect modern batteries on this site. Between February 1902 and January 1905, various tracts encompassing 45.13 acres, including a right of way connecting the tracts and Fort Popham, were purchased from Nathaniel Perkins and Anson M. Oliver for $5,000.(246)

Commissioned and noncommissioned officers were housed either at the old Fort Popham reservation or at the new Sabino Head reservation on the Kennebec River. Eventually, a double barracks for a company of coast artillery and other enlisted personnel of the garrison was built, along with an administration building, lavatory, bathhouse, storehouse, bakery, hospital, 899-foot wharf, and two messhalls/kitchens. Later a guardhouse was added.



Fort Baldwin and Fort Popham. NARA

Three batteries were begun in 1905 along the crest of the ridge. Two were for 6-inch guns and one was a 3-inch R-F battery of two guns. Construction advanced rapidly and by 1908 they were completed and ready for their armament. Unlike most batteries of the period, those on Sabino Head had guardrooms and officers' rooms designed to accommodate part of the manning detachments with a degree of comfort. On November 13, 1908, all three batteries, although only partially armed, were transferred to the artillery.

Battery Patrick Cogan was a concrete structure built to cover the minefield at the mouth of the Kennebec River, with M1903 3-inch guns Nos. 19 and 21 on M1903 pedestal carriages Nos. 22 and 23. The design was the 1903-type, with magazines and guardroom on the parade level, and a combination BCS and CRF station atop the rear of the central traverse. The square concrete observation post had a four-inch splinterproof concrete roof. The power plant removed from Battery Chase at Fort Preble was installed in Battery Cogan to furnish electric power. The battery was named for 2nd Lt. Patrick Cogan, quartermaster of the 1st New Hampshire Regiment of the Continental Army, who died August 21, 1778.

About 150 feet to the right of Battery Cogan, the second battery was a single-story concrete structure built for a single M1905 6-inch gun (Watervliet No. 10) on M1903 disappearing carriage No. 71 manufactured by Detrick and Harvey. Although the disappearing carriage was shipped on October 28, 1905, the gun tube did not arrive until 1907 and was not mounted until 1910. The battery was transferred, unarmed, to the coast artillery November 13, 1908. The battery was the 1903-type, modified for a single gun. It contained a projectile room, a powder magazine, a guardroom, and an office. The open roofed BCS was atop the rear of the traverse on the right of the emplacement.(247)

The central traverse of Battery Cogan, surmounted by the combination BCS and CRF station. *Author*

The battery was named for Capt. John Hardman, 2nd Maryland Regiment, Continental Army. Hardman was wounded and captured in the Battle of Camden, SC, during the Revolutionary War and died a prisoner on September 1, 1780.(248)

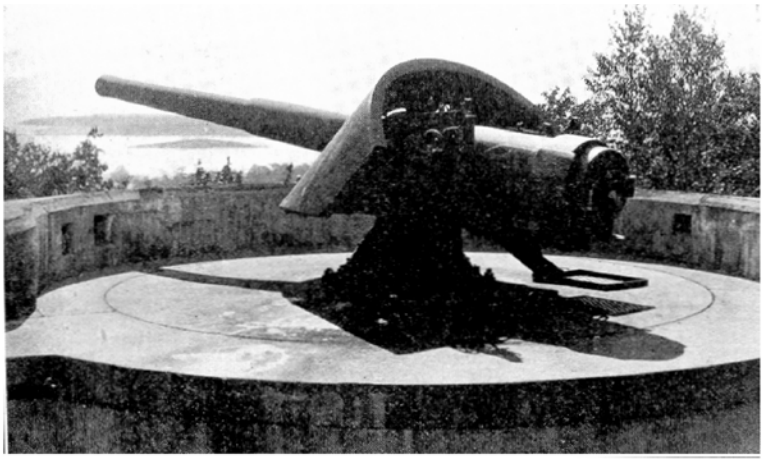
Battery Hawley. *Dunnack*, Maine Forts

The third battery on Sabino Head, about 350 feet to the right of Battery John Hardman, was armed with two M1900 6-inch guns on M1900 pedestal carriages. The emplacements and their traverse magazine were built between 1905 and 1908, in accordance with the 1902 standardized plan. The battery contained a shell room, power magazine, guardroom, and office. Although only one gun and two carriages had been emplaced by November 13, 1908, the battery was transferred to the coast artillery. The second 6-inch gun was finally mounted around 1910. The BCS was of the same open-roof design as Battery Hardman. Guns Nos. 47 and 48 were manufactured by Watervliet Arsenal, barbette carriages Nos. 31 and 45 by Watertown Arsenal.(249)

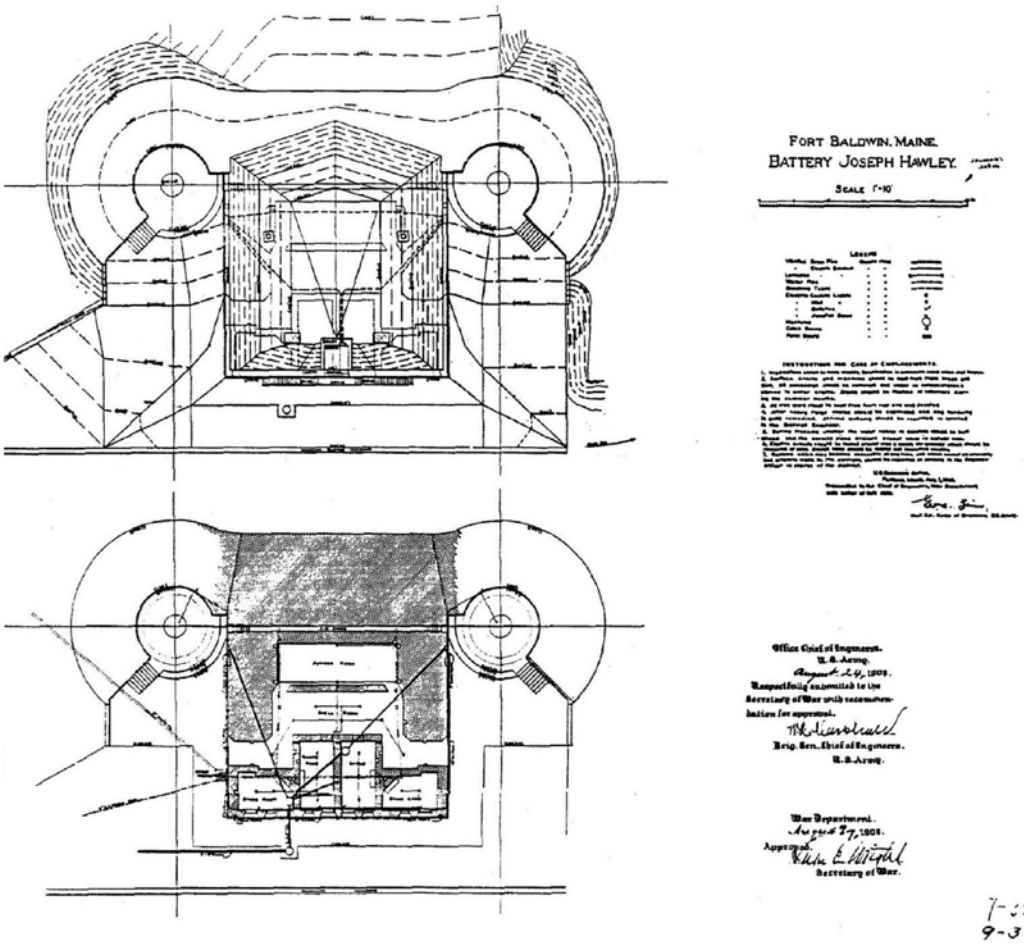
The battery was named for Col. and Bvt. Maj. Gen. Joseph Roswell Hawley, a captain in the 1st Connecticut Volunteer Infantry Regiment, then colonel of the 7th Connecticut Volunteer Infantry.

He was appointed brigadier general of volunteers on September 13, 1864, and brevetted major general of volunteers September 28, 1865, for gallant and meritorious service during the Civil War. General Hawley was mustered out January 15, 1866.(250)

Soon after completion of the batteries on Sabino Head in 1906, the War Department named the reservation Fort Baldwin in honor of Col. Jeduthan Baldwin, an artillery officer and engineer during the American Revolution.(251)



One of Battery Hawley's M1900 6-inch guns on M1900 barbette carriage. *Dunnack*, Maine Forts



Battery Hawley. *NARA*

In 1905 the Murray Board recommended a submarine mine project for the Kennebec River consisting of a casemate, torpedo storehouse, loading room, cable tank, mine-planter wharf, and a 450-foot tramway, along with single primary and secondary mine stations. Such mine defenses as were constructed were at old Fort Popham. By November 1914, they consisted of a mine casemate on the lower tier of the fort's left channel face and a wooden torpedo storeroom on the parade ground, 15 feet long and 30 feet wide. The mine primary station was in Battery Hawley's crow's nest, while the secondary station was atop a tower in the rear of Fort Popham. Electricity for the mine defenses was supplied by a small power plant at the edge of the pond in the southeast corner of the Sabino Head tract.(252)

Although finally armed, the fort on Sabino Head was garrisoned only by a caretaking detachment from Portland until America entered World War I. At that time, the chief of coast artillery recommended a fire control system at the fort with the necessary instruments, to include enlarging Battery Hawley's crow's nest to accommodate a depression position finder (DPF) and enlarging the battery storeroom for use as a plotting room. Noting there were no searchlights at Fort Baldwin, he also recommended the commanding general of the Eastern Department consider supplying that equipment.

Exterior of mine casemate in the left flank of Fort Popham. *Author*

Improving Portland's Coast Defenses

As gun and mortar battery designs evolved, older structures were modernized when possible. Two shortcomings of the earlier disappearing gun batteries was their contracted loading platforms and the lack of adequate communications between the emplacements. Batteries built before 1900 also had inadequate BCS. During the first two decades of the 20th century, gradual progress was made in improving the older batteries as much as circumstances and funding allowed.

Due to the difficulty of using long ramrods on shallow loading platforms, the rears of the batteries were extended. At the same time, communication galleries were built around the rear of the traverses separating the emplacements. Splinterproof BCS were also built atop the rear of the traverses or in separate structures immediately behind the battery.(253)

Concurrent with such modifications, ammunition service was improved. Batteries initially equipped with Hodges projectile hoists were reequipped with back-delivery Taylor-Raymond chain hoists between 1903 and 1919. With the adoption of long-point projectiles with ballistic caps for large-caliber guns, it was necessary to alter the chain hoists and their delivery tables. Most of the large-caliber gun batteries in the Portland coast defenses were modified for long-point projectiles by the end of World War I. In most cases the large caliber batteries were also provided with Type-C powder hosts.(254)

Although as late as 1911 the nation's coastal defenses had been considered to be among the world's most advanced and powerful, the strides in the range and power of naval armament over the next few years were significant. By the time war erupted in Europe in 1914, the main batteries of the newest German and British battleships could out-range the most powerful 12-inch disappearing guns in the American coastal defenses, due to the 10-degree elevation limitation imposed by the Buffington-Crozier disappearing carriages. To compensate, the Ordnance Department modified the Buffington-Crozier disappearing carriages upon which most of the 12-inch guns were mounted.(255)

Ordnance personnel changed out the elevating band elevating arm and elevating disk, and that part of the elevating gear sufficient to shift the maximum elevation from 10^0 to 15^0, but in so doing shifted the lower limit from -5^0 to 0^0. The added five degrees in elevation extended the gun range from 13,200 yards to 17,300 yards while firing the half-ton, long-point projectile.

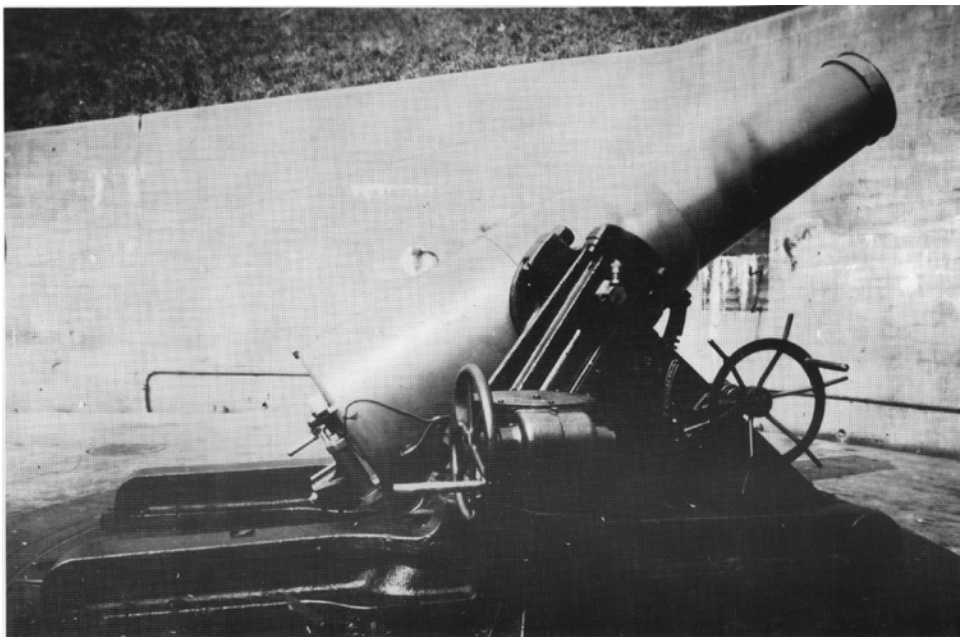
By 1906, Batteries Ferguson and Daniels at Fort Levett and Batteries Keyes and Garesché at Fort Williams had been completed. These four batteries, whose primary role was protection of the minefields of the main ship channel, made the single Armstrong 6-inch gun redundant by 1910, and on August 25, 1913, the gun and its pedestal mount were shipped to Benicia Arsenal, CA. Soon thereafter, they were shipped to Oahu, T.H., where the gun was emplaced in a casemate of Battery Henry Adair in the land defenses on Ford Island in Pearl Harbor.(256)

By the late 1890s, the 12-inch mortars had proven much more accurate than had been expected, and improved fire control methods added to the efficiency. It was no longer felt that a "shotgun pattern" of 16 mortar shells fired simultaneously was necessary to hit a projected target. Consequently, several changes were made in the employment of the mortars.

The first step taken in 1896 was to construct new mortar batteries such as Battery Ingalls for eight mortars in two pits rather than 16 mortars in four pits. The next step, taken in the early 1900s, was the division of the four-pit mortar batteries into separate two-pit tactical units. The 16-mortar, four-pit batteries such as Battery Kearny at Fort Preble were divided into two separate batteries, each with its own name. After about 1910, planning was undertaken to reduce the number of mortars in each pit of the older batteries from four to two, but not until after the United States entered World War I were most mortar pits actually reduced to two mortars each.

On January 26, 1906, Battery Kearny was separated into two batteries, each with two four-mortar pits. The two rear pits were renamed Battery Chase in honor of Lt. Col. Constantine Chase, Artillery Corps, who died September 20, 1902. Chase began his service as a second lieutenant in the 3rd Massachusetts Volunteer Artillery Regiment in September 1863. Mustered out of the service at the end of the Civil War as a captain of volunteers, Chase reentered military service May 11, 1866, as a second lieutenant in the 1st U.S. Artillery and transferred to first the 3rd and then the 4th Artillery. Promoted to major in December 1900 and lieutenant colonel in the new Artillery Corps on September 11, 1902, he died nine days later, after some 39 years of service.(257)

In 1910, Fort Preble was ordered to dismount two of the eight mortars and their carriages in Battery Kearny. On January 14, 1911, the pair was shipped to the U.S.M.A. for use by the cadets.(258)



12-inch mortar, Battery Kearny. *Author's Collection*

Portland Harbor's Garrison 1865-1916

Following the Civil War, only a token force of artillery manned Portland Harbor. Fort Preble, the only garrisoned post, was manned in 1866 by a detachment of Battery F, 1st U.S. Artillery Regiment. In the latter part of 1866, Batteries L and M, 3rd U.S. Artillery Regiment, and Battery M, 5th U.S. Artillery, were posted in Portland Harbor until their departure in 1869. After that, the harbor remained in the hands of the engineers, ungarrisoned, until Battery H, 1st Artillery, arrived in 1875, remaining at Fort Preble until relieved by Battery M, 4th Artillery, in 1881.

With the outbreak of the Spanish-American War, the Maine National Guard was federalized. A portion of the 2nd Maine was organized into the 1st Maine Heavy Artillery Bn and sent to garrison unmanned Fort Popham at the mouth of the Kennebec River, where four old 15-inch smoothbore guns were temporarily mounted, along with an 8-inch breechloading rifle on a strengthened 15-inch smoothbore carriage. Later, that summer, the battalion was sent to Savannah, GA, and then to Cuba.

Since the federalized Maine National Guard was sent south, in May eight of the eleven companies of the federalized 1st Infantry, Connecticut National Guard, were sent to Maine. Col. Charles L. Burdett was sent with six companies to Third-System Fort Knox on the Penobscot River, where they established tent Camp Knox. The other two companies were sent to Portland Harbor, where they established tent Camp Burdett on the barren slope several hundred yards south of Fort Preble. The Connecticut troops were recalled in July and sent to Camp Alger, VA, to reform and train for Cuba.

The old Civil War monitor U.S.S. *Montauk*, long anchored in Philadelphia, was reconditioned and a crew of New Jersey naval reservists sailed her to Portland Harbor in May, to ward off the rumored Spanish fleet; other harbors received similar vessels. In Portland, newly appointed officers and enlisted naval reservists from Maine took over (a handful of the New Jersey men remained), and the *Montauk* chugged back and forth in Portland Harbor and Casco Bay until September.

The detachment of the 2nd U.S. Artillery stationed at Fort Preble was transferred so that regiment could be reformed for war service. Battery M , 4th Artillery provided Port-

land's garrison until 1889 when it was relieved by Battery E, 2nd US Artillery. In 1898, the newly organized Batteries D and E , 7th US Artillery, joined Battery E, encamped at Portland Head to man the two just-completed concrete batteries (later named Sullivan and DeHart). At the end of the Spanish-American War, Battery E, 2nd Artillery, departed for Fort Screven, GA, while Batteries D and E, 7th Artillery, remained at Forts Williams and Preble.(259)

Between the late 1890s when the modern batteries were established and the onset of World War I, each fort in the harbor functioned as a separate tactical command, while administratively all were part of the First Coast Artillery District. Each fort commander supervised one or more fire commands, comprised of one or more batteries.

The assignment of batteries of the same artillery regiment as either light batteries with the mobile field forces or companies of heavy artillery in the seacoast fortifications had come under increasing criticism by the turn of the century. While both the light and heavy batteries were frequently utilized as infantry in the Indian campaigns of the 1800s, by the end of the 19th century, the more technically sophisticated long-range breechloading heavy artillery coming into service along the nation's seaboard prompted a reorganization of the artillery, and the Act of February 2, 1901, reorganized the artillery. The seven regiments of artillery were abolished, and the 98 lettered batteries that had comprised them were used to create an Artillery Corps, to consist of 126 companies of coast artillery and 30 batteries of field artillery, with 44 more companies of coast artillery and 14 additional batteries of field artillery. (260)

Guard detail, 74th Co., CAC, in front of Fort Williams' guardhouse. *Author's Collection*

At the time of the reorganization, Capt. Henry C. Davis, commanding Battery D, 7th Artillery, was at Fort Williams with 102 enlisted men, and Capt. Charles J. Bailey's Battery E, 7th Artillery, was at Fort Preble manning the four serviceable mortars with 102 enlisted men present for duty. With the passage of the act, Batteries D and E were redesignated the 74th and 75th Companies, Coast Artillery, Artillery Corps.(261)

The garrisons of the harbor forts were generally at about half their peacetime manning levels during the 1890s and early 1900s. In some cases, this meant that posts such as Forts Levett and Preble might have only a single company assigned, and Forts Williams or McKinley might have only three or four companies, and even these companies operated at reduced strength.

During 1901, the number of companies serving in Portland Harbor grew. In August 1901, half the personnel in the 74th and 75th Cos. were transferred to create two new companies. Men from the 74th Co. were transferred to the newly constituted 108th Co., Coast Artillery, Artillery Corps, at Fort Williams, while the men from the 75th Co. were reassigned to the 107th Co. at Fort Preble.(262)

During the early 1900s, companies were transferred to and from Portland. The 49th Co. was ordered from Fort Hamilton to Fort Williams in October 1902, replacing the 108th Co. that shipped out for the Philippine Islands late in 1902. Numerous coast artillery batteries were serving in Cuba, and in 1903, they began returning to the United States. On October 24, 1903, the 23rd and 24th Cos. and the 2nd Artillery Band arrived at Portland from Havana. The 23rd and 24th Cos. were posted at Fort McKinley and the band at Fort Williams, raising the number of companies in the harbor to six. On October 22, the 90th Co. departed Fort McHenry, MD, and arrived at Fort McKinley the next day. The 37th Company also moved from Fort Washington to Fort Williams by train, arriving September 2, 1905.(263)

Thus by the end of 1905 eight companies of coast artillery were posted at Portland, in addition to the band.(264)

Ft McKinley - 23rd, 24th, 37th, & 90th Cos.
Ft. Williams - 49th & 74th Cos.
Ft. Preble - 75th & 107th Cos.

The coast artillery strength remained stable at eight companies into 1907.

Joint Army-Navy Maneuvers of 1903

Portland was selected as the principal location for the 1903 joint army-navy exercises, designed to measure how effectively the navy's new warships could force their way into a fortified harbor, and how well the army could oppose such a passage. Scheduled for August 26-29, 1903, both branches began preparations weeks before the event. Twenty-one additional companies from coast artillery districts along the Atlantic seaboard were ordered to Maine.

Maj. Gen. Adna R. Chaffee, commanding general of the Department of the East, also ordered detachments of the 23rd and 27th Field Artillery Batteries to Portland from Fort Ethan Allen, VT, and Maine sent its 1st and 2nd Regiments of National Guard Infantry along with its Signal and Ambulance Corps. The 1st Regiment of Heavy Artillery, Massachusetts Volunteer Militia, and the 1st and 2nd Signal Corps Cos., National Guard of the State of New York, also participated in the massive exercise.

The exercises began just before midnight on August 25, when searchlights at Fort Williams illuminated three small vessels in the main channel, identified as torpedo-boat destroyers or gunboats. Col. Samuel M. Mills, commanding the Portland defenses, ordered Batteries Hobart and Blair to "open fire." Forts Levett and McKinley joined the action, and the umpires ruled all three vessels "sunk."

For the next two days and nights, Admiral Barker's squadrons attacked the various channels leading into Casco Bay. The naval forces attempted to clear minefields, land marines at various locations, and "bombard" the harbor forts. The forts proved up to the task of defending the harbor, "sinking" or "damaging" Barker's battleships and cruisers at almost every turn. However, naval landing parties of some 1,400 marines and sailors were able to gain a lodgment on Long Island and capture the island's some 300 troops as well as the new searchlight installations there.

On August 27, the battle fleet made its final assault on the harbor. In late afternoon, Admiral Barker formed his squadrons in line ahead in the eastern reaches of Casco Bay off Fort McKinley. With the flagship USS *Kearsarge* in the van, Barker began his attempt to pass into the harbor with the battleships USS *Illinois*, *Alabama*, and *Texas*, the cruisers USS *Chicago*, *Olympic*, *Baltimore,* and *Panther*, the training ship USS *Essex,* and three more cruisers, USS *Yankee*, *Topeka,* and *Prairie*. These were followed by the gunboat USS *Scorpion* and the destroyers USS *Worden*, *Stewart*, *Truxton*, and *Whipple*.

When the warships came within 8,000 yards of Battery Ingalls, Fort McKinley opened fire, and the fleet soon returned fire. As the ships passed in front of Portland's waterfront, the mortars of Battery Kearny at Fort Preble joined the fusillade. Barker's squadrons then turned and set course down the main ship channel and as they passed into the open waters off Portland Head, they were taken under fire by Forts Levett and Williams.

While this last engagement was a spectacle for the civilian populace thronging the shore, a number of conclusions had been reached during the two-day exercises. Searchlights had been able to pick up vessels at night up to 10,000 yards offshore; the numerous islands in the harbor required larger garrisons; the coordination of fire had been enhanced by telephone communications between the forts and the batteries; minefields had effectively closed channels when supported by sufficient R-F batteries, and while most of the firing by the forts had been case I and case II, there were insufficient observation stations to permit case III firing.(265)

Notes Part II

148. W.B. Franklin, "National Defense," *North American Review*, Vol. 137 (Dec. 1883), pp. 594-604. H.A. Smalley, "A Defenseless Seaboard," *North American Review*, Vol. 137 (March 1884), pp. 235-45. "The Defense of Our Sea-Ports," *Harpers New Monthly Magazine,* Vol. 71 (1885), pp. 927-37.

149. "Report of the Board on Fortifications or other Defenses Appointed by the President of the United States under the Provisions of the Act of Congress Approved March 2, 1885," Appendix No. 3, Annual Report of the Chief of Engineers (*ARCE*), 1886, pp. 499-525. Hereafter, "Endicott Report."

150. Edward Ransom, "The Endicott Board of 1885-1886 and the Coast Defenses," *Military Affairs*, Vol. 31, Summer 1967, p. 77.

151. M.F. Harmon, "The Buffington-Crozier Experimental Disappearing Carriage for 8-inch Breechloading Steel Rifle," *Journal of the United States Artillery*, Vol. 14, No. 1 (Jan.-Feb. 1895), pp. 42-60.

152. "Endicott Report," pp. 511, 516, 519, 523.

153. *Index to the Reports of the Chief of Engineers, U.S. Army, 1866-1912*, Vol. II, U.S. Cong. House Doc. No. 740, 63rd Cong., 2nd Sess., pp. 1845-48.

154. Early mine control rooms were frequently built inside the casemates of older masonry seacoast forts and therefore termed "mining casemates." The term stuck and control rooms were referred to as "mine casemates" thereafter. *ARCE*, 1895, pp. 5-6.

155. *ARCE*, 1895, pp. 6, 13. Lewis W. Call, *United States Military Reservations, National Cemeteries and National Parks: Title, Jurisdiction, Etc*. (GPO, 1907), pp. 120-21. Hereafter: Call, *U.S. Military Reservations*.

156. *ARCE*, 1895, pp. 6, 503; 1896, pp. 12, 469

157. *ARCE*, 1895, pp. 6, 503.

158. *ARCE*, 1895, pp. 6, 12, 469, 503.

159. *ARCE*, 1897, pp. 584-87; 1898, p. 587.

160. Battery Ledgers, Journals, and Memoranda, Fortification Notebook, Portland Harbor, Coast Defense Fortification File 1898-1920, Entry 220, RG 77, NARA, Washington, D.C. Hereafter: Battery Ledgers, Journals, and Memoranda.

161. Card File on Guns and Carriages, Entry 712, RG 156, Archives II, NARA, College Park, MD.

162. Eben Eveleth Winslow, *Notes on Seacoast Fortification Construction*, Engineer School Occasional Paper No. 61, (Washington, D.C., 1920), pp. 119-22, 159-88. Hereafter: Winslow, *Notes.* Battery Ledgers, Journals, and Memoranda.

163. Matthew Adams (comp.), *Designating US Seacoast Fortifications: War Department General Orders and Letters from the Adjutant General 1809-1950* (privately printed, n.p. 2000), p. 64. Hereafter: Adams, *Designating US Seacoast Fortifications.*

164. Battery Ledgers, Journals, and Memoranda. Card File on Guns and Carriages.

165. *ARCE*, 1899, p. 692. Reports of Completed Works, Fort Williams, Battery Hobart, March 1, 1922, Entry 1007, RG 77, Archives II. Hereafter, RCW, fort, structure.

166. Francis B. Heitman, *Historical Register and Dictionary of the United States Army from its Organization September 29, 1789, to March 2, 1903* (GPO, 1903), Vol. I, p. 533. Hereafter, Heitman, *Historical Register*. Adams, *Designating US Seacoast Fortifications*, p. 64.

167. HQ of the Army, G.O. No. 71, April 13, 1899. Heitman, *Historical Register*, Vol. I, p. 1042. Adams, *Designating US Seacoast Fortifications*, p. 39.

168. *ARCE*, 1901, p. 710.

169. Call, *U.S. Military Reservations,* p. 129.

170. *ARCE*, 1900, p. 736. Reservation Map, Fort Williams, January 14, 1915, Revised February 11, 1921, Entry 1007, RG 77, Archives II.

171. *ARCE*, 1901, pp. 701-02.

172. RCW, Fort Williams, Battery Blair, December 31, 1927. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards. Glen Williford, "The Modern Defenses of Portland, Fort Preble," Unpub.

173. Heitman, *Historical Register*, Vol. I, p. 222. Adams, *Designating US Seacoast Fortifications*, p. 64.

174. Card File on Guns and Carriages. Battery Ledgers, Journals, and Memoranda. RCW, Fort Williams, Battery Blair, December 31, 1927.

175. Fire Control Ledgers, Journals, and Memoranda, Portland Harbor, Entry 220, RG 77, NARA, Washington, D.C.

176. *ARCE*, 1902, pp. 626-27.

177. *ARCE*, 1902, pp. 626, 628. Torpedo Defense Ledgers, Journals, and Memoranda.

178. *ARCE*, 1902, p. 626.

179. Gun and Carriage Cards. Robert D. Zink, "Coast Defenses of Portland," *CDSG News*, Vol. 3, No. 2 (Feb. 1989), pp. 9-13.

180. Battery Ledgers, Journals, and Memoranda. Heitman, Historical Register, Vol. I, p. 446. Adams, *Designating US Seacoast Fortifications*, p. 64.

181. RCW, Fort Williams, Battery Erasmus Keyes, May 31, 1919. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards. Robert D. Zink, "Coast Defenses of Portland," *CDSG News*, Vol.3, No. 2 (Feb. 1989), pp. 9-13. Winslow, *Notes*, pp. 108-09.

182. War Department, G.O. No. 194, December 27, 1904. Heitman, *Historical Register*, Vol. I, p. 596. Adams, *Designating US Seacoast Fortifications*, p. 74.

183. *ARCE*, 1895, p. 16; 1896, pp. 12, 582; 1897, pp. 12, 581-82; 1898, p. 585; 1899, p. 687. Call, *U.S. Military Reservations*, p. 126. George W. Cullum, *Biographical Register of the Officers and Graduates of the U.S. Military Academy,* Vol. IV, p. 549.

184. Cullum, *Biographical Register*, Vol. IV, p. 449

185. *ARCE*, 1899, pp. 687-88. *ARCE*, 1900 p. 735; 1901, pp. 699-700. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

186. RCB, Defenses of Coast of Maine - Battery Kearney, December 31, 1903, File No. 873701, Entry 225, RG 77, NARA, Washington, D.C.

187. Adjutant General's Office (AGO), G.O. No. 78, May 25, 1903. Heitman, *Historical Register,* Vol. I, p. 586. Adams, *Designating US Seacoast Fortifications*, p. 63.

188. *ARCE*, 1901, p. 699. Williford, "Modern Defenses of Portland, Fort Preble: Batteries Kearny-Chase," unpub.

189. *ARCE*, 1902, p. 623.

190. Winslow, *Notes*, pp. 205-09.

191. *ARCE*, 1897, pp. 585-86. Torpedo Defense Ledgers, Journals, and Memoranda.

192. Battery Ledgers, Journals, and Memoranda. Williford, "Modern Defenses of Portland, Fort Preble: Battery John Rivardi," unpub.

193. War Department G.O. No. 194, December 27, 1904. Heitman, *Historical Register*, Vol. I, p. 833. The term "deranged" was used in the early 19th Century to describe the elimination of a position when the size of the U.S. Army was reduced or "downsized," to use modern parlance. Adams, *Designating US Seacoast Fortifications*, p. 74.

194. Williford, "Modern Defenses of Portland, Fort Preble: Battery Philip Mason," unpub. AGO, G.O. No. 194, December 27, 1904. Heitman, *Historical Register*, Vol. I, p. 695. Adams, *Designating US Seacoast Fortifications*, p. 74. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

195. Eastman, "The Protected Switchboard Building at Fort Preble, Maine," *CDSG News*, Vol. IV, No. 2 (May 1990), pp. 18-19.

196. *ARCE*, 1896, p. 12.

197. Call, *U.S. Military Reservations*, p. 123.

198. AGO, G.O. No. 16, February 14, 1902. Heitman, *Historical Register*, Vol. I, p. 673. Adams, *Designating US Seacoast Fortifications*, p. 74.

199. *ARCE*, 1896, p. 12; 1897, pp. 11-12, 581-84; 1898 pp. 585-86.

200. Cullum, *Biographical Register*, Vol. IV, p. 176. *ARCE*, 1898, p. 589; 1899, p. 693; 1900, p. 739; 1901, p. 705. RCW, Fort McKinley, Battery Berry, May 31, 1919. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

201. AGO, G.O. No. 43, April 4, 1900. Heitman, *Historical Register*, Vol. I, p. 214. Adams, *Designating US Seacoast Fortifications*, p. 45.

202. *ARCE*, 1898, pp. 588-89. Williford, "Spanish American War Defenses: Summary of Older Works Construction and Emplacement," unpub.

203. *ARCE*, 1898, pp. 588-90. Williford, "Modern Defenses of Portland, Fort McKinley: Battery Thompson, Battery Weymouth, Battery Honeycutt," unpub. *ARCE*, 1899, p. 696; 1900, pp. 699-710; 1901, pp. 704-07. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

204. Fortifications Clipping File, Maine Historical Society, Portland, ME. Adams, *Designating US Seacoast Fortifications*, p. 45. AGO, G.O. No. 43, April 4, 1900. Heitman, *Historical Register*, Vol. I, p. 539.

205. *ARCE,* 1901, pp. 704-07. RCW, Fort McKinley, Battery Honeycutt, May 31, 1919; Battery Weymouth, May 31, 1919; Battery Thompson, May 20, 1920. Battery Ledgers, Journals, and Memoranda.

206. *ARCE*, 1898, pp. 588-90. RCW, Fort McKinley, Battery Ingalls, January 1, 1922.

207. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 562. Adams, *Designating US Seacoast Fortifications*, p. 45.

208. Gun and Carriage Cards. Williford, "Modern Defenses of Portland, Fort McKinley: Battery Ingalls," unpub.

209. RCW, Fort McKinley, Battery Ingalls, January 1, 1922. Battery Ledgers, Journals, and Memoranda.

210. *ARCE*, 1899, p. 693; 1900, pp. 699-710. RCW, Fort McKinley, Battery Acker, May 20, 1920. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

211. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 151.

212. *ARCE*, 1899, p. 693; 1901, pp. 704-07.

213. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 414.

214. *ARCE*, 1902, pp. 631-32.

215. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 284.

216. Williford, "Modern Defenses of Portland, Fort McKinley: Battery Carpenter," unpub. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

217. *ARCE*, 1902, pp. 631-32.

218. Battery Ledgers, Journals, and Memoranda. Williford, "Modern Defenses of Portland, Fort McKinley: Battery Ramsay," unpub. Gun and Carriage Cards.

219. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 813.

220. Torpedo Defense Ledgers, Journals, and Memoranda.

221. Call, *U.S. Military Reservations,* pp. 121-22. *ARCE*, 1895, p. 6; 1896, pp. 12, 449. Report of the Department of the East, August 31, 1905, *Annual Reports of the War Department*, House Doc. No. 2, 59th Cong., 1st Sess., pp. 34-35.

222. AGO, G.O. No. 43, April 4, 1900.

223. *ARCE*, 1899, pp. 698-702; 1900, pp. 762-63**;** 1901, p. 710. Cullum, *Biographical Register*, Vol. V, pp. 252, 615. RCW, Fort Levett, Battery Kendrick, May 20, 1920.

224. RCW, Fort Levett, Battery Bowdoin, May 31, 1919; Battery Kendrick, May 20, 1920. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards. Williford, "Modern Defenses of Portland, Fort Levett: Battery Bowdoin and Battery Kendrick," unpub. AGO, G.O. 43, April 4, 1900.

225. Battery Ledgers, Journals, and Memoranda.

226. ARCE, 1899, p. 699; 1900, p. 763; 1901, p. 710; 1902, p. 635.

227. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

228. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 353.

229. *ARCE*, 1902, p. 635-36.

230. Sketch Showing the Position and Number of Gun Platforms, December 31, 1902, Fort Levett, Portland Harbor, Maine, RG 77, Cartographic Branch, Archives II.

231. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

232. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 417. Williford, "Modern Defenses of Portland, Fort Levett: Battery Daniels," unpub.

233. Call, *U.S. Military Reservations*, p. 240

234. *ARCE*, 1901, p. 708; 1902, p. 633.

235. Battery Ledgers, Journals, and Memoranda. AGO, G.O. No. 78, May 25, 1903. Heitman, *Historical Register*, Vol. I, p. 149. Gun and Carriage Cards. Williford, "Modern Defenses of Portland, Fort Lyons: Battery Abbot," unpub.

236. "Battery of Three 15-pounder Guns. Pedestal Mounts Cow Island, Portland Harbor, Me. December 31, 1902," RG 77, Cartographic Branch, Archives II.

237. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

238. AGO, G.O. No. 194, December 27, 1904. Heitman, *Historical Register*, Vol. I, p. 200.

239. AGO, G.O. No. 193, 1904. Heitman, *Historical Register*, Vol. I, p. 650.

240. Electrical Installations Ledgers, Journals, and Memoranda.

241. Ibib. "Central Powerhouse," *CDSG News*, Vol. I, No. 3, p. 8.

242. Electrical Installations Ledgers, Journals, and Memoranda. ARCE, 1902, p. 633.

243. Call, *U.S. Military Reservations*, pp. 121, 123, 127, 129.

244. Electrical Installations Ledgers, Journals, and Memoranda. Searchlight Ledgers, Journals, and Memoranda.

245. Dunnack, *Maine Forts*, p. 137. Williford, "Modern Defenses of the Kennebec, Fort Popham," unpub.

246. Call, *U.S. Military Reservations*, p. 117.

247. Battery Ledgers, Journals, and Memoranda. Battery Ledgers, Journals, and Memoranda, Fortification Notebook, Kennebec River. Electrical Installations Ledgers, Journals, and Memoranda. Gun and Carriage Cards. Dunnack, *Maine Forts*, p. 139. Williford, "Modern Defenses of the Kennebec, Fort Baldwin: Battery John Hardman," unpub.

248. Gun and Carriage Cards. Dunnack, *Maine Forts*, p. 139.

249. Battery Ledgers, Journals, and Memoranda. Battery Ledgers, Journals, and Memoranda, Kennebec River. Williford, "Modern Defenses of the Kennebec, Fort Baldwin: Battery Joseph Hawley,: unpub. Gun and Carriage Cards. Dunnack, *Maine Forts*, p. 141.

250. Heitman, *Historical Register*, Vol. I, p. 513.

251. AGO, G.O. No. 20, January 25, 1906.

252. Torpedo Defense Ledgers, Journals, and Memoranda. Battery Ledgers, Journals, and Memoranda, Kennebec River.

253. Winslow, *Notes*, pp. 101-197 passim.

254. Ibid., pp. 85-97. Battery Ledgers, Journals, and Memoranda.

255. Nelson H. Lawry, "Another Five Degrees: WWI Alterations to the Disappearing Carriage," *CDSG Journal*, Vol. 10, No.2 (May 1996), pp. 4-5.

256. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

257. Heitman, *Historical Register*, Vol. I, p. 297. Adams, *Designating US Seacoast Fortifications*, p. 84

258. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

259. AGO, "Circular Showing the Distribution of Troops of the Line of the United States Army, January 1, 1866, to June 30, 1909" (Washington, D.C., July 1, 1909), pp. 20-22, 25, 29, 30, 36, 38, 40. Hereafter: "Circular Showing the Distribution of Troops." *Annual Report of the War Department, 1898*, p. 487.

260. Heitman, *Historical Register*, Vol. I, pp. 61-62.

261. AGO, *Official Army Register for 1901*, Washington, D.C., 1901), pp. 122-23. *Annual Report of the War Department, 1901*, Pt. 1, p. 239.

262. "Circular Showing the Distribution of Troops," pp. 36, 40.

263. Report of the Military Secretary, 1904, House Doc., 58th Cong., 3rd Sess., p. 427. Report of the Military Secretary, 1905, House Doc., 59th Cong., 1st Sess., p. 427. "Circular Showing the Distribution of Troops," pp. 25, 29, 31, 36, 40.

264. AGO, *Army List and Directory, Officers of the Army of the United States, June 20, 1905*, Washington, D.C.

265. Report of the Military Secretary, October 1, 1904, House Doc., 58th Cong., 3rd Sess. Edwin C. Bearss, Historic Resource Study, *Fort Hancock 1895-1948*, Gateway NRA (Denver Service Center, May 1981), p. 179. "Army Strikes at Navy," Aug. 24, 1903; "Navy Fires on Forts," Aug. 26, 1903; "Barker's Fleet is Sunk," Aug. 28, 1903, *New York Times*.

The Seacoast Defenses of Portland, Maine 1605-1946 Part III 1905-1939

William C. Gaines

The Taft Board

On January 31, 1905, President Theodore Roosevelt appointed a new board of army and navy officers to review the coastal defenses of the United States and its overseas possessions. Secretary of War William Howard Taft chaired this body, and the National Coast Defense Board (known as the "Taft Board") spent the next 12 months studying the nation's seacoast defenses. Subcommittees developed recommendations on practically every aspect of coast defense and estimated the costs to adequately defend the nation's harbors. In January 1906, the board completed its studies and presented its findings and recommendations to the President, who transmitted them to Congress.

In general, the Taft Board reaffirmed the findings of the Endicott Board two decades before. However, a number of its recommendations went beyond those of the earlier board:

> The primary gun defense of harbors be guns of at least 12 inches; the 10-inch gun was suitable for defending channels liable only to cruiser attack; 3-inch guns be emplaced to defend minefields at "ordinary" ranges and 6-inch guns at distant ranges.
>
> A more efficient and centralized system of fire control would give land-based guns greater advantage over shipboard guns.
>
> In light of increased draft of warships, defense of shallower and narrower channels could be reduced.
>
> Existing means of mining channels was inadequate and more suitable mine planting equipment was necessary.
>
> Centralized electric power plants and reserve plants were necessary at fortified harbors.
>
> Searchlight illumination of target areas was important.
>
> Adequate communications between elements of the defense was vital.
>
> Adequate facility for service and reserve ammunition was necessary.

The cost of upgrading the defenses of the 28 harbors in the continental United States, including ammunition, was estimated at $50,879,339, in addition to $19,873,682 to defend the insular possessions.

For Portland Harbor, the Taft Board recommended two additional 12-inch guns and a pair of 6-inch guns, enhancement of the submarine mining system, additional central and reserve power plants, additional fire control stations, and modernization of older gun emplacements. The estimated cost was $1,310,570.(266)

Fire Control

Initially, most of the batteries' fire control was limited to the field of fire visible from the battery. The gun was laid and trained from instructions received from the battery commander, who obtained his data from personal observation of the target. In "Case I," the gunner established both the range and azimuth of the target by means of his sight. By the turn of the century, a vertical range-finding system

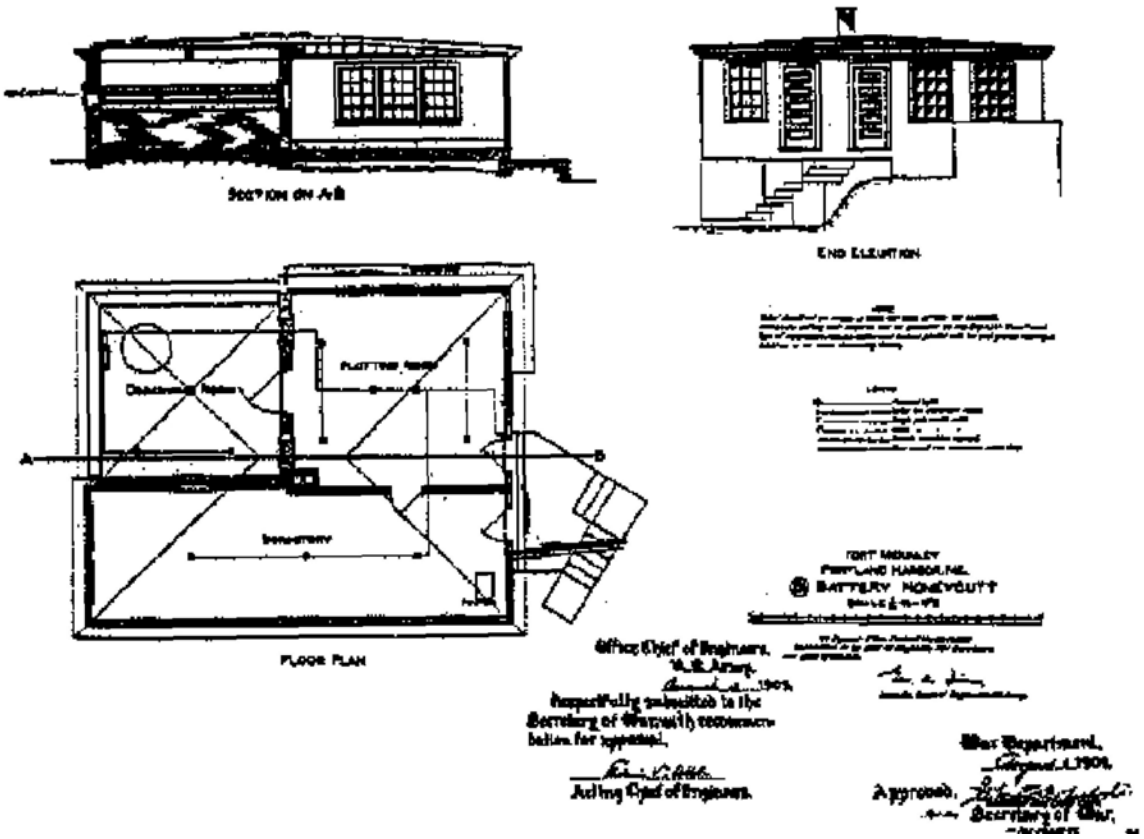
Fire control detail mans a DPF in one of Portland's fire control stations, ca. 1905. *G.E. Fogg Collection*

was developed. Using a depression position finder (DPF), target range and azimuth were determined, and the data were transmitted to a plotting room, where the target was tracked and plotted. In "Case II," the gunner tracked the target in azimuth by means of his sight, while azimuth offset and range were calculated in the plotting room and the range was set on an elevation scale. DPF instruments, however, had to be at least 30 to 40 feet above sea level. To attain such heights, tall and conspicuous observation towers were required at most sites. The vertical-base method also required very precise "water lining" of the target to obtain accurate ranges. A second method, the horizontal-base system, employed two instruments to triangulate the position of the target. The problem of adequate heights was not as acute at Portland as at many other locations along the Atlantic and Gulf coasts, but towers were still necessary, especially when longer-range guns were developed around the time of World War I.(267)

About 1903, Maj. Garland N. Whistler developed a new system of position finding while a fire commander at Fort Barrancas at Pensacola, FL. This new method used horizontal base lines that consisted of a group of primary fire control, or base end, stations and some distance away, a like number of stations that formed a secondary station group. Each fire command normally had primary (B') and secondary (B'') stations for each battery, plus a primary and secondary station for the fire commander (F' and F''). The stations of each fire command were built quite close together with their instrument piers in a line. The primary stations consisted of observation and plotting rooms, while the secondary stations were only observing rooms. The Barrancas System placed the battery commander in the primary station rather than at the battery. Some batteries built while the system was in vogue had no plotting room in the battery structure.

A "Modified Barrancas System" was adopted by the War Department in 1904 and Portland Harbor was one of three locations where the system was installed and evaluated. The system was designed to make it less vulnerable during an engagement. If one B' or B'' station were destroyed, target data

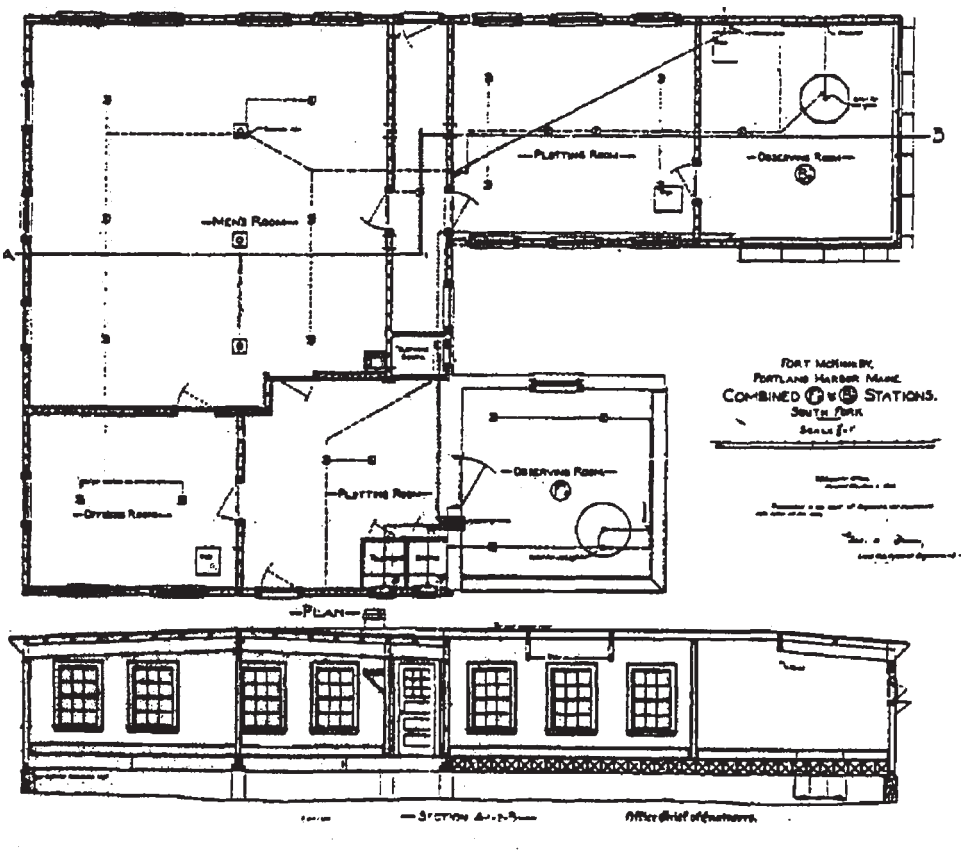
from another station in the base line could be used. However, the close proximity of the stations was such that if one station was destroyed, especially by fire, adjacent stations might be put out of action as well. In addition, it was noted that only rarely do different batteries even in the same fire command have identical fields of fire. Consequently, after several years, the Barrancas System was abandoned. The battery commanders moved back to their batteries and plotting rooms were returned to the batteries. Where batteries lacked battery commanders stations (BCS) or plotting rooms, these were built adjacent to the battery. The primary and secondary stations, however, continued to provide target data to the plotting room.



Combined BCS and plotting room, Battery Honeycutt, Fort McKinley. *NARA*

Between 1906 and 1910, the permanent fire control system for the Artillery District of Portland was installed and turned over to the coast artillery.(268) A large number of fire control stations were constructed as primary or secondary stations of batteries or fire commands. Because of the elevation of Portland Harbor's islands, most were equipped with DPF instruments for the vertical-base position finding system. The initial structures that housed these stations were frame, but at several locations, a number of experimental buildings were built using non-flammable materials.

An experimental fire control structure suggested by Capt. John S. Sewell of the engineers and built about 1905 by Maj. William M. Black proved very satisfactory. Metal laths were nailed to a timber stud frame, and this lathwork was covered with cement plaster, while a tin roof was laid on a sheath and frame of timber. However, the noise from rain on the tin roofs soon resulted in their replacement with tar and gravel. This construction known as "Sewell-type" became standard for numerous functions reasonably distant from gun or mortar batteries. Structures closer to batteries were more commonly built of concrete to better survive the blast of the guns.(269)



Combined BCS and plotting room, Battery Weymouth, Fort McKinley. *NARA*

As most fire control sites at Portland in the early 1900s were some 60 to 80 feet above sea level, most position finding stations did not need towers. The B' stations were about 16 feet wide and 29 feet long, with two levels. The upper level at the front of the station served as the observation room. The concrete instrument pier was well anchored in the ground and extended through a hole in the floor of the room, with no part of the structure touching the pier. Behind the observation room, the plotting room, about 15 by 16 feet, was some five feet below the observing room, with a flight of steps connecting the two levels.

The B'' stations were smaller one or two-story frame structures; each level was about 10 feet square with a stairway on the exterior. Roofing was the same as the primary stations. The instrument pedestal extended through both floors.

Barrancas fire control stations were established primarily at Forts Williams and Levett. Because of the height of the terrain, most could be located in buildings rather than atop towers; some were single-story; others had two or more levels. Between 1904 and 1908, the major-caliber gun batteries were organized into three fire commands, each with primary and secondary position-finding stations housed in structures that incorporated plotting rooms in accordance with the Barrancas System.

Two battle commands were established for the tactical command and control of the Portland defenses. The first was composed of the First, Second, and Third Fire Commands at Forts Williams, Levett, and Preble, and the First Mine Command that also controlled the small-caliber gun batteries at Forts Williams and Levett. The command post of the First Battle Command, or C-1 Station, was in a two-room Sewell structure behind the center of Battery Sullivan.

Early 1900s primary fire control station and plotting room at Fort McKinley. *Author's Collection*

The Second Battle Command encompassed the Fourth, Fifth, and Sixth Fire Commands at Fort McKinley and the Second Mine Command that controlled the R-F guns at Forts McKinley and Lyon. The C-2 station was a three-room Sewell building 82 feet above sea level, above and to the rear of Battery Ingalls' left flank.

The First Fire Command controlled Batteries Blair, De Hart, Sullivan, and Garesché from its F' in a brick and Sewell-construction four-room building atop a 60-foot hill near the southwest boundary of Fort Williams, which was transferred to the garrison July 15, 1908. The F'' at Fort Levett, the other end of the fire command's 3,520-yard baseline, occupied a single-story frame building on the northeast end of Cushing Island turned over to the coast artillery on January 29, 1909. Each battery of the fire command had an observing room in the building.

A two-room Sewell-type structure used as a fire control switchboard room was to the left of the F', 85 feet above sea level. This building was transferred on November 19, 1907. In April 1915, $1,500 was allotted for a protective parapet around the switchboard room, and on September 9, 1918, funds were allotted for a new "protected" (bombproof) switchboard room.

A two-room Sewell-type dormitory and latrines for officers and enlisted men assigned to C-1, the switchboard room, and related operations, transferred February 3, 1909, were behind Battery Sullivan's right flank near the command post.

The Second Fire Command controlled the mortars of Batteries Chase and Kearny at Fort Preble. Its two-room Sewell F' station, 100 feet above sea level at Whitehead on Cushing's Island, was turned over to the coast artillery on January 29, 1909. The F'' station was in the 10-room Sewell fire control complex at Fort Williams' southwest corner, and a supplementary (F''') station in a six-room Sewell building on Peaks Island was also transferred on January 29, 1909. The supplementary station enabled the mortars to use a baseline oriented northeast to cover the Hussey Sound approaches to Casco Bay,

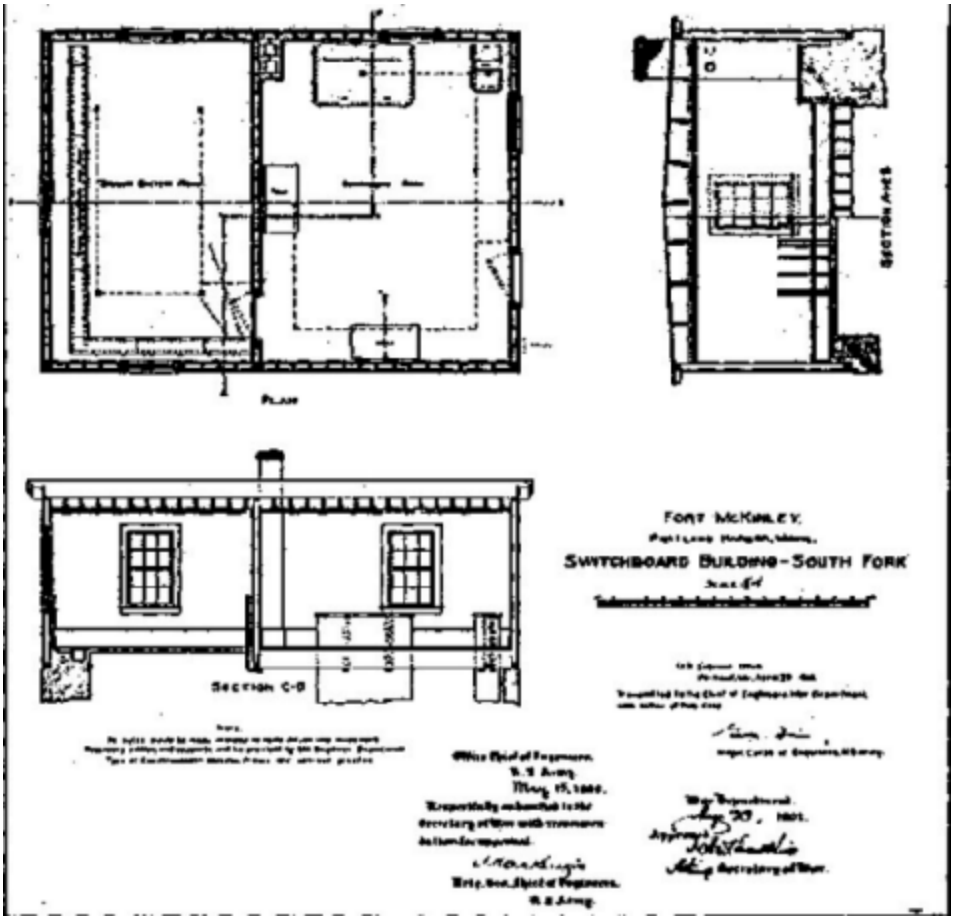
as well as the main channel. The fire control switchboard room in Fort Preble's 1870s North Battery was a two-room Sewell building transferred November 2, 1916. A new bombproof Sewell switchboard room about 90 feet west of Battery Mason was transferred to the garrison August 23, 1921.

The Third Fire Command comprised Batteries Bowdoin, Kendrick, and Ferguson. The F', transferred January 29, 1909, was in a two-room Sewell structure, 98 feet above sea level, at the Whitehead fire control complex. The Third Fire Command's baseline, like that of the First Fire Command, was also about 3,520 yards. The secondary stations were in the southwest corner of Fort Williams in the ten-room Sewell building at Fort Williams' southwest corner. Batteries Bowdoin and Kendrick had their two-room B's at Whitehead, close to F'. No fire control stations were provided for Battery Ferguson. The fire control detachments at Whitehead were housed in a two-room Sewell dormitory transferred January 29, 1909, along with the switchboard room for the fire command, a two-room Sewell structure also at Whitehead.

When the fire control system was established, no attempt was made to employ the Barrancas System with Fort McKinley's three fire commands. The fire commands utilized the vertical position-finding system with DPFs and did not require B'' stations. C-2, a three-room Sewell structure behind Battery Ingalls on an 82-foot hillock, was transferred August 11, 1908.

BCS, plotting rooms, and B's of the battle command were generally in close proximity to the batteries they served, sometimes in the same structure.

The fire control switchboard room for the Second Battle Command was also at Fort McKinley. Detachments manning C-2, the switchboard room, and the Sixth Fire Command F' used a four-room



South Fork fire control switchboard room, Fort McKinley. *NARA*

Sewell dormitory behind C-2. Funds were allotted for new protected fire control switchboard rooms on both the North and South Forks September 19, 1918, and they were transferred to the garrison on August 23, 1921.

The Fourth Fire Command, Battery Ingalls' eight 12-inch mortars, had its F' in a six-room Sewell building atop a 100-foot hill on Peaks Island. F'' was in a two-room Sewell structure at the Whitehead fire control complex on Cushing Island.

A supplementary (B''') station for Battery Ingalls was in a one-room brick station, lit by a concrete and glass roof (sometimes termed sidewalk glass). To the left of Battery Ingalls at about 78 feet elevation, it was transferred on February 24, 1905. A nearby one-room dormitory was provided.

The Fifth Fire Command was composed of Batteries Weymouth, Carpenter, and Honeycutt on Great Diamond Island's South Fork. The F' was in an older brick station with a concrete and glass roof, built in the early 1900s at 96 feet elevation, between Batteries Weymouth and Carpenter. The structure, also serving as B' for Battery Weymouth, was modified about 1908 when the concrete and glass roof was covered with a tar and slag roof and a Sewell addition gave the station a total of six rooms. Battery Honeycutt's B' occupied another three-room brick and Sewell building at an elevation of about 75 feet that was modified and transferred August 30, 1909. Battery Carpenter's B', at the left of the battery in a one-room Sewell building at an elevation of some 88 feet, was transferred on June 12, 1908. The fire control switchboard room for the fire command was in a two-room Sewell building adjacent to the one-room meteorological station of the same type behind Battery Weymouth. It was transferred to the garrison at the same time as Battery Carpenter's B'. The switchboard room remained unaltered until a new protected switchboard room was funded.

The Sixth Fire Command on the North Fork controlled Batteries Berry, Thompson, Acker, and Ramsay. The F' and its plotting room were near the C-2 station in a two-room brick building initially roofed with concrete and glass but later modified with tar and slag after its transfer to the garrison on February 24, 1905. Battery Thompson's B' was a three-room structure that had originally been a single-room brick station with a concrete and glass roof. It was modified about 1906 with two additional Sewell rooms and the roof was changed to tar and slag. Battery Berry's B' station, behind and to the right of the battery in a four-room structure of the same construction as Battery Thompson's, was transferred June 12, 1908. The B' for Battery Acker, at an elevation of 84 feet in a one-room Sewell structure behind Battery Thompson's right-flank traverse, was transferred June 12, 1908. Battery Ramsay was eventually equipped with a coincidence range finder (CRF) in a concrete station at the battery. Funds were allotted November 6, 1917, and the station was transferred December 30, 1920.(270)

Submarine Mines

When initially established during the Spanish-American War, the minefields were laid in "grand groups" of 21 mines, each group some 2,000 feet long. The mines, buoyant or ground, were electrically controlled from a mine casemate, and could be set to explode on contact or fired in groups of three by "judgment," using electricity from the mine casemate when the target vessel was passing over or near the plotted position of a mine. Both the main ship channel and the passage into Hussey Sound were provided with controlled minefields in the summer of 1898. Uncontrolled contact mines were also planted east of House Island in Whitehead Passage, between Peaks and Cushing Islands.

The initial mine casemates built in the early 1890s at Forts Williams, McKinley, and Preble proved too small and poorly ventilated; dampness caused short circuits and other electrical malfunctions. By the late 1890s, new plans were being developed for improved mine casemates. In the years following the Spanish-American War, several improvements were achieved in mine warfare, as the electrical wir-

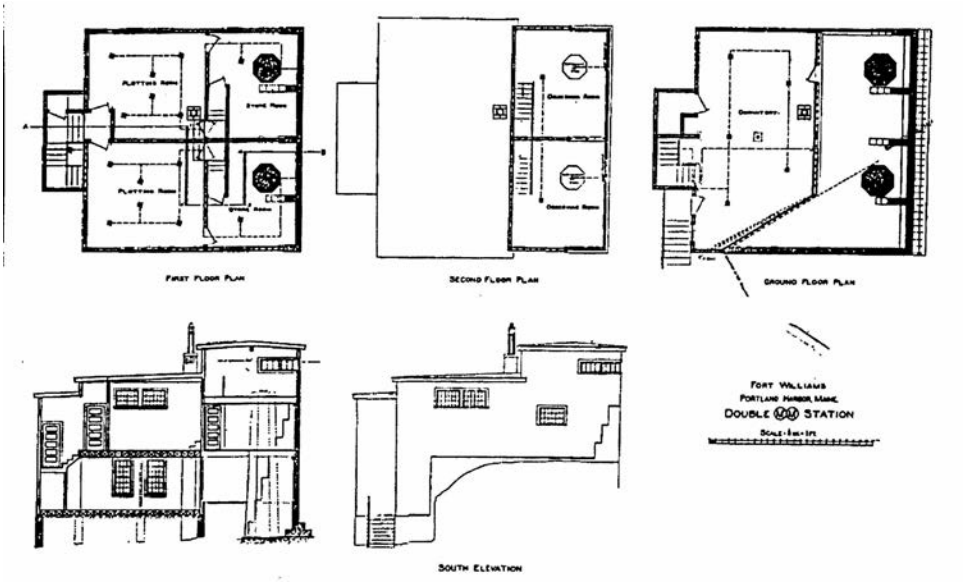
ing and control systems were improved. Formerly operated by the Corps of Engineers, the mines were passed to the Artillery Corps in 1901 and R-F batteries were assigned to the mine commands to protect the minefields. These factors, coupled with the tendency to relocate the minefields seaward toward the entrances to those channels, brought numerous changes to the mine defenses of Portland Harbor. Because of improved wiring, the number of mines in a grand group was reduced to 19 and each mine could be tested and exploded individually instead of in groups of three.

By the early 1900s, new mine casemates had been built at Forts Williams and McKinley; that at Fort Preble was to be abandoned. The new casemates were larger, and the heavy earthen embankment and thick concrete rear wall of the casemate was replaced by a wall with doors and windows to admit light and fresh air, while air spaces were left between the buildings and the concrete walls and ceilings. These new casemates were provided with both storage battery and generator rooms, as well as the mine operating room. Each grand group of mines was now provided with its own switchboard in the new mine casemates. In some cases, a small dormitory was provided for the casemate detachment. These casemates continued in service until no longer required, or until replaced in the early 1940s.

The submarine mine defenses consisted of two controlled minefields, each controlled by a mine command. The First Mine Command (Mines I) controlled the mines planted in the main channel, while the Second Mine Command (Mines II) controlled the Hussey Sound mines. In addition to the controlled minefields, there was to be a field of contact mines in Whitehead Passage. However, no mines would be planted in peacetime except for exercises.(271)

The primary station for Mines I was a double M' in a seven-room Sewell building on a ledge 51 feet above sea level, about halfway between Battery Sullivan and Battery Hobart. A double mine station could track two ships at a time. Two rooms were for observation and two were plotting rooms. The double M'' station was in the rear of Battery Erasmus Keyes. Both stations were transferred on July 15, 1908. Later the M'' station was moved to the top of Battery Keyes' magazine traverse and rebuilt of splinterproof reinforced concrete.(272)

Three mine casemates were built at Fort Williams between 1891 and 1940. The first, excavated out of the cliff on the south side of Ship Cove, proved crowded and inadequate, so early in the 20th century a new casemate was built to the left rear of Battery Hobart.



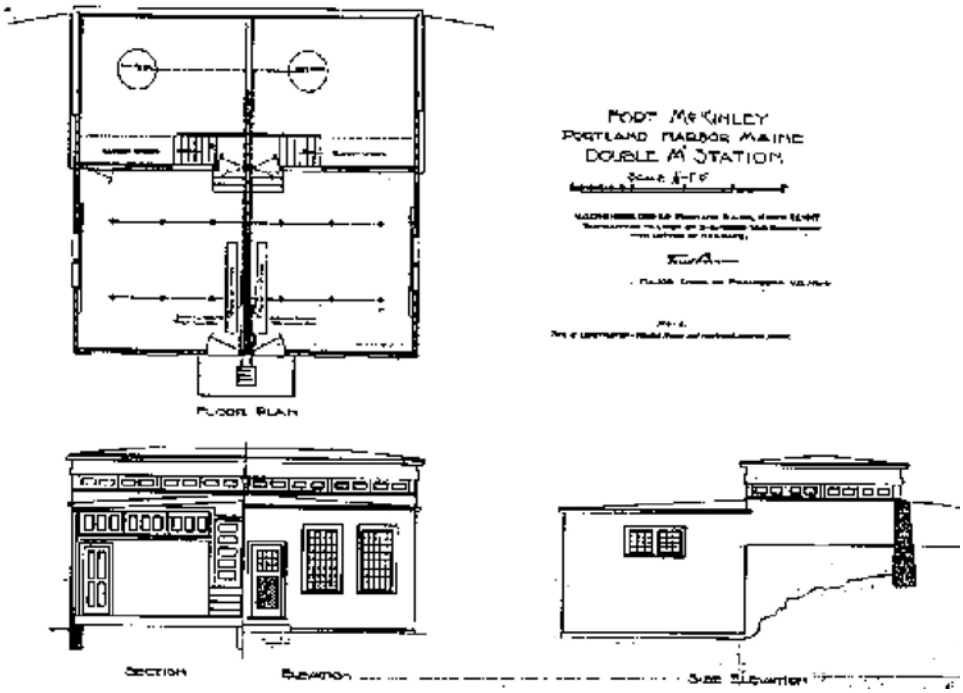
Fort Williams' double-primary mine station. *NARA*

On the eve of World War II, the main-channel minefields were advanced seaward and the original casemate was enlarged and rebuilt. After that, an "annex" was added to accommodate the increased number of mines projected for the main channel. The minefield defenses were also reorganized.

The facilities for the First Mine Command were at the head of Fort Williams' Ship Cove: the torpedo (mine) storeroom, the mine loading room, a cable tank, and a terminal hut. A railway extended to these structures and out along the ledge on the south side of Ship Cove to the mine wharf, where the mines would be loaded aboard an army mine planter.

In addition to controlling the minefields, the First Mine Command also controlled the 3-inch R-F guns of Battery Erasmus Keyes at Fort Williams and Battery Daniels at Fort Levett, which protected the inner minefield, and the 6-inch guns of Batteries Hobart, Ferguson, and Garesché that protected the outer field. The First Mine Command also controlled Battery George Mason's 3-inch guns and Battery Rivardi's 6-inch guns at Fort Preble that covered the contact minefield in Whitehead Passage.

The Second Mine Command (Mines II) initially controlled the minefields in Hussey Sound and protected the contact mines north of Great Chebeague Island. A mine casemate built in the early 1900s replaced the original casemate built in the 1890s. This second casemate, controlling the minefield at the entrance to Hussey Sound, was on Great Diamond Island's South Fork at Great Diamond Cove. Later, when another minefield was projected for Casco Bay between Great Diamond Island and Falmouth on the mainland, a second casemate was built on the North Fork to the left of Battery Farry to control these mines, but the Casco Bay minefield was deleted by 1920 and the casemate was never put in service. When the Hussey Sound minefield was advanced seaward on the eve of World War II, a new casemate was built on Peaks Island.(273)



Fort McKinley's double-primary station for the Second Mine Command (Mines II) on the South Fork. *NARA*

The double M' station for Mines II was four rooms in a Sewell building at the right rear of Battery Weymouth on the South Fork. The M'' was in a two-room Sewell building at Fort Lyon on Cow Island, directly behind Battery George Bayard at about 36 feet elevation.(274)

Mines II controlled three batteries of 6-inch guns - Batteries Acker and Carpenter on Great Diamond Island and Battery Bayard on Cow Island - and three 3-inch batteries, Ramsay and Farry on Great Diamond and Abbot on Cow Island. Batteries Carpenter, Bayard, Ramsay, and Abbot covered the Hussey Sound passage between Peaks and Long Islands, while Batteries Acker, Farry, and Abbot covered the waters north of Great Chebeague Island, where the contact minefield would be planted.

The support installations for the Second Mine Command along Great Diamond Cove, in addition to the mine casemate, included a torpedo storehouse, cable tank, mine loading room, dynamite storehouse, and mine wharf. The Hussey Sound minefield was illuminated by six searchlights, two on Peaks Island, two on Long Island, one at Fort McKinley, and another at Fort Lyon.(275)

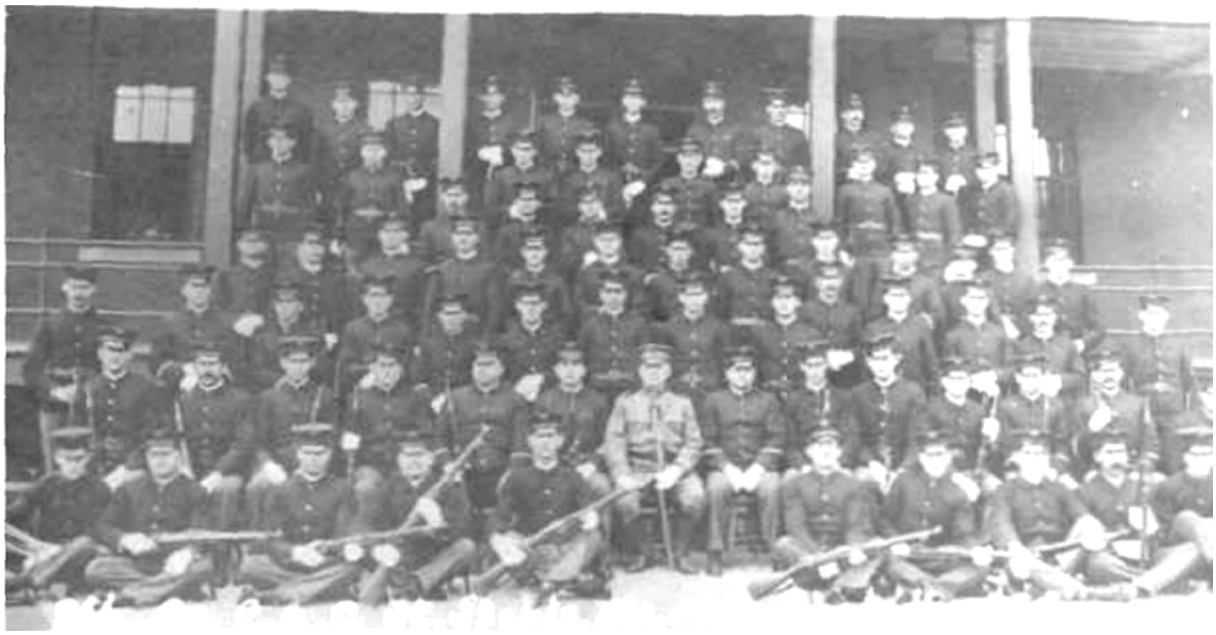
Antiaircraft Defenses

In 1916, consideration was given to defending the coastal defenses from aerial attack. Early in the year, plans were prepared for pairs of 3-inch antiaircraft guns at Forts Williams and McKinley. The War Department Board of Review recommended the four guns be installed and they were funded in the 1917 budget estimates. It is believed that the antiaircraft project underwent further revision during World War I, with two emplacements being constructed at Fort Scammell.

Although the emplacements were probably constructed during World War I, it is doubtful any guns were emplaced during the war. A new project approved May 29, 1920, called for two-gun batteries at Forts Lyon, Levett, Preble, and Williams.(276)

Creation of the Coast Artillery Corps

As early as 1903, the need was apparent for more coast artillery companies to man the seacoast batteries, existing and under construction. Further, the increasingly different missions of the field and coast artillery elements of the Artillery Corps supported arguments for creation of two separate



The 8th Company, CAC, at Fort Preble. *Author's Collection*

branches. New fortifications, both projected and begun, in Hawaii and the Philippines called for still more personnel. Many forts along the nation's seaboard were ungarrisoned or undermanned even by peacetime standards. In Portland Harbor, Fort Levett remained without a permanent garrison until 1907, when the 1st Company, CAC, came to Portland.

On January 25, 1907, Congress passed an "Act to Reorganize and to Increase the Efficiency of the Artillery of the United States Army," creating a separate Coast Artillery Corps (CAC). On February 2, 1907, the War Department implemented the act with G.O. No. 24. The coast artillery was increased from 126 companies to 170, and its authorized strength was increased to 700 officers and 19,323 enlisted men.

The 170 companies were to be comprised of "one captain, one first ieutenant, one second lieutenant, one first sergeant, one quartermaster sergeant, two cooks, two mechanics, and such number of sergeants, corporals and privates" as were required to man the battery to which the company was assigned.(277)

Numerous changes were made in the seacoast garrisons in 1907. New companies were constituted and organized, while other companies were transferred to new stations both within the United States and to the recently acquired overseas possessions. The 74th Co., CAC, was ordered from Fort Williams to Fort Screven, GA, departing April 3, 1907. The 75th Co., CAC, at Fort Preble, departed for Fort Moultrie, SC, the next day. These two companies were replaced by the 1st Co., CAC, which arrived at Fort Levett May 10 from Fort DeSoto in Tampa Bay, and the 5th Co., CAC, from Fort Screven, which reached Fort Williams on May 10.

In August 1907, the 154th and 155th Cos. were constituted and organized with men from the other companies in the harbor. This brought the Portland garrison up to 11 companies by the end of 1907.

Between 1907 and 1916, periodic changes in the coast artillery companies at Portland continued. Portland's garrison was enlarged by the arrival at Fort Williams of the 89th Co. from Fort Banks, MA, in April 1909. The additional companies also called for a shift within the harbor; the 1st and 8th Cos.

Barracks of the 8th Company, CAC, at Fort Preble. *Author's Collection*

were moved from Forts Levett and Preble to Fort McKinley.(278)

In late February 1911, the 23rd and 90th Cos. were transferred from Ft. McKinley to the Philippines, the 23rd Co. to Fort Wint in Subic Bay and the 90th to Fort Mills, on Corregidor, reducing the Portland garrison to 12 companies. As a result, the 107th Co. moved from Fort Preble to Fort Williams on March 15, 1911. In May 1911, the 50th and 51st Cos. arrived at Fort McKinley from the Philippines.(279)

In February 1912, the War Department ended the rotation of the Regular Army coast artillery companies between continental and overseas assignments. The units in the Philippines and Hawaii at that time were designated the permanent garrisons in those places, establishing a more stable structure for the Coast Artillery Corps. Permanent overseas garrisons also improved the stability of the continental garrisons, although more coast artillery companies would be dispatched overseas as the insular defenses were increased.(280)

The Portland Harbor garrison remained constant from 1912 through 1914. Col. Clarence P. Townsley, CAC, commanded the Portland Coast Artillery District in January 1912. His staff consisted of Capt. David Y. Beckham, CAC, adjutant; Capt. George T. Bartlett, QMC, post quartermaster; Capt. Arthur L. Fuller, CAC, artillery engineer; and 1st Lt. Philip S. Gage, CAC, ordnance officer. The garrison was composed of 12 CAC companies, the 1st, 8th, 24th, 37th, 50th, 51st, and 154th Cos. at Fort McKinley, the 5th, 49th, 89th, 107th, and 155th Cos. at Fort Williams.(281)

In April 1914, the 24th Co. was moved from Fort McKinley and the 107th Co. left Fort Williams, both for Fort Preble, which again became a two-company post after a few years as solely the Portland District headquarters. On October 13, 1914, the 50th Company moved from Fort McKinley to Fort Levett. In April 7, 1916, the 8th Co. departed Fort McKinley for the Panama Canal Zone.(282)

World War I

Prior to 1914, when world war erupted in Europe, the coastal defenses of the United States were considered among the most modern in the world, and Portland's defenses were on a par with the rest of the nation. The fourteen 10-inch and 12-inch disappearing guns and the twenty-two 12-inch mortars that constituted the primary defenses, coupled with the extensive minefields, were considered more than adequate to repulse an enemy fleet. In addition, the 14 R-F guns covering the minefields were considered capable of destroying lesser vessels such as cruisers, destroyers, and torpedo boats. When war broke out in Europe, plans were implemented to augment the overseas garrisons. The 8th Co. was transferred to Fort Amador in the PCZ, reducing the number of companies in Portland Harbor to 11.

However, by the second decade of the 20th century, major strides were being made in naval technology; larger, more heavily armed and armored warships were joining the world's fleets. In this country, 14-inch seacoast guns were adopted and the Ordnance Department was striving to make a suitable 16-inch gun. These weapons were, however, still too few in number and generally, seacoast weaponry, based largely on the Buffington-Crozier disappearing carriage, lagged behind the newest naval ordnance.

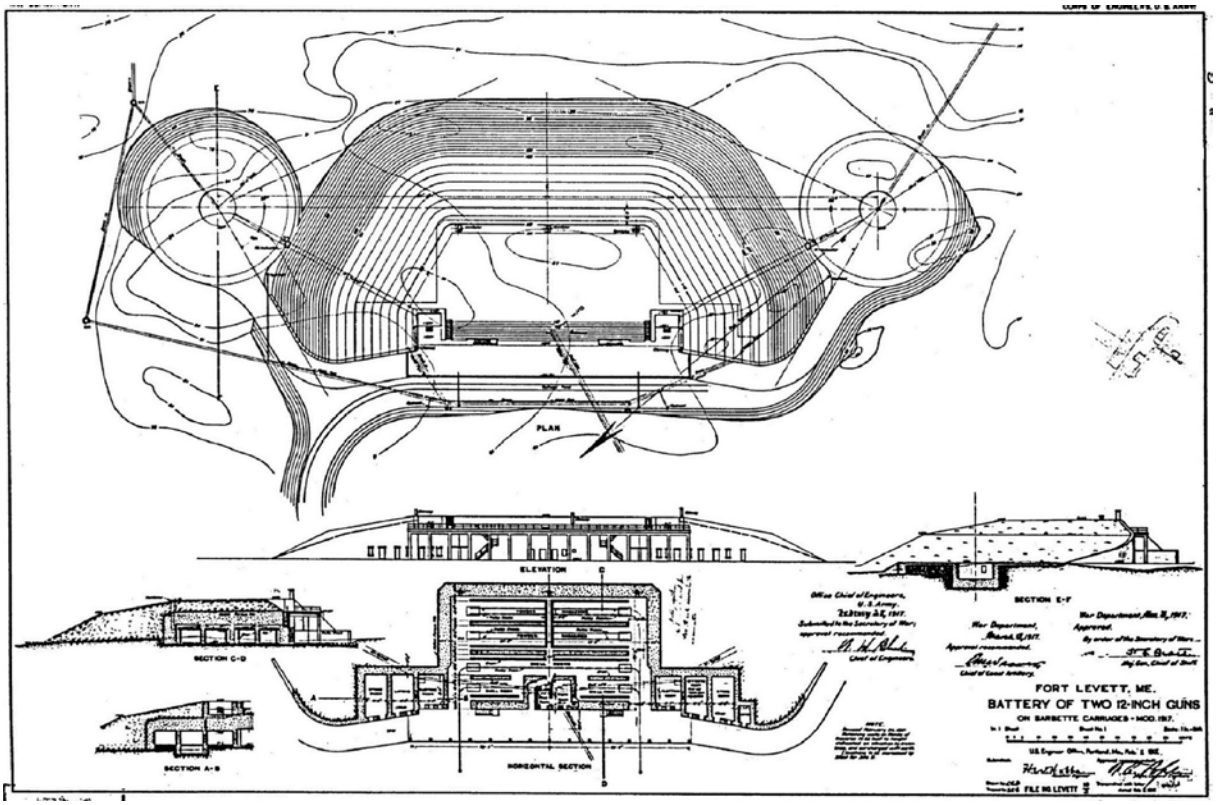
Increasingly concerned with the effectiveness of American coastal defenses, the secretary of war created a War Department Board of Review in March 1915. In a report dated November 26, 1915, the board made a number of recommendations, some which would have a direct effect on Portland's defenses. Among the findings were the need for 11 batteries of 16-inch guns, 12 batteries of 16-inch mortars, and 12 batteries of 12-inch guns on long-range barbette carriages, to be built in the continental United States. Another six 12-inch batteries, two 16-inch gun batteries, and three 16-inch mortar batteries were recommended for our overseas possessions. The 16-inch gun batteries were to be armed

with a new 16-inch gun then in development but still far from production.

In the interim, reliance would be on 12-inch gun batteries armed with 12-inch M1895 gun tubes held as replacements for the numerous disappearing batteries. These 12-inch guns mounted on new high-angle long-range barbette carriages would allow the guns to elevate to 35 degrees and fire to almost 29,000 yards. The same caliber gun on disappearing carriages at Batteries Blair, Berry, and Bowdoin could only range to about 17,000 yards. Additionally, the new long-range batteries would be capable of all around fire, not possible with limited-traverse disappearing-carriage emplacements.

The board recommended on June 9, 1915, and the secretary of war approved, construction of one long-range 12-inch gun battery on Cushing Island, and the carriages were provided for in the 1917 budget estimates. From this advanced location, the battery could cover the seaward approaches to the harbor over an arc of some 17 miles. Additionally, new fire control stations were to be built, submarine mine defenses improved, and additional searchlights and power plants installed. These improvements were estimated at $149,415.(283)

The uncertainties of the war in Europe hastened the long-range gun project and Portland Harbor ranked high on the list of priorities. The project was funded in 1917 and construction began that same year. Work progressed steadily and by the end of 1919, the battery was generally complete and ready for its armament. Located about 530 yards northeast of Battery Bowdoin, near the center of the Fort Levett reservation, the new battery was about 80 feet above sea level. On September 19, 1918, the district engineer was allotted $10,000 to mount the 12-inch guns and carriages. The end of World War I in November, however, diminished the urgency and it was not until 1920 that the two guns and their carriages were received and mounted. M1895A4 rifles Nos. 72 and 3 were mounted on M1917A2 long-range barbette carriages Nos. 12 and 13 during 1920, and the district engineer reported the



Battery Stephen M. Foote. *NARA*

battery complete on December 17. On January 21, 1921, the battery was transferred to the CD of Portland.(284)

This newest coast artillery battery was named in honor of Col. Stephen M. Foote, CAC. A second lieutenant in the 4th Artillery, he was a major, USV, with the 3rd US Volunteer Engineer Regiment during the Spanish-American War. Promoted to captain in the 6th Artillery in 1899, he served in Hawaii and the Philippines. Foote commanded the Artillery District of New Orleans, LA, 1907-1909, the Coast Defenses of San Francisco in 1915, and the South Atlantic Coast Artillery District 1915-1917, when he was promoted to brigadier general, National Army, to command the 163rd FA Brigade in France in 1918. General Foote returned to his permanent rank of colonel in 1919 and took command of the Coast Defenses of Boston until his death at age 60 at Fort Banks on October 30, 1919.(285)

The design of the new battery differed from the batteries built during the previous 20 years. The two circular concrete gun platforms, each 100 feet across, were about 320 feet apart. In the center of each emplacement was a circular gun well 23 feet across and 10 feet deep. Between the emplacements was a magazine-service traverse, with a thick covering of earth on its front and sides for bombproofing and concealment. From seaward, the battery site blended into the terrain.

The M1917 gun carriage was positioned over the gun well, its metal loading platform flush with the concrete loading platform. When the gun was elevated, the breech of the gun was depressed through a slot in the metal loading platform into the gun well. When being loaded, the gun had to be brought horizontal. From the rear of the concrete platform, a 15-foot-wide concrete roadway for moving powder charges and projectiles led to the rear of the traverse. The truck corridor along the rear of the traverse was roofed with a concrete slab two to three feet thick, supported by concrete columns 10 feet apart. This rear corridor could be enclosed by lowering metal shutters between the columns. Facing the rear corridor at each end of the traverse were storerooms, latrines, plotting rooms, and an

Battery Foote's Gun No. 1 at loading practice. *Private collection*

office. At the center of the traverse was an electric power room. A corridor at each end of the magazine portion of the traverse ran to the front of the magazine.

The front and side concrete walls of the traverse were seven and one-half feet thick, the rear, five and one-half feet. The interior walls were three to four feet thick. At each end of the center part of the magazine traverse, a two-flight concrete stairway led up to the open dual-level fire control stations atop the traverse, directly above the battery plotting rooms and connected with them by voice tubes. Adjacent to each station was a short flight of concrete steps to the earthen top of the traverse.

Ammunition service from the powder magazines was by cart, while projectiles were brought from the projectile rooms by a system of overhead trolleys to the truck corridor, where the powder charges and projectiles were placed on ammunition trucks and pushed out the rear corridor to the loading platforms.(286)

While Battery Foote was a substantial improvement over the disappearing gun batteries in terms of increased range and all-around fire, the gun platforms were less well protected. For a few years, the battery's height above the shore contributed to its safety; but as naval ordnance continued to develop, this advantage diminished. This vulnerability was compounded after World War I, as the military role of aircraft continued to increase. From the air, the concrete gun platforms appeared as gigantic bulls eyes.

The increasing threat of World War led Congress to pass the National Defense Act of 1916, providing a 50 percent augmentation of the Coast Artillery Corps, to 1,200 officers and 30,009 enlisted men in five equal increments over the next five years. This had no immediate impact on Portland's defenses, although some 17 new companies were organized in other harbors. Only the first of the increases had been accomplished when the nation entered the World War and the remaining installments were immediately authorized.(287)

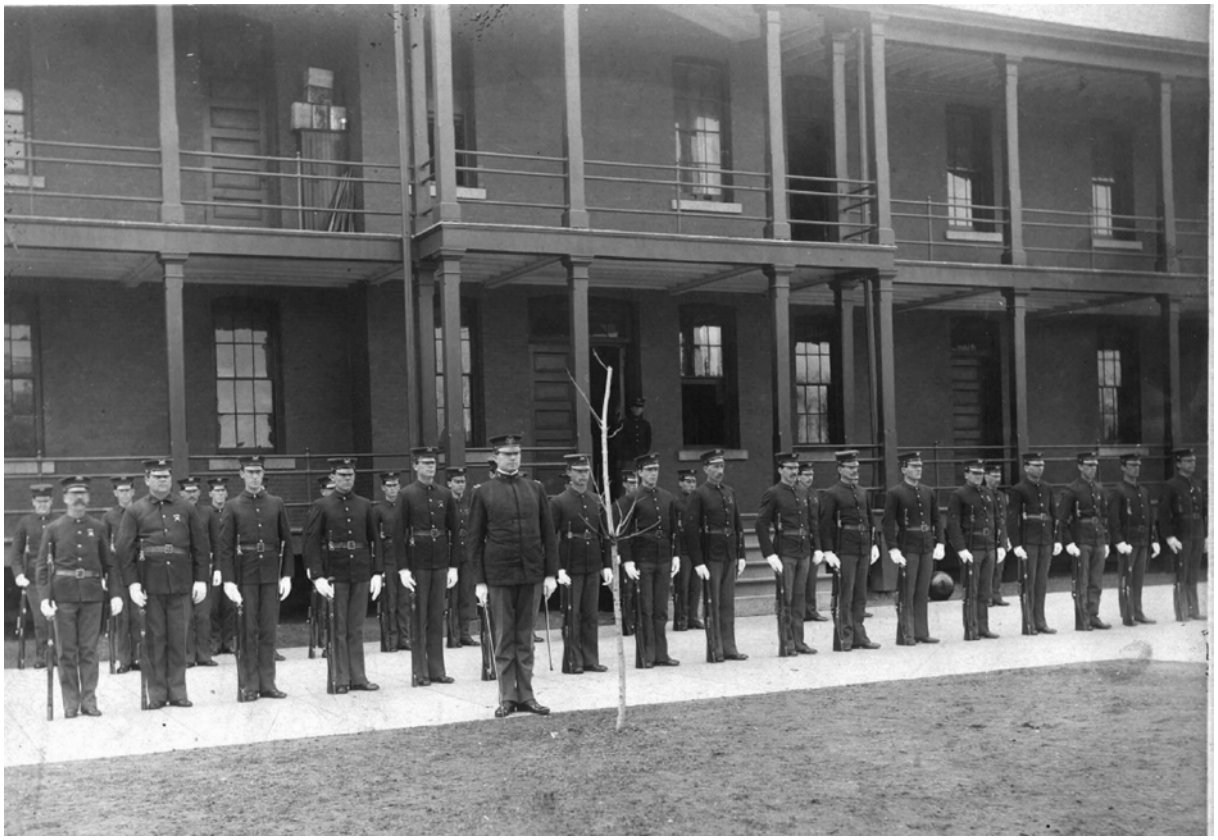
On July 24, 1916, the old serially numbered separate companies were redesignated and renumbered according to the post to which they were assigned:(288)

1st Co., CAC, redesignated 1st Co., Fort McKinley
5th Co., CAC, redesignated 2nd Co., Fort Williams
24th Co., CAC, redesignated 2nd Co., Fort Preble
37th Co., CAC, redesignated 3rd Co., Fort McKinley
49th Co., CAC, redesignated 3rd Co., Fort Williams
50th Co., CAC, redesignated 1st Co., Fort Levett
51st Co., CAC, redesignated 2nd Co., Fort McKinley
89th Co., CAC, redesignated 4th Co., Fort Williams
107th Co., CAC, redesignated 1st Co., Fort Preble
154th Co., CAC, redesignated 4th Co., Fort McKinley
155th Co., CAC, redesignated 1st Co., Fort Williams

In April 1917, soon after the United States entered the World War on the side of the Allied Powers, the Portland garrison was increased to 13 companies when the 5th and 6th Cos., Fort McKinley, were organized on April 19. On July 1, two more companies were organized at Fort Williams: the post headquarters company, redesignated the 5th Co. (HQ), Fort Williams; and the 6th Co., Fort Williams.(289)

Scarcely had these two new companies been organized in July 1917 when orders were received July 6, 1917, for Portland to send six companies to Fort Adams, RI, where they became firing batteries of the 6th Provisional Regiment, one of three regiments of a Coast Artillery Corps expeditionary brigade slated to man heavy-caliber railway artillery in France.(290)

1st Co., Ft. McKinley, became Battery A, 6th Prov. Regiment
5th Co., Ft. McKinley, became Battery D, 6th Prov. Regiment
1st Co., Ft. Preble, became Battery E, 6th Prov. Regiment
4th Co., Ft. Williams, became Battery F, 6th Prov. Regiment
3rd Co., Ft. Williams, became Battery G, 6th Prov. Regiment
5th Co., Ft. Williams, became Battery H, 6th Prov. Regiment



The 24th Company, CAC, in front of its Fort Preble barracks, 1915. *Author's Collection*

The remaining seven companies of the 6th Prov. Regiment were drawn from the coast defenses of Boston, Narragansett Bay, and the Delaware River. The brigade sailed for France in early August, and in January, 1918, the regiment was redesignated the 51st Artillery, CAC, forming part of the Railway Artillery Reserve of the AEF in Europe until January 1919.

The withdrawal of half of Portland's Regular Army coast artillery companies resulted in the mobilization of the Maine National Guard Coast Artillery Corps on July 25, 1917. Thirteen National Guard companies, a band, and assorted attached units arrived July 27. On August 5, 1917, the National Guard troops under Col. William O. Peterson were mustered into federal service in the CD of Portland. The National Guard companies were quickly absorbed, swelling the number of companies on duty in the harbor.(291)

The National Guard companies were redesignated as follows:

1st Co., MeNG, redesignated 7th Co., Ft. Williams
2nd Co., MeNG, redesignated 2nd Co., Ft. Levett

3rd Co., MeNG, redesignated 7th Co., Ft. McKinley
4th Co., MeNG, redesignated 1st Co., Ft. Baldwin
5th Co., MeNG, redesignated 8th Co., Ft. Williams
6th Co., MeNG, redesignated 3rd Co., Ft. Levett
7th Co., MeNG, redesignated 9th Co., Ft. Williams
8th Co., MeNG, redesignated 3rd Co., Ft. Preble
9th Co., MeNG, redesignated 8th Co., Ft. McKinley
10th Co., MeNG, redesignated 4th Co., Ft. Preble
11th Co., MeNG, redesignated 9th Co., Ft. McKinley
12th Co., MeNG, redesignated 10th Co., Ft. McKinley
13th Co., MeNG, redesignated 1st Co., Ft. Lyon

Thus by mid-August 1917, the coast artillery companies were distributed as follows:

Fort Williams -	9 companies
Fort McKinley -	10 companies
Fort Preble -	4 companies
Fort Levett -	3 companies
Fort Lyon -	1 company
Fort Baldwin -	1 company

The July 24, 1916, restructuring of the CAC lasted only about a year. In 1913, the Artillery District of Portland was renamed the Coast Defenses of Portland, and on July 26, 1917, the coast artillery companies were renumbered as companies of the coast defenses. The companies serving in the harbor forts were therefore redesignated:(292)

5th Co., Ft. Williams, redesignated 1st Co., CD Portland
6th Co., Ft. Williams, redesignated 2nd Co., CD Portland
1st Co., Ft. Williams, redesignated 3rd Co., CD Portland
2nd Co., Ft. Preble, redesignated 8th Co., CD Portland
1st Co., Ft. Levett, redesignated 9th Co., CD Portland
2nd Co., Ft. McKinley, redesignated 12th Co., CD Portland
3rd Co., Ft. McKinley, redesignated 13th Co., CD Portland
4th Co., Ft. McKinley, redesignated 14th Co., CD Portland
6th Co., Ft. McKinley, redesignated 16th Co., CD Portland
7th Co., Ft. Williams, redesignated 17th Co., CD Portland
8th Co., Ft. Williams, redesignated 18th Co., CD Portland
9th Co., Ft. Williams, redesignated 19th Co., CD Portland
3rd Co., Ft. Preble, redesignated 20th Co., CD Portland
4th Co., Ft. Preble, redesignated 21st Co., CD Portland
2nd Co., Ft. Levett, redesignated 22nd Co., CD Portland
3rd Co., Ft. Levett, redesignated 23rd Co., CD Portland
7th Co., Ft. McKinley, redesignated 24th Co., CD Portland
8th Co., Ft. McKinley, redesignated 25th Co., CD Portland
9th Co., Ft. McKinley, redesignated 26th Co., CD Portland

1st Co., Ft. Lyon, redesignated 27th Co., CD Portland
10th Co., Ft. McKinley, redesignated 28th Co., CD Portland
1st Co., Ft. Baldwin, redesignated 29th Co., CD Portland

4th Co., CAC, Maine National Guard, at Fort Williams, 1914. *Kenneth E. Thompson Jr. Collection*

The renumbering had hardly taken effect when the coast defenses were called on in August 1917 for personnel for the artillery and engineers of the 26th Division being organized. A draft of 169 National Guardsmen from the 17th, 21st, 23rd, and 28th Cos. was transferred on August 23.

Soon after the initial coast artillery troops arrived in France, a decision was made to organize additional regiments to man the heavy and medium-caliber artillery needed for the Western Front. Each regiment would consist of a headquarters company, a supply company, and six lettered firing batteries organized into three two-battery battalions. Initially about a dozen of these coast artillery regiments were authorized and constituted in late 1917 and early 1918. Later in 1918 plans were developed to activate still more artillery regiments. In addition to the 6th Prov. Regiment in August 1917, Portland was called upon to supply personnel for two more regiments.

54th Artillery Regiment, CAC

The National Guard companies had scarcely been merged into the Portland garrison when orders were received in December 1917 to organize a full regiment of coast artillery troops to man 6-inch guns on wheeled carriages in France. As the National Guard companies constituted the largest proportion of troops in the harbor, the greater part of the regiment was drawn from them. The 54th Artillery, CAC, was organized December 25, 1917.

The National Guard companies serving in Portland for the most part had only about half the strength required for a battery of artillery on overseas service. Consequently, two National Guard companies each were required for the supply company and the four batteries of the 54th Artillery to be composed of guardsmen. The remaining three batteries were to be Regular Army companies from the coast defenses.

The 54th Artillery, CAC, was made up of the following companies from the CD of Portland:

1st Co., redesignated HQ Company
20th Co., redesignated Supply Company
2nd Co., redesignated Battery A
18th Co., redesignated Battery B
19th Co., redesignated Battery B
12th Co., redesignated Battery C
16th Co., redesignated Battery C
22nd Co., redesignated Battery D
29th Co., redesignated Battery D
24th Co., redesignated Battery E
27th Co., redesignated Battery E
25th Co., redesignated Battery F
26th Co., redesignated Battery F

The ranks of the 54th Artillery were further bolstered with National Army draftees, and after training in the winter of 1918, its organization was completed in March. The regimental supply company and Batteries A and B left Portland for the Hoboken, NJ, Port of Embarkation (POE) on March 14. The supply company sailed on SS *Baltic*, and Batteries A and B on SS *Niagara,* for Le Havre on March 16. Regimental headquarters and Batteries C, D, E, and F, under Col. Malcolm Young, sailed from Portland on SS *Canada* March 22, arriving Le Havre April 6. The 54th was sent to the camp at Mailly-le-Camp (Aube) until May 2, 1918, when it was transferred to Haussimont (Marne). Not destined to see action as a unit; the 54th was the replacement regiment for American railway and tractor-drawn artillery regiments.(293)

On September 20, 1918, the 54th Artillery was reorganized into three battalions with new stations until the Armistice. The 1st Bn (Batteries A and B) was the Training Bn, posted at Angers (Marne-et-Loire). The 2nd Bn was the Tractor Replacement Bn at Doulevant-le-Chateau (Hauts Marne). The 3rd Bn, the Railway Artillery Replacement Bn, remained at Haussimont (Marne) and Angers (Marne-et-Loire). The regiment sailed from Brest February 23, 1919, aboard SS *Vedio*, arriving Boston March 7. The regiment moved to Camp Devens, MA, where it was demobilized March 13, 1919.(294)

72nd Artillery Regiment, CAC

On May 31, 1918, a large contingent from the CD of Portland was assigned to a new artillery regiment. Rather than transfer entire companies to the 72nd Regiment, all transfers of personnel were done individually. The 72nd Artillery, CAC, was organized in June 1918 and in August moved to the POE at Montreal, Canada, from which it shipped out for France, arriving that same month and moving to the Organization and Training Center at Limoges. There it was assigned to the 35th Artillery Brigade, equipped with British 9.2-inch howitzers. After practicing on the range at La Courtine, the regiment was ready to go on the line as army artillery at the time of the Armistice, but it saw no actual combat. The 72nd Artillery remained in France until finally returned to New York by way of Brest later in March 1919, and was sent to Camp Upton, NY, and demobilized in April 1919.(295)

5th Antiaircraft Battalion

In September 1918, the CD of Portland organized a battalion of antiaircraft troops from coast artillerymen. The 5th AA Bn, CAC, was formed at Fort Williams and ordered later that month to Camp Merritt, NJ, to prepare for overseas service. In October, the battalion sailed for France from the Hoboken POE. There it went into an AA training camp at Arnaudville-les-Gonesse, where it was redesignated the 5th AA Sector in early November 1918. However, the war ended before it saw action and within days, orders were issued to demobilize the AA units. The majority of the Regular Army personnel of the 5th Sector were retained in France and assigned to the newly organized Third Army, while the National Army and National Guard personnel returned to the United States in January 1919. On arrival in New York, the organization was processed at Camp Mills, NY, then demobilized at Camp Devens, MA, later in January.(296)

29th Artillery Regiment, CAC

Expecting that the war could last several more years, measures were taken in late October 1918 to organize still another regiment of artillery for France in the CD of Portland. The 29th Artillery, CAC, began its organization at Fort Williams in early November 1918, but the Armistice halted the regiment's organization and its National Army and National Guard personnel were demobilized in Portland in December 1918.(297)

Batteries Disarmed

By 1915, the War Department had determined that many of the medium and heavy-caliber guns and mortars then mounted in the nation's coastal defenses were no longer required, at least in light of the limited manpower to serve them. In some cases, the armament was obsolete, out-ranged by newer naval ordnance. In the case of the mortars, they could be served more efficiently if the number of mortars in a pit were reduced from four to two. Although war in Europe had begun as a war of mobility, by 1916 it had stagnated into a war of position, trench warfare in which large numbers of heavy-caliber guns pounded enemy field positions and paved the way for massed infantry assaults. When the United States entered the war in April 1917, the Allies called upon the United States to provide additional medium and heavy artillery, along with the men to man them.

The chief of coast artillery was soon instructed to release armament that could be safely dispensed with. By 1917, the Austro-Hungarian navy was confined to the Adriatic by the Italian and British navies, and the German High Seas Fleet no longer posed a threat. It was considered safe for the United States to dismount some 385 guns ranging from 3-inch R-F guns to 12-inch guns and mortars from the nation's coast defenses for remounting on field and railway carriages, and for use on transport ships.(298)

The removal of excess armament from the CD of Portland began May 3, 1917, when Col. Charles L. Phillips, CAC, commanding the North Atlantic Coast Artillery District, directed that Batteries Chase, Kearny, and Ingalls be reduced to four mortars each. The first to be dismounted were those at Fort Preble. This required dismounting six 12-inch mortars (Nos. 33, 17, 36A, and 30 from Battery Chase and Nos. 10 and 36B from Battery Kearny) and on May 24 the mortars were shipped to Morgan Engineering Co. to be remounted on railway cars.

On August 24, 1917, Battery Kendrick's two 10-inch and the 6-inch guns of Batteries Rivardi, Garesché, Carpenter, and Bayard were ordered dismounted. Battery Kendrick's guns were dismounted and moved to the Fort Levett wharf, where they reposed for the remainder of the war. The pair of 10-

inch guns were later remounted and remained in place until December 1942, when they were authorized for salvage. The 6-inch guns were also removed from their carriages and prepared for shipment to Morgan Engineering and Watervliet Arsenal preliminary to remounting on improvised wheeled carriages for field service in France.

On November 27, 1917, Battery Rivardi's M1903 6-inch guns were shipped to Watervliet Arsenal. From there, Gun No. 40 was sent to Fort Monroe, VA, for staging through the Newport News POE on March 29, 1918 and Gun No. 8 followed on April 17. Gun No. 8 went to France on July 29 and Gun No. 40 on August 26, 1918. Gun 40 returned to this country on June 7, 1919, Gun No. 8 on December 19. Both were sent to Aberdeen Proving Ground (APG), where their wheeled mounts were scrapped. In 1942, Gun No. 8 was forwarded to Newfoundland and emplaced in Battery Construction No. 282, while Gun No. 40 was sent to Fort Rosecrans at San Diego in 1943.

Battery Carpenter's M1900 guns were shipped to Morgan Engineering on November 28, 1917, and remounted on wheeled mounts. They were forwarded to Fort Monroe and staged for France through the Newport News POE in February 1918. Gun No. 10 was returned to the United States on February 15, 1919, and stored at Camp Eustis, VA, until May 27, when it was returned to Fort McKinley for remounting in Battery Carpenter. Gun No. 9 remained in France until May 5, 1919, when it was shipped to APG. On December 5, 1919, it was shipped back to Fort McKinley and re-emplaced in Battery Carpenter.

Battery Garesché's M1900 guns went to Watervliet Arsenal December 1, 1917, and from there to Morgan Engineering on April 12, 1918. Gun No. 45 was sent to Fort Story, VA, on August 3, 1918, and staged for shipment to France through Newport News. Upon returning to the United States, the gun was sent to Camp Eustis until April 5, 1921, when it was sent to Watervliet. Gun No. 46 was retained at Morgan Engineering until shipped to Aberdeen on September 30, 1918. Battery Garesché's wheeled mounts were scrapped and the guns placed in storage at Aberdeen until salvaged September 13, 1945.

On December 6, 1917, Battery Bayard's three 6-inch M1903 guns were also shipped to Watervliet. All three guns were remounted on wheeled mounts and sent to Fort Monroe for staging through Newport News for France. Following the war, the guns returned to the United States in June 1919

6-inch seacoast guns on wheeled carriages. *Author's Collection*

and were stored at Aberdeen until World War II. Gun No. 9 was removed from its wheeled mount and used to arm BCN 293 in the HD of Seward, AK. Gun No. 12 was similarly sent to Hawaii for BCN 301 in the HD of Kaneohe Bay. Gun No. 16, also dismounted, was shipped to the HD of Long Island Sound to arm BCN 215 at Fort H.G. Wright.(299)

With the departure of the 6-inch guns, Portland's coast defenses were undisturbed until May 25, 1918, when Battery Sullivan's three 10-inch M1888 guns (Nos. 22, 40, and 50) at Fort Williams were ordered dismounted and shipped to Watervliet for remounting on railway carriages. All three guns were dismounted, and shipped on June 28, 1918. Guns 22 and 50 were stored at Watervliet until declared obsolete and ordered salvaged in 1942. On April 13, 1920, Gun No. 40 was sent to Watertown Arsenal and provided with a railway carriage. On July 7, it was sent to the railway artillery brigade at Camp Eustis, until declared obsolete July 9, 1931, and ordered salvaged August 10.

Still more of Portland's armament was tagged for service in France when Battery Thompson at Fort McKinley was disarmed. In addition, the chief of coast artillery advised the CD of Portland on July 12, 1918, that the 10-inch guns of Battery DeHart at Fort Williams and the 8-inch guns of Batteries Honeycutt and Weymouth at Fort McKinley were also on the list for overseas service. Some of the above named guns were dismounted during the summer of 1918, but none was shipped away, however, as the need for additional armament in France had diminished.

In addition to the batteries in Portland Harbor, the three 6-inch guns at Fort Baldwin were also slated for overseas service. Barely seven years after receiving 6-inch M1905 disappearing gun (No. 10), Battery Hardman was dismounted, along with Battery Hawley's pedestal-mounted M1900 guns Nos. 47 and 48, to be remounted on railway carriages or transport ships. All three guns were shipped by December 4, 1917. Battery Hardman's gun went to Watervliet, while Battery Hawley's guns went to Morgan Engineering for conversion. This left Fort Baldwin with only the two 3-inch R-F guns of Battery Cogan.

Battery Hardman's gun was forwarded from Watervliet to Fort Story, VA, on May 23, 1918, where it was staged for shipment by way of Newport News on August 25, 1918. On December 19, 1919, the gun was returned to the United States and stored at Aberdeen until March 18, 1947. Battery Hawley's guns were shipped from Morgan Engineering to Fort Monroe on February 25, 1918, in anticipation of shipment to France. The guns were still at Newport News on October 19, when they were sent to nearby Camp Eustis until April 3, 1919, then returned to Fort Baldwin for remounting in Battery Hawley.

Although many of the harbor's gun batteries were disarmed or slated for disarmament, a directive was issued soon after the end of hostilities to retain of the guns of Batteries DeHart, Honeycutt, and Weymouth that, although dismounted, still awaited shipment, and to rearm Batteries Sullivan, Kendrick, Carpenter, and Thompson. By the end of 1920 most of the batteries in the coast defenses had been fully rearmed. Battery Sullivan was rearmed with three M1888MII 10-inch guns manufactured by Bethlehem and transferred from other locations. No. 4 was shipped from Fort Monroe on November 6, 1919, and mounted in Emplacement No. 1. No. 5 was also shipped from Fort Monroe November 11, and mounted in Emplacement No. 2. Emplacement No. 3 was armed with Gun No. 11 that had been sent to Watervliet from Fort Stevens, OR, on June 21, 1918. After reconditioning, it was forwarded to Battery Sullivan on November 5, 1919.(300)

With the decision to retain most of armament following the war, wartime plans to update the ammunition service of the harbor's most powerful gun batteries were implemented. It was April 15, 1919; however, before new Taylor-Raymond projectile hoists replaced the Hodges hoists in 12-inch gun Batteries Blair at Fort Williams, Berry at Fort McKinley, and Bowdoin at Fort Levett.

Attempts to modify the M1898 Driggs-Seabury carriages had proven so inadequate that in 1916 the chief of ordnance had ordered the Driggs-Seabury guns fired only in combat situations; all practice firing was to be at batteries with newer-model guns. Following the war, the War Department authorized disarming the numerous M1898 3-inch batteries.

On March 27, 1920, Battery Daniels at Fort Levett and Batteries Farry and Ramsay at Fort McKinley were taken out of service and their armament removed. The guns were to be placed in storage but the troublesome masking-parapet carriages were to be scrapped. Thus, at the beginning of the interwar period, the Coast Defenses of Portland had five fewer batteries than in April 1917.

The companies used to organize the 54th Artillery in 1918 continued to perform their coast defense duties in the harbor forts until the regiment departed, leaving only 10 companies to man the five Portland forts and Fort Baldwin. The 2nd, 3rd, and 17th Cos., CD of Portland, were at Fort Williams, the 14th and 28th Cos. at Fort McKinley, the 9th and 23rd at Fort Levett, the 21st at Fort Preble, the 27th at Fort Lyon, and the 13th Co. was at Fort Baldwin.

The shortage of personnel to man the batteries resulted in the organization of additional companies of coast artillery for Portland. With the departure of the 54th Artillery in March 1918, room became available at the various posts for the new National Army recruits and draftees.

Four new companies were organized in March at Fort McKinley, the 12th(II), 16th(II), 24th(II) and the 25th(II) Cos. At Fort Preble, the 8th(II) Co. was organized. At Fort Williams, the 18th(II) Co. was added to the garrison while the 22nd(II) Co. was organized at Fort Levett. The following month 13 more companies were added. The 10th(II), 11th(II), 15th(II), 26th(II), and 27th(II) Cos. were organized at Fort McKinley. Fort Preble received the 6th, 7th, and 20th(II) Cos. At Fort Williams four companies were added: the 1st(II), 4th, 5th, and 19th(II). At Fort Levett, one more company was added, the 29th(II). The result was 29 companies in Portland and one on the Kennebec River.(301)

Between the Two World Wars, 1919-1938

Demobilization and Reorganization

Soon after the November 11, 1918, Armistice, the demobilization of the vast American army began. During the war, the CAC had grown from an authorized strength of 881 officers and 30,009 enlisted men in April 1917 to 5,254 officers and 142,020 men in November 1918. Initially the peacetime authorized strength of the army was 280,000 men, with 30,000 allotted to the CAC, intended to bring the army back to the peacetime level established in 1916, sufficient to provide the CAC full peacetime strength for the insular possessions and half-strength manning of the continental coast defense commands.

However, since the establishment of the 30,000-man level in 1916, in addition to coast defense, the CAC had been assigned heavy railway and medium-caliber tractor-drawn artillery, as well as antiaircraft defense. These additional missions would require at least 10,000 additional men alone to man the proposed ten regiments of railway and tractor-drawn artillery and provide personnel for the fledgling antiaircraft defenses. However, no such augmentations would be forthcoming.(302)

To meet its basic training commitments regarding mobile artillery, by 1920 the CAC was forced to reduce the continental defenses to well below the optimum half-strength levels. In 1921, the army was reduced from 280,000 to 150,000, a cut of some 44 percent. The CAC was reduced proportionally, from 30,000 to about 16,000 and in June, 1922, when the army was further reduced to 125,000, the enlisted strength of the corps was reduced to a mere 12,026 men, less than in 1907.(303)

As a result of these drastic cuts, many coastal defenses in the United States were either inactivated or totally abandoned; in nearly all the rest, manpower was reduced to the minimum required for the maintenance of the gun and mortar batteries and submarine mine materiel.

Portland Defenses Reduced and Reorganized

When the World War ended, 29 companies of coast artillery were serving in the CD of Portland. The reductions in the coast defenses at Portland began with the discharge of the remaining Maine National Guard and National Army personnel. When the guardsmen were sent home, many companies were so reduced that they were no longer effective, forcing the consolidation of many companies and the demobilization of others, while the few regulars were transferred to the remaining active companies. By the end of 1919, the number of companies had been reduced to 12. During 1920, the Portland coast defense were reorganized and by December, the defenses had been reduced to 10 companies:(304)

1st Co., originally organized July 1, 1917, as the 6th Co., Ft. Williams, redesignated the 2nd Co., CD of Portland, August 1917, and 1st Co.(II), CD of Portland, March 18, 1918.

2nd Co., organized March 24, 1918, as 12th(II) Co., CD Portland, demobilized September 1919. Personnel used to organize 2nd Co, CD of Portland.

3rd Co., originally organized 1907 as the 155th Co., CAC. Redesignated 1st Co., Fort Williams, 1916 and 3rd Co., CD of Portland, August 1917.

4th Co., originally organized April 19, 1918, as 4th Co., CD of Portland. Absorbed 5th Co., August 1919.

5th Co., originally organized 1821 as Co. A, 4th U.S. Artillery. Redesignated 37th Co., CA, AC, February 1901. Redesignated 3rd Co., Fort McKinley, in 1916. Became 13th Co., CD of Portland, August 1918, redesignated 5th Co. in 1920. Transferred to Fort Totten, NY, August 1921.

6th Co., originally organized 1907 as the 154th Co., CAC. Redesignated 4th Co., Fort McKinley, 1916. Redesignated 14th Co., CD of Portland, August 1917. Merged into 13th Co. in 1919; consolidated company redesignated 6th Co. in 1920.

7th Co., originally organized April 1917 as 6th Co., Fort McKinley. Redesignated 15th Co., CD of Portland, August 1917. Absorbed 16th Co. 1919. Consolidated company redesignated 7th Co., CD of Portland, in 1920.

8th Co., organized March 25, 1918, as 8th Co.(II), CD of Portland. Absorbed 7th Co. in 1919.

9th Co., organized 1861 as Battery B, 5th U.S. Artillery. Redesignated 50th Co., CA, AC, February 1901. Redesignated 1st Co., Fort Levett, 1916, and 9th Co., CD of Portland, August 1918.

10th Co., organized April 5, 1918, as 10th Co., CD of Portland. Absorbed 11th Co. September 1919.

1922 CAC Reorganization

On May 12, 1922, the War Department undertook a sweeping reorganization of the Coast Artillery Corps. From 1901 until 1917, the basic unit of the corps was the company. Although provisional regiments had been formed from time to time for special purposes, not until World War I were regularly constituted regiments of coast artillery formed. Many mobile regiments of tractor-drawn and

railway artillery were to be retained in service for training purposes, and by 1922, several antiaircraft organizations had also been formed. This created parallel systems of organization for the CAC: serially numbered companies assigned to coast defense commands and lettered batteries assigned to numbered regiments. While the companies manning the fixed coastal defenses were formed into separate coast defense commands, the frequent redesignations soon confused historical lineages, damaging unit *esprit de corps*.(305)

One purpose of the reorganization was to restore the CAC's *esprit de corps* by reestablishing the historic lineages of the separate companies by returning to the old serial numbering system in place prior to 1916. A second purpose was to standardize the designations of the mobile battalions and regiments of heavy artillery. Third, the assignment of companies to the fixed coastal defenses was to be re-evaluated in light of the current defense situation in the harbors.

The 170 coast artillery companies that had been serially numbered in 1916 reverted to their pre-1916 numbers, while the batteries of the regiments organized in 1917 and 1918 were given additional designations as serially numbered companies of the CAC. Companies that had become batteries of regiments formed during the war and retained in active status following the war were given the serial numbered designations they held prior to 1916 as additional designations to their lettered battery designations. For example: The 1st Co., CAC, had a historic linage extending back to 1808 when it was organized at Fort Preble as Battery A, Regiment of Light Artillery. As a company of coast artillery after 1901, it had been posted at Forts Dade and DeSoto in Tampa Bay, FL, until transferred to Fort McKinley. In 1916 it became the 1st Co., Fort McKinley. The following year the company was redesignated Battery A, 6th Provisional Regiment, CAC, and subsequently Battery A, 51st Artillery, CAC, while overseas during the World War. In June 1922, Battery A assumed its additional designation of 1st Co., CAC.

New companies organized between 1916 and 1922 were assigned serial numbers between 171 and 273.(These redesignations proved to be only a first step to reorganize the CAC. The experience of the World War, where the CAC served with the field armies, was fresh in everyone's mind, and to facilitate that in the future, as well as to foster unit pride, the entire corps was reorganized along regimental lines in 1924.(307)

As a second goal in the 1922 reorganization, most of the continental garrisons were reduced to provide optimum peacetime strength for the overseas garrisons. At Long Island Sound, Sandy Hook, Chesapeake Bay, Pensacola Bay, San Francisco Bay, and Puget Sound, an attempt was made to maintain moderate-sized garrisons of coast artillery troops for training purposes. These reductions in the continental coast defenses allowed the army to maintain three regiments of railway artillery, four tractor-drawn regiments equipped with mobile 155 mm GPF guns, and three battalions of antiaircraft artillery in the continental United States. Overseas, 14 coast artillery companies were in the Territory of Hawaii, 21 in the Philippine Islands, and 16 in the Panama Canal Zone, although all of these units were far below nominal peacetime strength levels.

This reorganization reduced the Portland coast defenses and redesignated the companies assigned to the command. The 24th and 51st Cos. had been serving in Portland when the United States entered the war and later served in France as batteries of the 54th Artillery, CAC. Upon the 54th's return to the United States, both companies had been demobilized. In the 1922 reorganization, both companies were reconstituted, assigned to the CD of Portland, and consolidated with existing companies in the defenses. These consolidated companies then assumed the historic lineages of the 24th and 51st Cos.

The reorganization reduced Portland's peacetime garrison from ten companies to seven:(308)

> 1st Co., CD of Portland, raised July 1, 1917, as the 6th Co., CD of Portland. Redesignated 2nd Co., CD of Portland, August 1917. Redesignated 1st Co. March 18, 1918. Consolidated with reconstituted 24th Co., CAC. [24th Co. had been redesignated 2nd Co., Fort Preble, in 1916 and in August 1917 had become 2nd Co., CD of Portland. In December 1917, it was redesignated Battery A, 54th Artillery, CAC, and served in France from March to December 1918, first as Battery A, Replacement Regiment, Railway Artillery Reserve, and later as Battery A, 1st Replacement Bn, Army Artillery. In March 1919, the battery was disbanded at Camp Devens, MA, and reconstituted June 1922.] Consolidated company redesignated 24th Co., CAC.
>
> 2nd Company, CD of Portland, organized 1861 as Battery B, 5th U.S. Artillery. Redesignated 50th Co., CA, AC, February 1901, and 50th Co., CAC, 1907. Redesignated 1st Co., Fort Levett, 1916, and 9th Co., CD of Portland, in August 1917. In June 1922 merged with 2nd Co., CD of Portland [12th Co.(II), CD of Portland, 1918-20] and redesignated 50th Co. CAC. Transferred to CD Long Island Sound later in 1922.
>
> 3rd Company, CD of Portland, organized 1907 as 155th Co., CAC. Redesignated 1st Co., Fort Williams, in 1916. In August 1917 redesignated 3rd Co., CD of Portland, and 155th Co., CAC, June 1922.
>
> 4th Company, CD of Portland, organized April 19, 1918, as 4th Co., CD of Portland. Absorbed 5th Co., CD of Portland, in August 1919. Consolidated with reconstituted 51st Co., CAC, in June 1922 and redesignated 51st Company, CAC. [51st Co., CAC, initially constituted as Battery C, 5th U.S. Artillery, 1861. Redesignated 51st Co., CA, AC, in February 1901 and 51st Co., CAC, in 1907. Redesignated 2nd Co., Fort McKinley, July 1, 1916, and 12th Co., CD of Portland, August 31, 1917. In December the company was redesignated Battery C, 54th Artillery, CAC. Served in France as Battery C, Replacement Regiment, Railway Artillery Reserve, and later as Battery C, 1st Replacement Bn, Army Artillery. Demobilized March 1919 at Camp Devens, MA. Reconstituted June 1922 and consolidated with 4th Co., CD of Portland, and redesignated 51st Co., CAC. Transferred to CD of Long Island Sound later in 1922.
>
> 5th Company, CD of Portland, organized 1907 as 154th Co., CAC. Redesignated 4th Co., Fort McKinley in 1916. Redesignated 14th Co., CD of Portland, in August 1917. Merged with 13th Co. in 1919 and redesignated 6th Co. in 1920. Redesignated 5th Co., CD of Portland, August 1921. [Former 5th Co., CD of Portland, was transferred to Fort Totten, NY, in 1922, to become part of the 62nd Artillery, CAC (AA).]
>
> 6th Company, CD of Portland, organized in 1821 as Co. A, 4th U.S. Artillery. Redesignated 37th Co., CA, AC, February 1901, and 37th Company, CAC, in 1907. Redesignated 3rd Co., Fort McKinley, in 1916 and 13th Co., CD of Portland, August 1917. Absorbed 14th Co. September 1919. [14th Co., CD of Portland, organized 1907 as 154th Co., CAC. Redesignated 4th Co., Fort McKinley, 1916 and 14th Co., CD of Portland, August 1917.] In June 1922, 13th Co. consolidated with 6th Company and redesignated 154th Co., CAC.
>
> 7th Company, CD of Portland, organized April 1917 as 6th Co., Fort McKinley. Redesignated 15th Co., CD of Portland, August 1917. Absorbed 11th and 16th Cos. September 1919 and redesignated 7th Co., CD of Portland, 1920. In 1921, 7th Co. absorbed 8th Co., CD of Portland, [8th Co. formed by 1919 amalgamation of 7th, 8th, 10th, and 11th Cos.] and redesignated 171st Co., CAC, June 1922.

Even with this massive reorganization, only a single company, the 1st Co., Portland, was actually active. This company, the 24th Co., CAC, as of June 1, 1922, was provided additional NCOs to be assigned to the inactive companies when sufficient personnel were received to permit their reactivation. Under the reduced peacetime manning levels, the primary duty of the 24th Co. at Fort Preble was maintaining the coastal batteries in the harbor forts.(309)

The personnel reductions were heavily felt at Portland. In 1920, the garrison in the harbor was 10 companies. A year and a half later only a single company was active. Morale was generally impaired

when numerous redesignations between 1916 and 1921 practically erased the historic linage. Further, the personnel shortages had a deleterious effect on training, as most of the garrison's time was spent maintaining the gun and mortar batteries and protecting them from the elements.

5th Infantry Regiment at Forts Williams and McKinley

Although the seacoast batteries were in caretaking status, the posts themselves with their barracks, messhalls, etc. remained fully used, as infantry regiments returning from occupation duty in Germany were posted in inactive coast artillery posts. Forts Williams and McKinley were allocated to the 5th U.S. Infantry Regiment, which arrived aboard U.S.A.T. *Cantigny* on March 21, 1922. Regimental headquarters and one battalion were posted at Fort Williams, while the other battalion was quartered at Fort McKinley. Fort Levett was reserved for the Maine National Guard, CAC, while the coast artillery caretaking company continued to occupy Fort Preble.

During the next two decades, the 5th Infantry fulfilled the military support role once performed by the CAC in Portland Harbor, including support of civilian programs administered by the War Department.(310)

In 1921, the federal government established a nationwide training program for potential officers, the Citizens' Military Training Camps (CMTC). The program was set up at a number of forts around the country—one month of training for three summers in infantry, field artillery, or coast artillery, depending on the fort and the Regular Army garrison assigned. Fort McKinley in Portland Harbor became the location for a CMTC infantry program in 1925. The 5th Infantry formed the cadre of the CMTC program until the regiment departed for the Canal Zone in the late summer of 1939. Reserve officers and NCOs from the 8th Coast Artillery Regiment provided the cadre for the last summer camp in 1940, before the program was terminated.

In 1933, in the midst of the Depression, the Roosevelt Administration established the Civilian Conservation Corps (CCC) to get young men back to work on worthwhile outdoor projects, on a military-style footing. The headquarters and induction center for the 1st CCC District (Maine and New Hampshire) was established at Fort Williams, where two of the ultimately 28 companies were stationed. The 165th CCC Company became HQ company in 1933, and was exclusively the record keeping unit for the Maine program until the conclusion of the program in 1942. The company's biggest role was procuring and shipping supplies to the various camps. The second CCC company at Fort Williams, the 1131st, did construction work for the army at the various Portland Harbor forts from 1935 until 1939. Other companies were located around the state. As with the CMTC, the cadre of the CCC initially included 5th Infantry officers (soon replaced by reserve officers) and civilian specialists. The quartermaster and medical detachments at Fort Williams built quarters and attended to the health of the camps, with the 5th Infantry providing logistical support. The first executive officer of the 1st CCC District in 1933-34, Maj. James A. Van Fleet, commander of the 2nd Bn, 5th Infantry, at Fort Williams 1933-35, would be supreme commander in Korea as a four-star general two decades later.(311)

Coast Defenses of the Kennebec

During World War I, the forts at the mouth of the Kennebec River had been manned by troops from the CD of Portland. In November 1922, the War Department formally merged the defenses at the mouth of the Kennebec River into the CD of Portland, designating Fort Baldwin a sub-post of the Portland coast defenses, to be maintained by a small caretaking detachment. On March 4, 1923,

Congress authorized the War Department to dispose of numerous military posts that were no longer required, and Forts Popham and Baldwin were so designated. By February 27, 1924, both reservations had been sold to the state for $11,604.

Fort Baldwin had remained armed and maintained by the caretaking detachment until early 1924, when Batteries Hawley and Cogan began to be disarmed. Battery Hawley's M1900 6-inch guns were dismounted and shipped to Fort Preble February 21, 1924, where they remained in storage until forwarded to Watertown October 10, 1927. Gun No. 47 was eventually sent to the 242nd CA Regiment, Connecticut National Guard, for drill purposes on January 15, 1930. Gun No. 48 was sent to Fort Barry in the HD of San Francisco in 1936.

On March 21, 1924, Battery Cogan's M1903 3-inch R-F guns Nos. 19 and 21 were also sent to Fort Preble for storage. They remained only until October 10, 1927, when both guns were ordered shipped to Watertown. On October 11, 1933, both guns, without carriages, were shipped to Fort Mills on Corregidor Island.(312)

1924 CAC Reorganization

To foster unit pride and improve the CAC's ability to function with the mobile army, the War Department reinstituted a regimental organization for the entire CAC. They reconstituted the original seven regiments of United States Artillery that had been broken up in 1901, creating the 1st through 7th Coast Artillery (Harbor Defense) Regiments, to be comprised of as many as possible of the coast artillery companies that had been batteries of the original regiments. This required transferring 89 companies from one station to another. However, in all but a few instances, these transfers did not require the actual movement of personnel or materiel, as only the company records were transferred to the new regiments. The personnel and equipment remained at their old station. This transition was carried out on June 30, 1924, when all coast artillery companies to be transferred were inactivated and their serial number designations dropped. All companies were then redesignated either headquarters or firing batteries of the newly constituted regiments.

Sixteen harbor defense regiments were to be organized from the separate companies manning the fixed harbor defenses. The regiments were organized to facilitate the reassignment of the regiment to the mobile armies as railway, tractor-drawn, or antiaircraft artillery. The railway regiments were to have a headquarters battery and seven firing batteries. The regiments that would serve as tractor-drawn or antiaircraft regiments were to have a headquarters battery and 10 firing batteries.

Of the 103 batteries manning the fixed gun and mortar batteries in the continental United States in 1924, only 56 were active. An additional 26 active batteries were assigned to railway, tractor-drawn and antiaircraft artillery regiments and battalions in the continental United States. An additional 56 active batteries (including 15 companies of Philippine Scouts) were assigned to the fixed defenses in the Panama Canal Zone, Hawaii, and the Philippine Islands. An additional 32 active batteries manned tractor-drawn, railway, and antiaircraft artillery in the insular defenses.

While on paper the CAC's new organization seemed formidable, it was in fact only a "paper" organization. Most of the harbor defense regiments were, like the 8th CA, greatly under-strength, skeletal organizations. The newly constituted 8th CA Regiment's headquarters battery and seven firing batteries were to provide the peacetime coastal defenses for both Portland, ME, and Portsmouth, NH. As an additional change, the coast defenses were soon redesignated harbor defenses. Thus, the Coast Defenses of Portland were renamed the Harbor Defenses of Portland.(313)

8th Coast Artillery Regiment

In June 1924, five companies were assigned to Portland: the 24th, 51st, 154th, 155th, and 171st Cos., CAC. Of these, however, only the 24th at Fort Preble was still active. At Fort Constitution, Portsmouth, NH, there was only the 156th Co. Both companies together numbered four officers and less than 200 enlisted men. The 24th Co. provided caretaking details for all the forts in Portland Harbor, while the 156th Co. performed the same duties at Portsmouth.

The 8th CA (HD) Regiment was to be comprised of a headquarters battery and seven lettered firing batteries. While the primary mission of the regiment was to provide for the peacetime defense of the harbors of Portland and Portsmouth, its secondary mission was to man heavy railway artillery in support of the mobile army. Under this configuration, the headquarters battery would provide headquarters detachments for three battalions, each being composed of two firing batteries.

Although all eight battery elements of the regiment were constituted in 1924, there were only enough personnel to activate two batteries. On June 30, the 24th Co. was inactivated and transferred, less personnel and materiel, to Fort Randolph in the CD of Cristobal, PCZ, where it was reactivated as Battery G, 1st CA (HD) Regiment. The 51st Co. was similarly inactivated and transferred, less men and materiel, to Fort Hamilton in the CD of Southern New York, where it was redesignated Battery C (inactive), 5th CA (HD) Regiment. These transfers reduced the Portland garrison to three companies.

As the companies were transferred from Portland to their new duty stations, other companies were transferred to Portland. The inactive 123rd, 246th, and 251st Cos. were transferred, less men and materiel, from the CD of Southern New York and the 196th Co. from Fort Eustis, VA.(314)

On July 1, the personnel formerly assigned to the 24th Co. were transferred to the 123rd Co. The battery was originally constituted in 1901 as the 123rd Co., CA, AC, and organized at Fort Hamilton, NY, in October 1901, with a cadre from the 55th Co., at Fort Hancock, NJ. On February 2, 1907, the company was redesignated the 123rd Co., CAC, and on July 1916, as the 5th Co., Fort Hamilton. On August 31, 1917, the company was redesignated the 3rd Co., CD of Southern New York. Following World War I the company remained at Fort Hamilton until October 11, 1921, when it was inactivated. On June 1, 1922, the company was redesignated the 123rd Co., CAC. On June 30, 1924, it was transferred, less men and materiel, to Fort Preble, where it was redesignated HQ Battery, 8th CA (HD) Regiment, and reactivated with personnel that had been assigned to the 24th Co. From 1924 until 1939, HQ Battery functioned as the active associate of the inactive elements of the regiment, providing details for caretaking duties at the harbor forts. Until about 1930, the battery usually consisted of three officers and 135 enlisted men. In the CAC reorganization of 1930, the battery was reduced to three officers and 59 enlisted men.

The 154th Co., redesignated Battery A, remained inactive until July 1, 1939. The 155th Co. was redesignated Battery B and the 171st Co. was redesignated Battery C, both inactive until February 1941.

Battery D was constituted and organized in 1917 at Fort DuPont, DE, as the 5th Co., Fort DuPont, then redesignated 5th Co., CD of Delaware. Later in 1917, it was transferred to Fort Eustis, VA, as the 1st Trench Mortar Battery. In June 1922 the battery was additionally designated 196th Co., CAC, and on August 4, 1922, it was inactivated at Fort Eustis and transferred to Portland less personnel and materiel.

Battery E was originally constituted July 10, 1907, as the 156th Co., CA, AC, and organized at Fort Constitution in Portsmouth Harbor, NH, on August 20, 1907, as the torpedo company for Portsmouth Harbor. On July 1, 1916, the 156th Co. was redesignated the 1st Co., Fort Constitution.

On August 31, 1917, it became the 3rd Co., CD of Portsmouth, until September 1919, when it was demobilized. The 1st and 2nd Cos., CD of Portsmouth, organized in 1917, were consolidated into the 156th Co., CAC, on June 1, 1922. On July 1, 1924, the 156th Co., sole coast artillery unit in Portsmouth Harbor, became Battery E, 8th CA (HD) Regiment, one of two active organizations of the regiment. In 1930, the battery, although still active, was reduced to a caretaking detachment of one officer and 12 enlisted men. The battery garrisoned Portsmouth Harbor until it was inactivated September 1, 1939 and its personnel assigned to HHB, 8th CA, but continued on the same duty until 1941, when the caretaking detachment was assigned to the newly constituted 22nd CA (HD) Regiment.

Battery F was organized at Fort Hamilton as the 43rd Co., CD of Southern New York, January 19, 1918. In March 1918, the company was redesignated the 19th Co., CD of Southern New York. The company remained active as the 19th Co. into February 1919, when it was redesignated the 1st Co.(III). In 1921, the company was reassigned as HQ Battery, 59th Artillery, CAC, and transferred to the CD of Manila and Subic Bay. On June 1, 1922, HQ Battery of the 59th was additionally designated 246th Co., CAC, and in 1924, was inactivated at Fort Mills and transferred, less personnel, back to the CD of Southern New York. When the CAC was reorganized in June 1924, the inactive 246th Co. at Fort Hamilton was transferred, less men and materiel, to Portland and redesignated Battery F, 8th CA (HD) Regiment, remaining inactive until February 10, 1941.

Battery G, as the 33rd Co., 8th Coast Defense Command, New York National Guard, was initially stationed at Constable Hook, Bayonne, NJ, where in January 1918 it was redesignated the 30th Co., CD of Southern New York. In March 1918, the company moved to Fort Wadsworth and was augmented with National Army recruits. After a month it was transferred to Fort Hamilton where it remained until December 1918, when it was demobilized and its National Guard personnel discharged. The remaining personnel were then used to organize the 4th Co.(III) of the CD of Southern New York in January 1919 at Fort Hamilton. Later in 1919, the company was redesignated Battery A, 59th Artillery, CAC, when the regiment was transferred to Fort Winfield Scott at San Francisco. The company was inactivated October 11, 1921. In 1922, the organization was transferred back to the CD of Southern New York and was designated 4th Company, CD Southern New York and on June 1, 1922 the 4th Company was redesignated the 251st Company, CAC. On June 1, 1922, the inactive 4th Co., CD of Southern New York, was redesignated the 251st Co., CAC. The company remained posted in the CD of Southern New York until 1924, when it was transferred, less personnel and materiel, to Portland Harbor and redesignated Battery G (Searchlight) of the 8th CA (HD) Regiment, but remained inactive until June 1, 1941.

The regimental HQ Battery and Battery E provided the coast artillery presence at Portland and Portsmouth through the remainder of the 1920s.

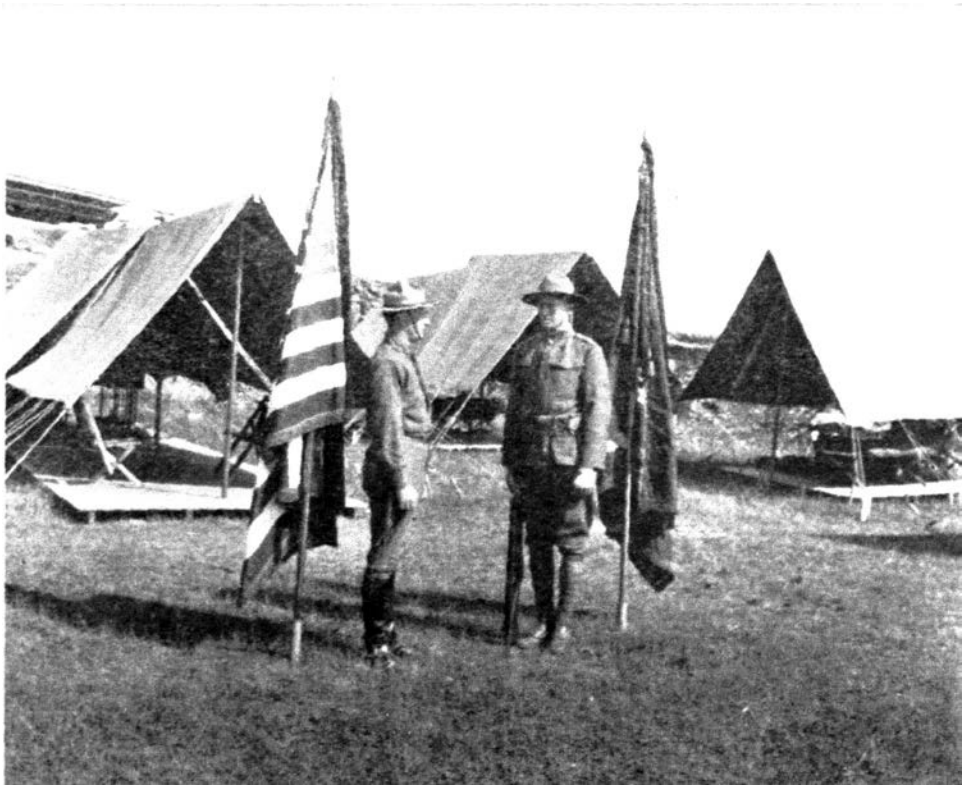
Maine National Guard Coast Artillery

When World War I ended in 1918, the Maine National Guard coast artillerymen serving in the Portland coast defenses were discharged. In the spring of 1919 the remaining guardsmen with the 54th Artillery were released from federal service. As the National Guard companies had been generally broken up during the course of the war and in many cases reassigned to other units, the coast artillery contingent of the Maine National Guard had essentially ceased to exist, and until the spring of 1921, Maine had no coast artillery organization.

In the spring of 1921, the adjutant general of the State of Maine authorized reconstitution of a coast artillery contingent in the Maine National Guard, initially a headquarters and five companies.

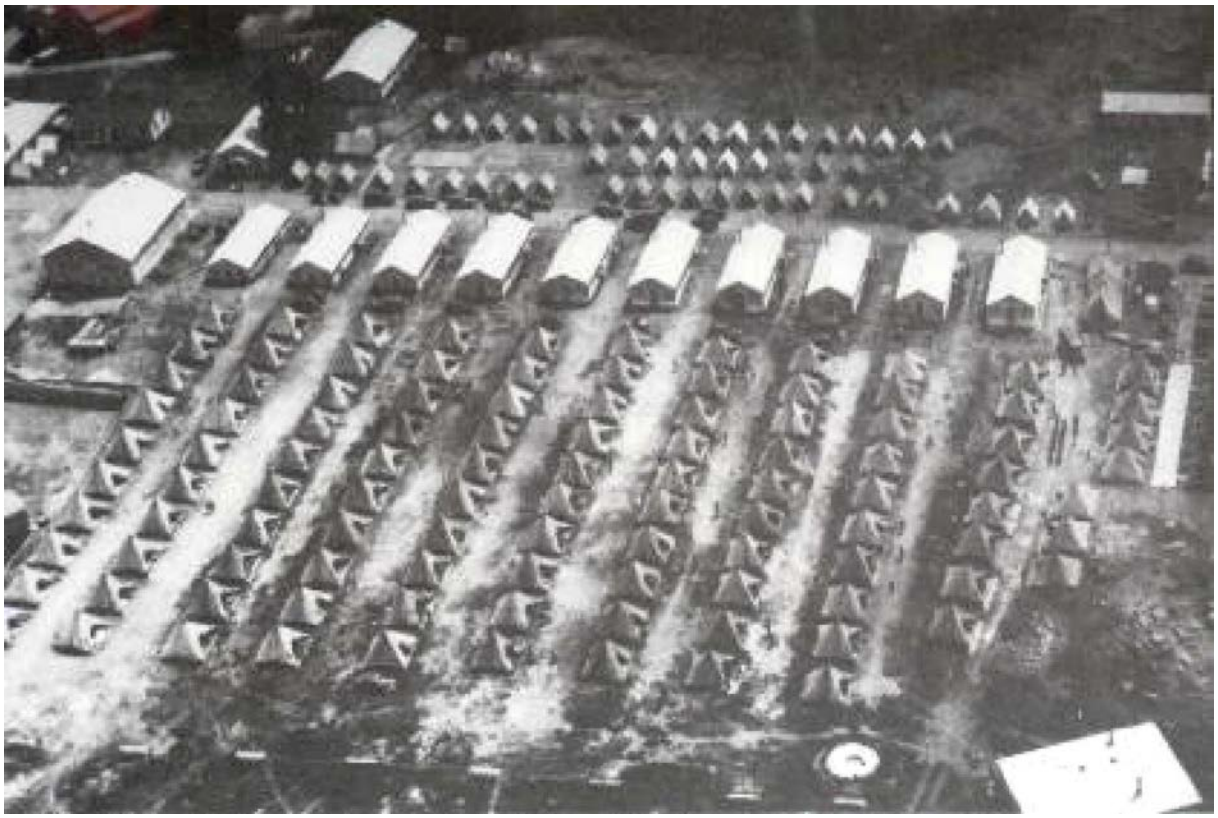
William P. Norton was appointed colonel, George A. Buker, lieutenant colonel, and George E. Fogg, major. This unit went into camp of instruction at Fort Williams in September 1921 and completed its basic artillery and infantry training. In the fall of 1921, Colonels Norton and Buker resigned their commissions and Major Fogg was appointed to command the unit that was increased to eight firing batteries in 1922.

In 1922, the National Guard coast artillery command was redesignated the 240th Artillery Regiment, CAC, Maine National Guard, and on April 16, 1924, in connection with the reorganization of the army CAC, the 240th was redesignated the 240th CA (HD) Regiment.



Col. George E. Fogg & Cpl. Robert E. Perry Jr., ca. 1930. *Kenneth E. Thompson Jr. Collection*

During the first six years the 8th CA was posted at Portland, in addition to providing the maintenance detachment for the coast artillery forts, the regiment hosted the annual summer training of the 240th CA (HD) Regiment. Each summer in July or August, the 10 officers and 124 enlisted men of HQ and HQ Battery, 8th CA, assisted in training the guardsmen. The 240th CA conducted its first two-week summer training session from July 7 through July 20, 1924, quartered in a tent camp at Fort Williams. The first three days were spent in coast artillery drill and infantry instruction, parade, and guard mount drill. From Thursday to Saturday, July 10 to July 12, the eight firing batteries carried out sub-caliber practice. On Monday and Tuesday, July 14 and 15, the batteries fired their annual service practices. Batteries A, B, C, and D manned the 10-inch and 12-inch disappearing guns on Monday, while Batteries E, F, G, and H fired the 12-inch mortars on Tuesday. The remainder of the second week of training was a "War Condition" period, and the batteries lived at the batteries. All this was under the supervision of the coast defense commander, Maj. Edward E. Farnsworth, of the 8th CA Regiment, and Brig. Gen. Mark L. Hersey, commander of the First Coast Artillery District.(315)



Annual summer encampment of 240th CA Regiment, Maine National Guard, at Fort Williams. Buildings at the end of each row of tents are kitchens and mess halls. *Author's Collection*

Encampment of the 240th CA Regiment, 1930. *Kenneth E. Thompson, Jr. Collection*

The 240th CA came to view the harbor defenses as their own, as the harbor forts were the regiment's mobilization station in the event of war. The guard regiment usually encamped at Fort Williams, but conducted target practices at Forts Levett and McKinley as well as Fort Williams. During the summer months, the 5th Infantry was frequently on their own annual maneuvers, leaving the harbor posts to the coast artillerymen.

Fort Williams, March 1936. *NARA*

Hussey Sound Minefield Advanced Seaward

Prior to World War I, the Hussey Sound minefields had been fairly close to Great Diamond Island and between Peaks Island and Long Island. Post-war thinking led to advancing the controlled minefield seaward to the approaches to Hussey Sound, where fewer mines and addition of a contact field between Chebeague and Cousins Islands could provide a more effective defense. A new underwater defense project approved by the secretary of war on January 1, 1929, provided for seven groups of submarine mines in Portland's Main Ship Channel controlled from Fort Williams, and three groups of mines in Hussey Sound controlled from Fort McKinley. Three fields of navy contact mines southeast of Cushing Island were projected: 15 contact mines in Whitehead Passage; another 45 contact mines across the seaward entrance to Chandler Cove south of Great Chebeague Island, and 18 contact mines in Little John Island Passage between Great Chebeague and Little John Islands.(316)

The shore facilities at Fort Preble also needed upgrading. The wharf had fallen into disrepair due to lack of maintenance, and the mine facilities had not been used for some time. The mine facilities at Fort Williams were currently used for the submarine mine project, but the wharf in Ship Cove was unusable in rough weather and the new project called for the mine planter to use the wharf at Fort Preble, submarine mine materiel being trucked from Fort Williams to Fort Preble.

Hussey Sound R-F Batteries

As the new minefields would require protection, new sites for R-F guns were selected by 1930. Two sites were selected to protect the controlled minefields in the approaches to Hussey Sound with M1902M1 R-F 3-inch guns on M1902 pedestal carriages. Two guns were on the Peaks Island Military Reservation, with a bombproof magazine. Across the sound on Long Island, a third emplacement was to be established. There were however, no guns available and the M1903 guns taken from Fort Baldwin's Battery Patrick Cogan in February 1924 had been sent to Watertown Arsenal in 1927.

Two batteries were established to protect the minefield between Chebeague and Cousin's Islands. One at the north end of Long Island for two M1902M1 3-inch R-F guns on M1902 pedestal carriages covered the passage between that island and Great Chebeague Island. The second battery, for one 3-inch M1902M1 gun, was established on the west shore of Chebeague Island opposite Cousin's Island.

8th Coast Artillery Reduced, 1930

As the 1920s drew to a close, the War Department, faced with further manpower reductions, coupled with increasing demands for antiaircraft artillery, undertook another reorganization of the CAC. The men to create the new AA regiment and to expand the six existing AA regiments could only come from the already skeletal harbor defense regiments, effectively reducing them to mere caretaking detachments.

Under this new organizational plan, the 8th CA Regiment continued to exist, but just barely. Understrength Battery E at Fort Constitution in the HD of Portsmouth was to be inactivated, its caretaking responsibilities assumed by HQ Battery. Even HQ Battery was to be reduced from about 135 officers and enlisted men to three officers and 59 men, while 67 enlisted men were to be transferred to the 11th CA Regiment at Fort H.G. Wright. Of the remaining three officers and 59 enlisted personnel, one officer and 12 enlisted men that continued on at Fort Constitution as a caretaking detachment for Portsmouth. These reductions reduced the caretaking detachment at Fort Preble to two officers and 47 men to care for all the armament in Portland Harbor.(317)

With the reorganization, the various forts in Portland Harbor were all but abandoned by the coast artillery. Forts McKinley and Williams continued to be garrisoned by the 5th Infantry while Fort Preble remained the coast artillery headquarters post.

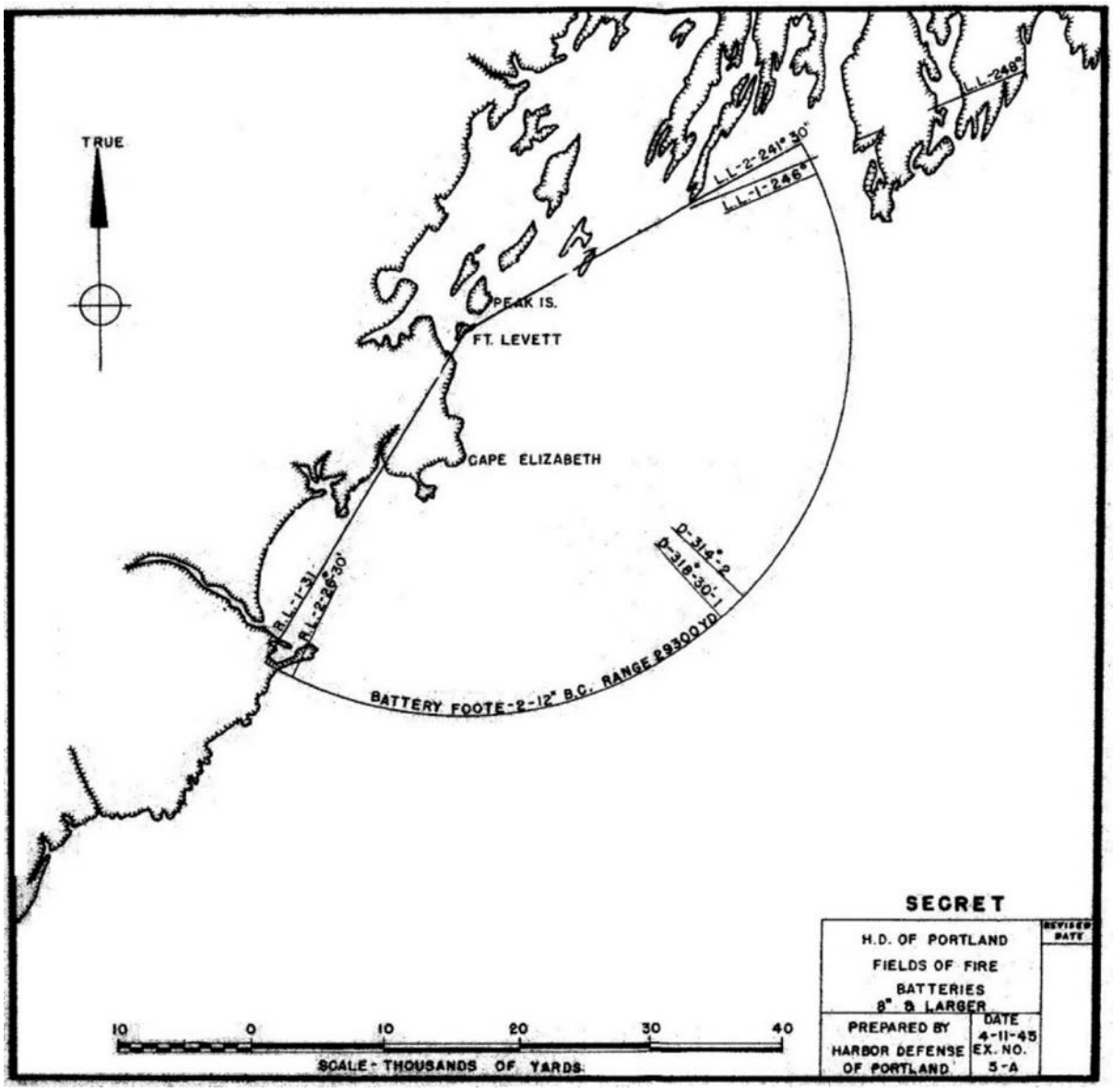
Defense Planning

In accordance with War Department instructions in 1930, a board of officers in the 1st Coast Artillery District prepared "Harbor Defense Projects for Harbor Defenses Included in the Portland-Cape Cod Area," which was approved by the secretary of war on December 27, 1932. With completion of the basic project, detailed plans for each harbor defense were prepared, and with their approval on August 13, 1934, these detailed plans termed "annexes" became the plan under which the Portland Harbor defenses would operate over the next decade.

The mission of the HD of Portland was simple and straightforward:

a. Protecting the harbor facilities and shipping in the harbor from enemy naval gunfire.
b. Insuring freedom of movement to friendly ships entering and leaving the harbor.
c. Denying enemy ships access to the harbor.
d. Supporting the defense against a landing within range of the harbor defense weapons.

To carry out the mission, an integrated weapons system was to be employed, utilizing large, medium, and small-caliber seacoast gun batteries, mortar batteries, submarine mines, and antiaircraft gun batteries. These weapons would be supported by searchlights and a system of fire control stations. Prior to construction of Battery Foote in the early 1920s, with its range of 27,000 yards (just over 15 miles), the maximum range at which an enemy fleet could be engaged was just over nine miles. Now, at 20 knots, an enemy fleet approaching Portland would be under the fire of Battery Foote's two 12-inch guns for about a quarter hour before the other seven 12-inch guns on disappearing carriages could add their firepower. At this point, the enemy squadron would still be nine miles at sea. The fire of the gun batteries could be joined in a few more minutes by the fire of twelve 12-inch mortars while the attacking vessels were still five miles from the channel entrances. The 12-inch guns and mortars, combined with the minefields in the channels that were well covered by R-F guns of the secondary 6-inch and 3-inch R-F batteries, were considered adequate to sink or turn back an aggressor before he could inflict serious damage to the city or its shipping.(318)



Field of fire of Battery Foote's long-range 12-inch guns at Fort Levett. *NARA*

The arc covered by the primary 12-inch batteries extended from the mainland at Harpswell Neck northeast of Portland to the southwest coast of Cape Elizabeth. The guns of the primary batteries could as a consequence bring enemy vessels under fire while they were still 20 miles from the wharves of Portland Harbor.

As a result, the need for the 8-inch and 10-inch batteries that had heretofore supplemented the larger-caliber batteries was decreased markedly.

Having prepared the 1932 Basic Project, the board recommended 8-inch gun batteries Honeycutt, Weymouth, and Thompson at Fort McKinley, as well as 10-inch Battery Sullivan at Fort Williams, be inactivated and eliminated from the plans. The secretary of war approved this recommendation on May 17, 1932. The board also recommended that the other two 10-inch batteries, Batteries Kendrick at Fort Levett and DeHart at Fort Williams, be unmanned in reduced-maintenance status as reserve batteries. With the exception of Battery Bohlen at Portsmouth and Battery Thompson at Charleston,

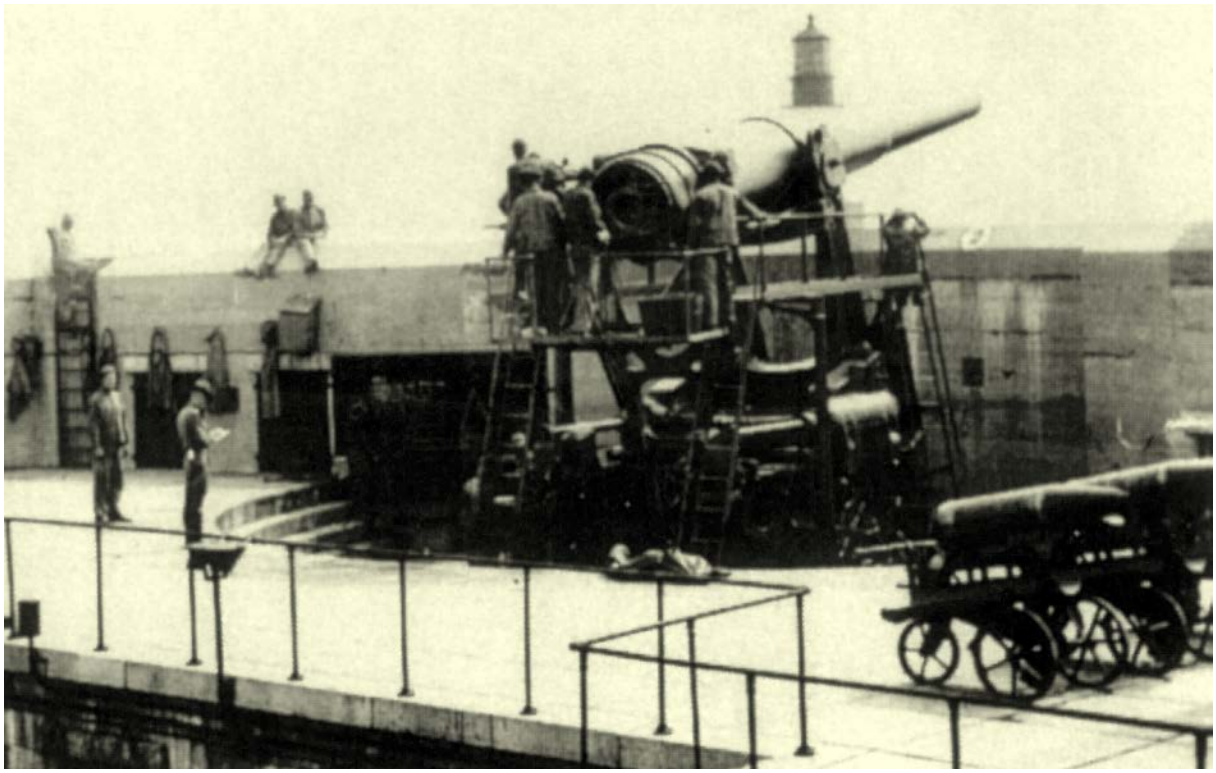
all 10-inch disappearing gun batteries were for all intents and purposes deleted from the nation's harbor defense projects.

Perhaps the most forward-thinking improvements in the harbor defenses were the 50 percent increase in the number of antiaircraft guns and the organization of an antiaircraft intelligence network. A third emplacement was provided at each antiaircraft gun battery at Forts Williams, Preble, Levett, and Lyon. The antiaircraft battery at Fort Scammell established more than a decade before was deleted from the project and its two gun blocks soon disappeared beneath the weeds and shrubs. The project also pointed out the need for sound locators and searchlights to direct the antiaircraft defenses, and recommended nine of each. Despite of the detailed annexes, the defense scheme for Portland remained a "paper" plan and the harbor defense posts continued on caretaking status with their small infantry and coast artillery garrisons.

Despite a lack of material improvement and strengthening of the defenses, further refinements to the defense plans continued. On February 2, 1938, the secretary of war approved alterations to the 1934 Basic Project Annexes, the last changes to the project prior to World War II.

The harbor defenses were organized into four gun groups and one mine groupment, under the harbor defense commander. The harbor defense command post, or "H" station, was on the ledge to the rear of Battery Sullivan at Fort Williams. From the "H" station the harbor defense commander exercised command and tactical control over the three seacoast gun groups, the antiaircraft gun group, and the two groups of the mine groupment.(319)

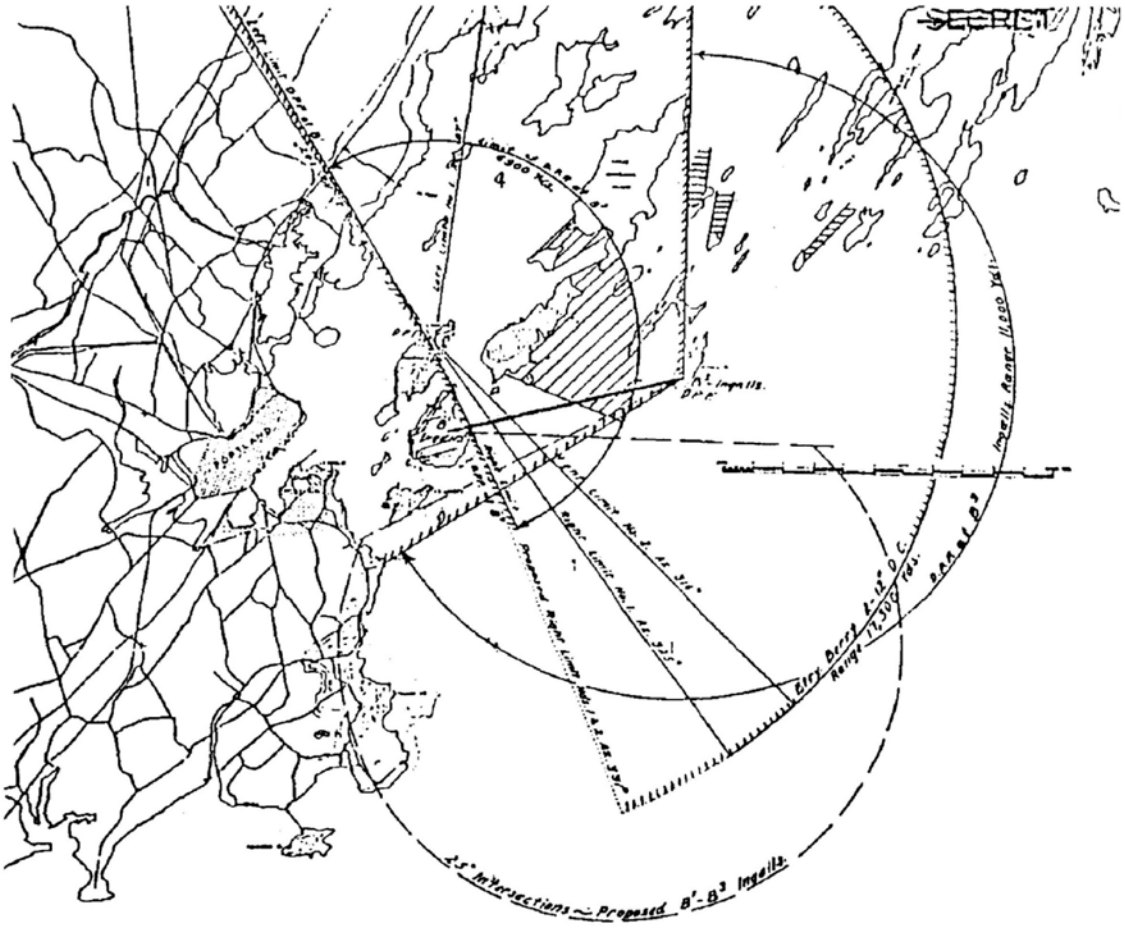
In Gun Group 1 (G1) at Fort Levett, Battery Foote (two 12-inch long-range guns) and Battery Bowdoin (three 12-inch disappearing guns) were active, and Battery Kendrick (two 10-inch disappearing guns) was in reduced maintenance status as a reserve battery in the event either Battery Foote or Bowdoin were out of action. No manning detachment was assigned to Battery Kendrick, nor was there an operational fire control system; fire control data was to be provided by the fire control system of the disabled battery.



Target Practice at Battery Blair, 1926. *Author's Collection*

The field of fire covered by Gun Group 1 extended from Fletcher's Neck and Saco Bay southwest of Portland Harbor to Harpswell Neck on the mainland to the northeast. The G1 command post in a splinterproof concrete structure on the high ground at the northeast end of Cushing Island gave a good view of the group's field of fire.

Gun Group 2 (G2), divided between Fort Williams and Fort Preble, was composed of Battery Blair (two 12-inch disappearing guns) at Fort Williams and Batteries Kearny and Chase (eight 12-inch mortars) at Fort Preble. This group also had as a reserve Battery DeHart (two 10-inch disappearing guns) in reduced maintenance at Fort Williams. Group 2's field of fire covered from Cape Elizabeth on the southwest to Jewell Island east of the harbor, including the approaches to the Main Ship Channel, Hussey Sound, and Luckse Sound. The group's field of fire was clearly visible from the G2 command post near the "H" Station at Fort Williams.



Fields of Fire for Gun Group 3. *NARA*

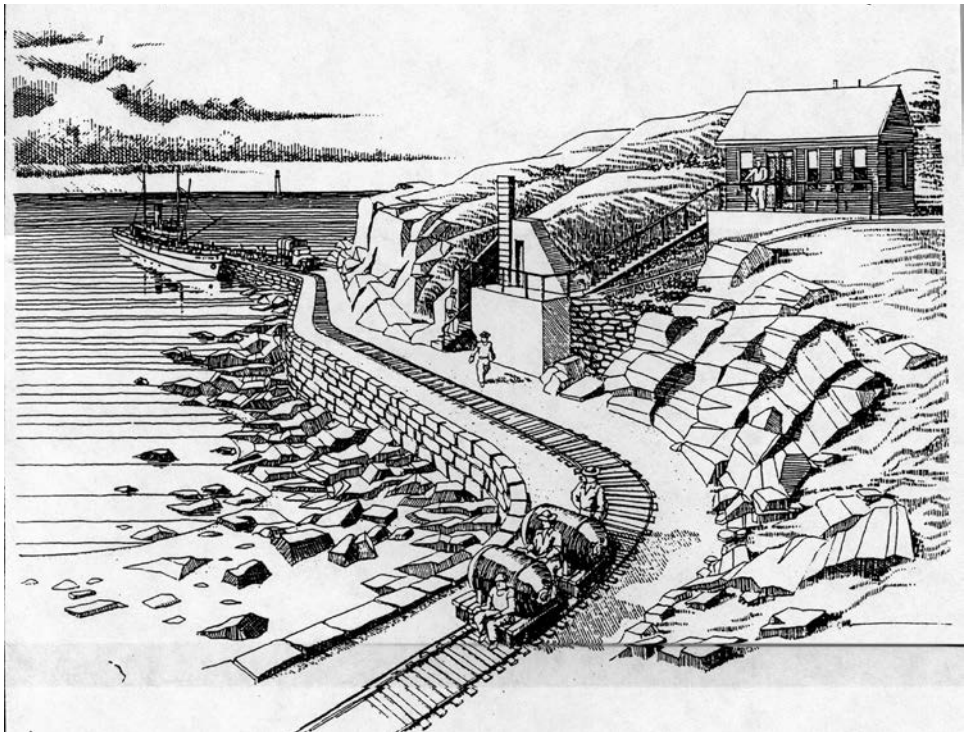
Gun Group 3 at Fort McKinley, Battery Berry (two 12-inch disappearing guns) and Battery Ingalls (four 12-inch mortars), covered from the approaches to Hussey, Luckse, and Broad Sounds to the mainland at Harpswell Neck northeast of the harbor. The mortars of Battery Ingalls could also reach as far as Cape Elizabeth to the south. The group command post was atop an 80-foot ridge on Great Diamond's North Fork, some 500 feet behind Batteries Berry and Ingalls.(320)

The mine groupment controlled two mine groups: Mines I and Mines II. The groupment command post at Fort Preble was on the upper floor of a tall building disguised as a clock tower. The support facilities for the two mine groups were at Forts Williams and McKinley. Each group operated multiple minefields and the R-F gun batteries that protected them.

Mines I had two batteries controlling the grand groups of controlled and contact mines between Portland Head and the shoals south of Cushing Island. The minefield for the main channel was to consist of seven groups of controlled buoyant mines, while the navy was to lay some 45 contact mines outside the channel. These underwater defenses were to be further supplemented by anti-submarine and torpedo nets. The mine support facilities at the head of Ship Cove at Fort Williams consisted of the mine storehouse, cable tank, mine loading room, dynamite storage building, and cable terminal.

The command post for Mines I was a two-story splinterproof double-primary station between Batteries Sullivan and Hobart at Fort Williams. The double-secondary station on the north shore of Fort Williams, at the rear of Battery Erasmus Keyes, was a splinterproof concrete observation station. The mining casemate for Mines I was a cut and cover concrete structure dug into the ledge at the left rear of Battery Hobart.

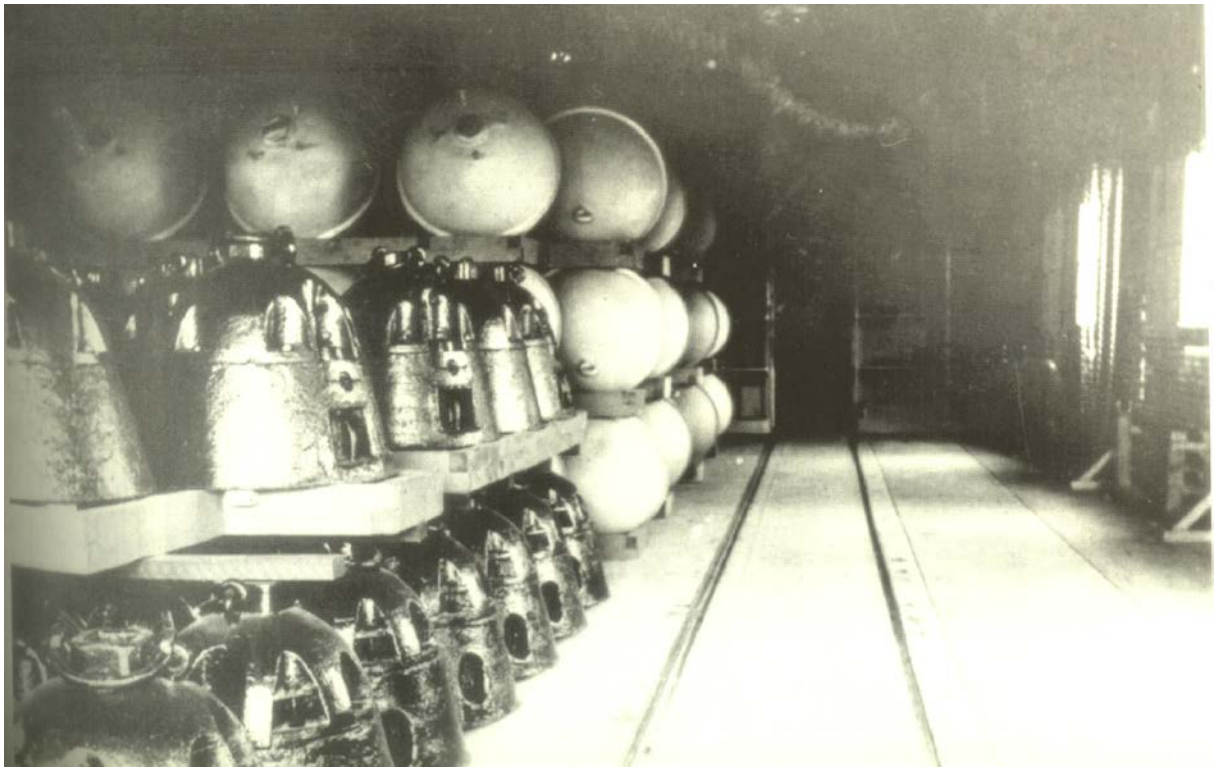
Three R-F gun batteries protected the Mines I minefields. Battery Ferguson's two 6-inch barbette guns at Fort Levett covered the controlled minefields in the Main Ship Channel and most of the contact mines southeast of Cushing Island. Battery Erasmus Keyes' two 3-inch R-F guns at Fort Williams covered the controlled minefields of the main channel, except for the westernmost grand group of



Mine tramway, mine casemate, and wharf at Fort Williams.

mines, as well as the contact mines southeast of Cushing Island. Battery George Mason's one 3-inch R-F gun at Fort Preble had initially covered the contact minefield in Whitehead Passage. When the Hussey Sound Minefield was advanced to the entry to the sound, plans were made to add another two guns to Battery Mason and relocate it to cover the inner portion of the main ship channel minefield. After further study, the Whitehead Passage was considered so reef strewn that the single gun of Battery Mason's single 3-inch gun could adequately defend that passage as well as the inner groups of mines in the main ship channel from its original position. Should an another gun be required to cover the main channel, an old 1870s emplacement could be utilized for a additional 3-inch gun.(321)

Mines II at Fort McKinley consisted of one mine battery and three R-F gun batteries. The mine defense was comprised of one controlled minefield at the entrance to Hussey Sound and two fields of contact mines, one southwest and the other north of Great Chebeague Island in Casco Bay. The double-primary station and command post for Mines II was just to the right rear of Battery Weymouth on the South Fork of Great Diamond Island. The two-story concrete building contained two observation rooms and two plotting rooms. The original mine casemate was near the shore of Diamond Cove. When the minefields were advanced to the entrance to Hussey Sound, a new mine casemate was planned and eventually built at the northeast shore of Peaks Island.



Interior of a mine storehouse with buoyant M3 submarine mines of the type planted in Portland Harbor. *Author's Collection*

Three R-F gun batteries were to provide partial coverage of the minefields of Mines II. Battery Acker's two 6-inch disappearing guns at Fort McKinley covered the waters north of Great Diamond and Great Chebeague Islands. The contact minefield north of the latter island was covered at extreme range of some 10,000 yards. Battery Carpenter's two 6-inch barbette guns at Fort McKinley covered Hussey Sound and Chandler Cove on the southwest side of Great Chebeague Island, as well as the contact mines north of the island, also at some 10,000 yards. Battery Abbot's three 3-inch R-F guns at

Fort Lyon on Cow Island covered the minefield at the entrance to Hussey Sound. With the advance of the Hussey Sound minefield to the entrance to the sound, additional batteries were projected for Long and Peaks Islands.(322)

The antiaircraft (AA) defense of the harbor forts was provided by Gun Group 4, which had its command post in the magazines in the out of service Battery Sullivan at Fort Williams, along with the Antiaircraft Artillery Intelligence Service (AAIS). The group was initially comprised of three batteries of 3-inch AA guns and an antiaircraft machine gun (AAMG) detachment armed with .50-caliber AAMGs. Each battery was to be composed of a gun detachment, a machine gun detachment, and a searchlight detachment. The Fort Williams AA battery at Battery Garesché was deleted from the harbor defense project in 1938, replaced by an AAMG detachment. The AA defenses were organized as follows:(323)

Battery No. 1 at Fort Preble consisted of three fixed 3-inch M1917A1 AA guns, three .50-caliber AAMGs on tripod mounts, and a 60-inch Sperry AA searchlight. The guns were mounted at disarmed Battery Rivardi, whose magazines stored the AA ammunition. Concrete-lined trenches dug into the earthen cover of the protected switchboard were used for the director, heightfinder, and battery commander. Battery No. 2 was between Batteries Kendrick and Bowdoin at Fort Levett, and Battery No. 3 was west of Battery Abbot at Fort Lyon. Both were organized in the same manner as at Fort Preble. An AAMG detachment and searchlight detachment at Fort Williams replaced the inactivated AA gun battery there. Fort McKinley was not provided with an AA battery.

Fort Levett AA Battery, ca. 1940. *Clifford Collins Collection*

The inadequacy of the nation's defenses was fully recognized by the late summer of 1939 when Germany marched into Poland and war in Europe became a reality for the second time in the 20th century. The meager measures taken in the preceding decade to bolster the sagging harbor defenses had for the most part been concentrated on the insular possessions in the Pacific and the Panama Canal

Zone. With the fall of France in 1940, new emphasis was placed on Atlantic defenses.

Apart from the insular defenses, only New York, Boston, and San Francisco were defended by the long-range 16-inch guns adopted earlier as the primary seacoast defense weapon, and frequently these weapons were unable to take full advantage of their range of more than 25 miles, as fire control relied on visual sightings. (Radar was still in its experimental stages.) Night visibility was reduced to a few miles, the maximum effective range of the searchlights. Many coast artillery weapons dated from the Endicott era; by the late 1930s they were often outranged by guns aboard warships. These batteries and most of the handful of 16-inch batteries built in the 1920s and 1930s were unprotected from aerial bombardment, while the shortage of antiaircraft weapons meant the War Department could not allocate additional antiaircraft guns to the harbor defenses.(324)

In an effort to increase the country's air defenses the War Department authorized new coast artillery antiaircraft regiments while beginning the slow process of rebuilding the skeletonized harbor defense regiments units to nominal peacetime strength. The Harbor Defenses of Portland became a major training center in 1939 and 1940 as the United States began to rearm.

As a partial solution to the greatly reduced strength of the nation's harbor defenses, the War Department began a substantial reassignment of coast artillery antiaircraft units that were at, or near, their table of organizations strength in September 1939. Early in September, some 227 officers and enlisted men from the 61st CA (AA) Regiment at Fort Sheridan, near Chicago, were transferred to Panama. Tentative orders were prepared to forward the remainder of the regiment to Portland, but the orders were rescinded.(325)

68th CA (AA) Regiment Reactivated

Inactive since the end of World War I, the 68th Coast Artillery Regiment was reactivated at Fort Williams November 4, 1939, as an antiaircraft regiment under Col. Robert C. Garrett, CAC. As senior officer, Colonel Garrett also assumed command of the Harbor Defenses of Portland and Portsmouth. The regiment's 184-man cadre was gleaned from the 11th CA (HD) Regiment at Fort H.G. Wright, at the time the only active regiment of coast artillery in the First Coast Artillery District. Large numbers of recruits from the Fifth Corps Area in the nation's heartland were also added as the regiment was organized at Fort Williams. By December, the regiment had grown sufficiently to require relocating the regiment's 2nd Bn to Fort McKinley, while Battery E was posted at Fort Preble.(326)

By January 4, 1940, the 68th exceeded its authorized peacetime strength of 1,000 enlisted men and had received a massive influx of materiel, including twelve 3-inch M3 AA guns on mobile mounts, most of their fire control equipment, 10 searchlight trucks, and a staff car.(327) During the next seven months, the 68th Coast Artillery underwent extensive training. In early August 1940, the regiment participated in First Army maneuvers in New York and New England before briefly returning to Portland in September, where it received orders to vacate Portland Harbor to afford housing for the 240th CA (HD) Regiment. The 68th CA was transferred in detachments to Camp Edwards near Cape Cod, MA, where it would continue its intensive training. There the 68th CA became part of the 36th CA (AA) Brigade. Colonel Garrett was promoted to brigadier general and placed in command of the brigade.(328)

240th Coast Artillery (HD) Regiment Mobilized

On August 27, 1940, in response to the increasing threat of war, Congress passed the Selective Service Act and authorized activating the greater portion of the National Guard for one year's train-

ing. Maine's harbor defense regiment, the 240th CA, was one unit mobilized. The batteries had just returned to their homes after their annual two-week active duty training at Portland Harbor when the regiment was activated. By September 16, 1940, the regiment under Colonel Fogg had taken station at Fort Levett on Cushing Island and the regiment was inducted into federal service. By the end of the month, the regiment was fully engaged in an active training program.

The 240th CA intensified its training in November when six of the regiment's firing batteries carried out their service practices. During January 1941, the regiment formed a special ski patrol for service during the winter months. By summer, the 240th and 8th CA Regiments were conducting beach defense maneuvers utilizing 37 mm antitank guns. By the end of the regiment's first year of federal service in September 1941, it had developed into a seasoned element of the CAC, fully assimilated into the HD of Portland.(329)

The 240th CA Regiment parades through downtown Portland, November 11, 1940.
George E. Fogg Collection

A ski patrol of the 240th CA Regiment at Fort McKinley during the winter of 1940-41.
Author's Collection

Augmentation of the 8th Coast Artillery

For more than a decade, the 8th Coast Artillery had served as caretaker for the two moderate sized harbor defenses at Portland and Portsmouth. During that period, the number of officers changed from a moderated-size harbor defense command of some 10 commissioned officers, to a caretaking detachment of three officers, and back to a harbor defense command on war footing.

The reorganization of 1930 was significant. Col. Percy P. Bishop left for First Corps Area headquarters in Boston at the end of 1929, leaving Lt. Col. Francis J. Behr as the harbor defense commander. When Colonel Behr departed for hurricane relief duty in Puerto Rico in April 1930, command devolved on the senior captain, Lynn P. Vane, until August, when Vane was ordered to Panama. Meanwhile, Lt. Col. Walter Singles was transferred from the Panama Canal Zone to the 8th CA as regimental commander, but by this time the regiment was reduced to three officers, one of which was at Portsmouth.

In August 1933, Colonel Singles, in declining health, was transferred to recruiting duty at Fort Slocum, NY, and retired in April 1934, succeeded by Maj. Berthold Vogel, until Vogel was reassigned to the 11th CA in early 1934. In October 1934, Maj. Charles A. French arrived from Fort Adams, RI, to become harbor defense commander.

By January 1, 1937, the 8th CA Regiment was commanded by Lt. Col. French**,** with Major Waldron as executive officer. First Lieutenant Erven C. Somerville was in charge of the caretaking detachment at Portsmouth.

Colonel French was relieved in the fall of 1937 by Lt. Col. Otto H. Schrader, professor of military science and tactics at the University of Pittsburgh. Colonel French was transferred to the First Corps Area CCC headquarters.

Most of the officer arrivals in 1939 and early 1940 were assigned to the 68th CA. A few, however, were assigned to the 8th Coast Artillery, as the harbor defense regiment was slowly augmented. Col. Franklin Kemble arrived in June 1940, but commanded the regiment only for a few months before he was reassigned to the 52nd CA (Railway) Regiment at Fort Hancock, relieved by Lt. Col. Donald B. Greenwood in October 1940.(330)

As war clouds threatened in the summer of 1939, the army began to increase recruiting. HQ Battery was brought up to full peacetime strength by the summer of 1939, and Battery A was activated July 1, 1939, as a mine battery. In September 1939, the War Department inactivated Battery E at Portsmouth and transferred its personnel to Battery A, 22nd CA, then being organized at Fort Constitution.

By the latter part of 1939, the world was becoming embroiled in conflict for the second time in the 20th century. The Panama Canal was considered one of the most vulnerable locations and immediate steps were taken to bolster its seacoast and antiaircraft defenses. The War Department ordered most of the harbor defense posts to organize and begin initial training of coast artillery detachments to be forwarded to Panama. At Portland, organizing the inactive elements of the 8th CA would have to be deferred until the immediate need to reinforce the Panama Canal was met.

On November 5, 1939, a Panama Recruit Detachment of two, later three, provisional batteries was constituted in the 8th CA Regiment at Fort McKinley. The initial cadre was provided by 27 enlisted men from the 11th CA (HD) Regiment at Fort H.G. Wright and 20 men from the 8th CA. The Panama Detachment was to occupy the barracks vacated by the 5th Infantry Regiment earlier in the year. The actual organization of the two initial batteries began on January 22, 1940, and during the first half of 1940 several hundred recruits received basic training.

On March 15, 1940, the third provisional battery was organized at Fort McKinley, its cadre from the 8th and 68th CA Regiments. All three batteries were composed of recruits organized around small cadres of enlisted men, non-commissioned officers, and recently commissioned officers. The basic training for the first two batteries of the detachment continued until early July and until the end of October for the third battery. All three were shipped to Panama during the late summer and fall of 1940. Upon arrival, the troops augmented the newly organized 72nd and 73rd CA (AA) Regiments.(331)

Harbor Defense Regiment for Portsmouth

With the training of the Panama Detachment at the end of summer 1940, the 8th CA was directed to provide a cadre to organize HQ Battery and a mine battery for the newly constituted 22nd CA (HD) Regiment at Portsmouth. This cadre of 33 enlisted men was commanded by Maj. Edward G. Cowan pending the arrival of the 22nd's commander, Col. Walter K. Dunn.

The detachment was quartered in the post hospital at Fort Constitution pending completion of the new military reservation ultimately designated Camp Langdon. On September 27, 1940, the HD of Portsmouth was reestablished as a separate command.

With the separation of the Portsmouth defenses, Colonel Kimball and his staff were able to turn their full attention to organizing the 8th CA. As recruits arrived at Forts Preble and McKinley during last half of 1940, it became possible to activate Battery B on July 29 with a cadre from Battery A. Like Battery A, Battery B was designated a mine battery and assigned to the Hussey Sound minefield.(332)

Additional enlisted personnel continued to be sent to Portland from the First Corps Area Recruit Reception Center at Fort Devens, MA. On January 13, 1941, the War Department ordered Batteries C, D, E, and F, and HQ Batteries of 1st and 2nd Bns activated. This was accomplished on February 10, 1941, with the batteries taking station as follows:(333)

HQ Battery - Fort Preble
HQ Battery, 1st Bn - Fort Preble
HQ Battery, 2nd Bn - Fort McKinley
Batteries A, C, & D - Fort Preble
Batteries B, E, & F - Fort McKinley

As the weeks progressed, sufficient personnel became available to activate Battery G, the regimental searchlight battery at Fort McKinley on June 1, 1941.

Prior to the outbreak of war, HQ and HQ Battery, 8th CA, was moved to Fort Williams, where it operated the various command functions of the harbor defenses.

Notes Part III

266. "Report of the National Coast Defense Board on Coast Defenses of the United States and the Insular Possessions," Senate Doc. No. 248, 59th Cong., 1st Sess., March 5, 1906.

267. *Coast Artillery: A complete Manual of Technique and Materiel* (Harrisburg, PA, 1941), p. 257.

268. *Report of the Department of the East*, 1910, p. 14.

269. Mimeograph No. 71, "Type of Thin Reinforced Concrete Construction for Fire Control Stations, etc.," RG 77, NARA, Washington D.C.

270. Fire Control Ledgers, Journals, and Memoranda, Fortification Notebook, Portland Harbor, Coast Defense Fortification File 1898-1920, Entry 220, RG 77, NARA, Washington, D.C. Hereafter: Fire Control Ledgers, Journals, and Memoranda.

271. Torpedo Defense Ledgers, Journals, and Memoranda, Fortification Notebook, Portland Harbor, Coast Defense Fortification File 1898-1920, Entry 220, RG 77, NARA, Washington, D.C. Hereafter: Torpedo Defense Ledgers, Journals, and Memoranda.

272. Fire Control Ledgers, Journals, and Memoranda

273. Torpedo Defense Ledgers, Journals, and Memoranda

274. Fire Control Ledgers, Journals, and Memoranda.

275. Torpedo Defense Ledgers, Journals, and Memoranda. Searchlight Ledgers, Journals and Memoranda, Fortification Notebook, Portland Harbor, Coast Defense Fortification File 1898-1920, Entry 220, RG 77, NARA, Washington, D.C. Hereafter: Battery Ledgers, Journals, and Memoranda.

276. Battery Ledgers, Journals, and Memoranda.

277. Adjutant General's Office (AGO), G.O. No. 24, February 2, 1907. A.C.M. Azot, "Great Guns: A History of the Coast Artillery Corps," Pt. 2, *Coast Artillery Journal (CAJ)*, Vol. 84, No. 6 (Nov.-Dec. 1941), p. 574. S.C. Vestal, "Field Service of the Coast Artillery in War," *Journal of the United States Artillery (JUSA)*, Vol. 56, No. 2 (March 1922), p. 218.

278. *Report of the Adjutant General*, 1909, p. 231; 1910, p. 154.

279. *Report of the Adjutant General*, 1911, pp. 194-195.

280. *Report of the Adjutant General*, 1913, pp. 224-25.

281. AGO, *Army List and Directory,* January 20, 1912, p. 26.

282. *Report of the Adjutant General*, 1914, p. 145; 1916, p. 240.

283. "Report of the Board of Review of the War Department to the Secretary of War (November 26, 1915) on the Coast Defenses of the United States, the Panama Canal and the Insular Possessions," Confidential Report, 64th Cong., 1st Sess., pp. 3-6, 12. Eben Eveleth Winslow, *Notes on Seacoast Fortification Construction*, Engineer School Occasional Paper No. 61 (Washington, D.C., 1920), pp. 151-53. Battery Ledgers, Journals, and Memoranda.

284. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards, Entry 712, Records of the Chief of Ordnance, RG 156, Archives II, NARA Washington D.C.

285. AGO, G.O. 129, December 1, 1919. Battery Ledgers, Journals, and Memoranda

286. Winslow, *Note*s, pp. 151-153.

287. R.H.C. Kelton, "Field Service of the Coast Artillery in the World War," *JUSA*, Vol. 56, No. 4 (Apr. 1922), p. 298.

288. AGO, G.O. No. 31, July 24, 1916.

289. "Coast Artillery Corps Companies, July 1, 1916, to December 31, 1920," General Historical Files, Entry 370, Box 396, RG 392, NARA, East Point, GA.

290. *Order of Battle WWI*, Vol. 3, Pt. 2 (GPO, Washington D.C.), pp. 1207, 1215, 1227-28.

291. P.A. Bachelder, "Maine Coast Artillery, National Guard," *JUSA*, Vol. 56, No. 1 (Jan. 1922), pp. 67-68. *Order of Battle WWI,* Vol. 3, Pt. 2, pp. 1193, 1206-08, 1215-16, 1227-28. *Pictorial History: Harbor Defenses of Portland, 1941* (Atlanta, GA: Army-Navy Pub. 1941), pp. 42, 98. Hereafter: *Pictorial History***.**

292. *Order of Battle WWI*, Vol. 3, Pt. 2, pp. 1171-72, 1193, 1206-08, 1215-16, 1227-28.

293. Ibid., pp. 1193, 1206-08, 1215-16, 1227-28. *Pictorial History,* pp. 42, 98. Bachelder, "Maine Coast Artillery," pp. 67-68.

294. *Pictorial History*, pp. 42, 98. Bachelder, "Maine Coast Artillery," pp. 67-68.

295. G.O. No. 144, GHQ, AEF, August 29, 1918, *United States Army in the World War*, Vol. 15, pp. 183, 204; Vol. 16, p. 432. *Order of Battle WWI*, Vol. 3, pt. 2, p. 1141. *Pictorial History*, pp. 42, 98.

296. *Order of Battle WWI*, Vol. 3, pt. 2, pp. 1132-37. Charles Edward Kirkpatrick, *Archie in the A.E.F.* (Ft. Bliss, TX: Air Defense Artillery School, 1984), pp. 122-23.

297. *Order of Battle WWI*, Vol. 3, Pt. 3, pp. 1137.

298. Ibid., Vol. 3, Pt. 1, pp. 151-52.

299. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

300. Battery Ledgers, Journals, and Memoranda. Williford, "Modern Defenses of Portland," unpub. Gun and Carriage Cards. Battery Ledgers, Journals, and Memoranda, Kennebec River, Coast Defense Fortification File 1898-1920, Entry 220, RG 77, NARA, Washington, D.C. Hereafter, Battery Ledgers, Journals, and Memoranda, Kennebec River.

301. *Order of Battle WWI*, Vol.3, Pt.2, pp. 1171-1172, 1193, 1206-08, 1215-16, 1227-28. Battery Ledgers, Journals, and Memoranda. Gun and Carriage Cards.

302. *Order of Battle WWI*, Vol. 3, Pt. 1, pp. 148-49. Kelton, "Field Service of the Coast Artillery in the World War," pp. 305-09.

303. "Annual Report of the Chief of Coast Artillery, 1924," *CAJ,* Vol. No. 61, No. 6 (Dec. 1924), pp. 481-85.

304. AGO, "Army List and Directory, October 1, 1920," p. 85; February 1, 1921, p. 25. "Coast Artillery Corps Companies, July 1, 1916, to December 31, 1920," RG 177, Archives II.

305. H.C. Barnes, "A Regimental Organization for the Coast Artillery Corps," *CAJ*, Vol. 60, No. 4 (Apr. 1924), pp. 293-95.

306. AGO, G.O. No. 21, May 13, 1922.

307. Barnes, "A Regimental Organization for the Coast Artillery Corps," p. 295.

308. *Order of Battle WWI*, Vol.3, Pt.2, pp. 1171-72, 1193, 1206-08, 1215-16, 1227-28. Office of the Chief of Coast Artillery, "Coast Artillery Corps Companies, July 1, 1916, to December 31, 1920," compiled from the outline history of coast artillery, Historical File, Entry 370, RG 392, NARA, East Point, GA. War Department, General Staff Statistics Branch, *Outlines of History of Regiments United States Army Prepared in the Historical Branch War Plans Division*, May 1, 1921. AGO, G.O. 21, May 13, 1922.

309. AGO, G.O. No. 21, May 13, 1922.

310. Kenneth E. Thompson, Jr., *Portland Head Light & Fort Williams* (Portland ME, 1998), pp. 49, 50-51, 55-57.

311. Information from Kenneth E. Thompson. Dunnack, *Maine Forts*, pp. 141-47.

312. Gun and Ordnance Cards.

313. AGO, G.O. No. 8, February 17, 1924. Barnes, "A Regimental Organization for the Coast Artillery Corps," pp. 295-96.

314. AGO, G.O. No. 8, February 17, 1924.

315. Bachelder, "Maine Coast Artillery," pp. 67-68. On July 11, 1922, the unit was redesignated the 1st Coast Defense Command, Maine National Guard, CAC. P.A. Bachelder, "The 240th Coast Artillery (Maine)," *CAJ,* Vol. 61 (Nov. 1924), pp. 445-48.

316. AGO, Harbor Defense Projects, Fort Harbor Defenses included in the Portland-Cape Cod Area, 1932, Pt. IV., Appendix I, Harbor Defenses of Portland, RG 407, Archives II. Hereafter, Harbor Defense Projects, 1932.

317. "The Reorganization and New Training Objective of the Coast Artillery Corps," *CAJ*, Vol. 72, No. 1 (Jan. 1930), pp. 3-7.

318. Harbor Defense Projects, 1932. U.S. Army, Eastern Defense Command, History of the Eastern Defense Command" (New York, 1945) p. 19.

319. Harbor Defense Projects, 1932. *History of the Eastern Defense Command,* p. 19.

320. Harbor Defense Project, Portland Harbor (Revised 1938) Annex A (Armament), June 3, 1938, RG 407, Archives II.

321. Ibid.

322. Ibid.

323. Ibid.

324. Johnson Hagood, *We Can Defend America* (Garden City, NJ, 1937), pp. 40-51.

325. "Troops Ordered to Maine," *New York Times*, Sept. 19, 1939, p. 6. "First Coast Artillery District," *CAJ*, Vol. 82, No. 6 (Nov.-Dec. 1939), p. 594.

326. The 68th Arty, CAC, had served in France in WW I and been demobilized in 1919. The 68th CA (AA) Regt. was organized in 1926 as an inactive unit and in 1936 was consolidated with the reconstituted 68th Artillery CAC. The 8th, 9th, and 10th CA Regiments typically consisted of only their HQ batteries and one firing battery at most in late 1939. "First Coast Artillery District," *CAJ*, Vol. 83, No. 1 (Jan.-Feb. 1940), p. 85. 68th CA Regiment File, US Army Center of Military History, Washington, D.C.

327. "First Coast Artillery District," *CAJ*, Vol. 83, No. 2 (Mar.-Apr. 1940), p. 192

328. "History of the Northeastern Sector, Eastern Defense Command," RG 338, Archives II. "First Coast Artillery District," *CAJ*, Vol. 83, No. 6 (Nov.-Dec. 1940), p. 569. 68th CA Regiment File, CMH. In early 1942, General Garrett was transferred to Hawaii to command of the Hawaiian Seacoast Artillery Command.

329. "First Coast Artillery District," *CAJ*, Vol. 83, No. 6 (Nov.-Dec. 1940), pp. 570-71; Vol. 84, No. 1 (Jan.-Feb. 1941), p. 76; Vol. 84, No. 2 (Mar.-Apr. 1941), p. 179; Vol. 84, No. 5 (Sept.-Oct. 1941), p. 497.

330. "Coast Artillery Orders," *CAJ*, Vol. 71 (1929) through Vol. 84 (1941). "Officers Station List, Coast Artillery Corps," January 20, 1937, Supplement to *CAJ*, Vol. 80, No. 1 (Jan.-Feb. 1937), pp. 1-7; October 1938, *CAJ*, Vol. 81, No. 5 (Sept.-Oct. 1938), pp. 491-96. Lt. C.L. MacLachlan arrived at Fort Preble in the summer of 1939.

331. AGO, Historical Data Sheet and Station List, HQ and HQ Battery, Harbor Defenses of Portsmouth, N.H.; Panama Recruit Detachment, 8th Coast Artillery (HD) Regiment, Organizational Records Unit, Military Personnel Section, National Personnel Records Center, St. Louis, Mo.

332. "First Coast Artillery District," *CAJ*, Vol. 83, No. 6 (Nov.-Dec. 1940), pp. 570-71.

333. Historical Data Sheet and Station List, 8th Coast Artillery (HD) Regiment. "First Coast Artillery District," *CAJ,* Vol. 83, No. 6 (Nov.-Dec. 1940), pp. 570-71. *Pictorial History*, pp. 14, 98.

The Seacoast Defenses of Portland, Maine 1605-1946 Part IV - 1940-1950

William C. Gaines

A New System of Harbor Defense

The Veterans Administration's need for additional facilities caused them to approach the War Department in March 1940 to ascertain whether the army had any military posts that could be transferred to that agency. In the course of evaluating this request, the War Department ordered a new survey of the nation's seacoast defenses by the Harbor Defense Board. This survey was still in progress in June when France fell and Nazi Germany threatened to overrun Great Britain. The possibility that a captured French fleet and possibly the greater part of the British fleet could be seized and combined with the German Kriegsmarine raised the specter of an inadequately defended American eastern seaboard attacked by a massive enemy fleet. The Harbor Defense Board presided over by Maj. Gen. Walter C. Baker, chief of the Chemical Warfare Service, was directed to completely reassess harbor defense requirements.(334)

On July 27, 1940, the board submitted its recommendations for what would become the last system of seacoast gun defenses in the United States. The primary seacoast weapon would be the 16-inch gun, with 6-inch guns as standard secondary armament. The board proposed 27 pairs of 16-inch guns, in protective casemates of thick concrete covered with earth to protect against aerial bombardment and naval gunfire. The proposed 51 two-gun 6-inch barbette batteries were to be supplemented by about 63 older 3 and 6-inch R-F batteries. This would permit deletion of 128 outmoded Endicott-era batteries. In addition to the new construction, four of the eight 16-inch barbette batteries and ten of the fifteen 12-inch barbette batteries completed after World War I were also to be casemated. By September 11, 1940, the initial priorities were set.

Eighteen harbor defenses in the continental United States were earmarked by the board for new battery construction during the summer of 1940. Each harbor was originally planned to have from one to four batteries of 16-inch guns and two or three 6-inch gun batteries. These batteries were generally on headlands or seaward points, where they covered the harbor entrances as far offshore as possible.

The seven 16-inch gun batteries authorized in 1934 were also included in the 1940 program, bringing the total number of primary batteries to 34. Subsequently, a 35th battery was projected for the Panama Canal Zone. In September 1940, the navy authorized transfer of 68 additional MkIIM1 16-inch guns to the War Department.

With a supply of guns assured, construction plans were further developed, project numbers assigned to each battery, and their priority established. About three-quarters of the total estimated cost of about $82 million was approved.

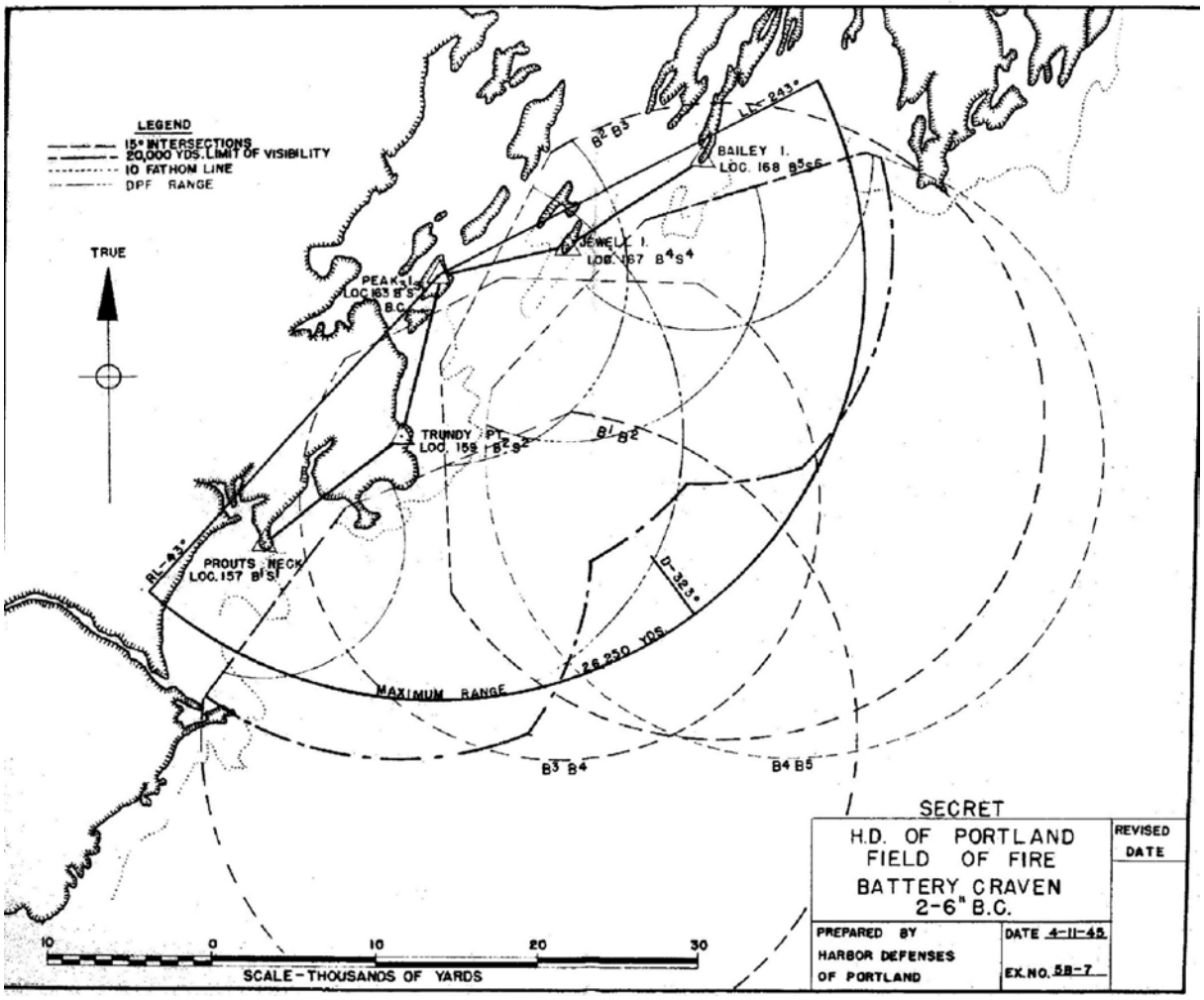
The various projects in the 16-inch battery program were numbered, beginning with 101. Battery Construction Numbers (BCN) 101 and 102 were at Portland, BCN 103 was at Portsmouth, and so on down the Atlantic seaboard, westward along the Gulf of Mexico, and northward up the Pacific coast from San Diego to Puget Sound.

Portland's pair of 16-inch batteries, the casemating of Battery Foote's 12-inch guns, and construction of three batteries for 6-inch guns, along with their fire control stations, were estimated to cost $5,847,000. Initially, one of Portland's proposed 16-inch batteries, BCN 101, had ranked 16th in priority. The site selected was on the south side of Cape Elizabeth. Portland's other 16-inch battery

site, BCN 102 on the east side of Peaks Island, was ranked 31st. The lower ranking of the Peaks Island site was due, no doubt, to Battery Foote's 12-inch guns on nearby Cushing Island. A battery on Cape Elizabeth would increase the coverage of Porland's seaward approaches more than a battery on Peaks Island.

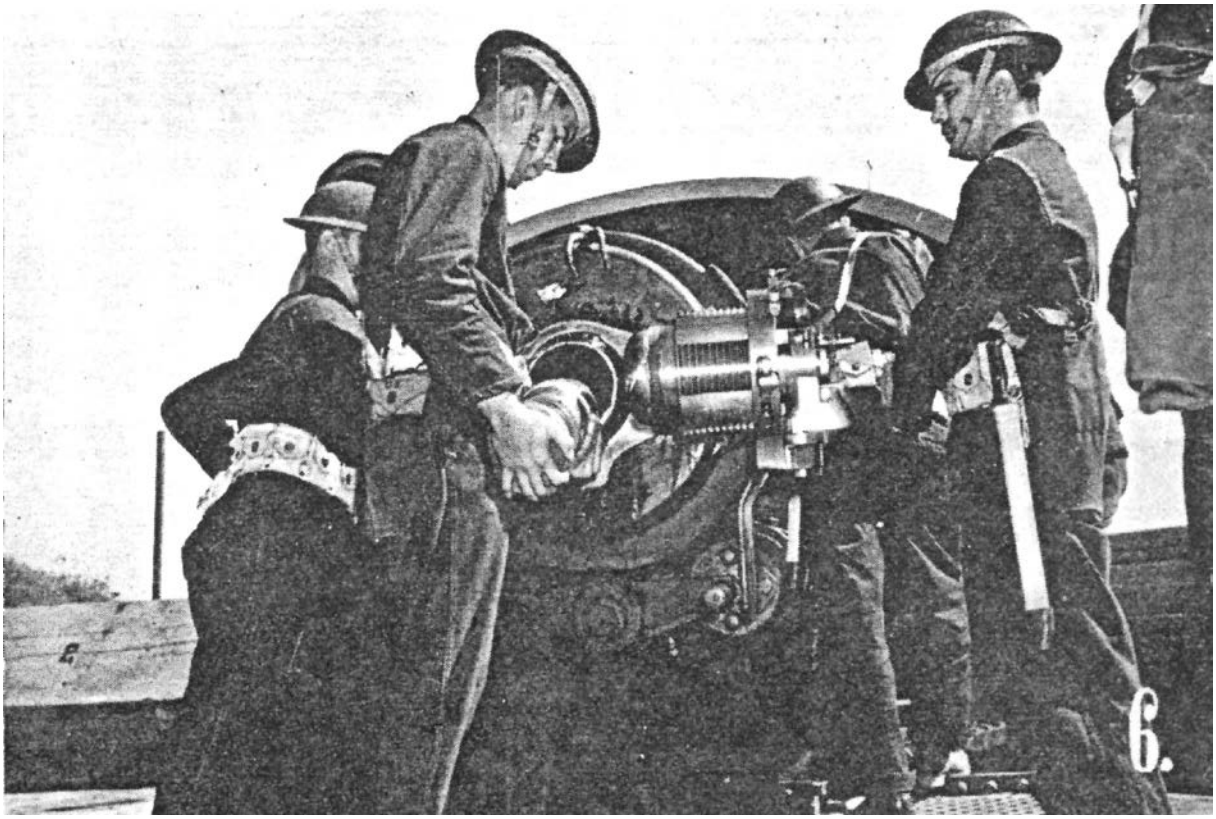
The July 1940 board findings called for construction of 51 batteries of 6-inch guns within the continental United States. In the fall, 30 additional sites in Newfoundland, Alaska, and the Caribbean were added to the program. Still later five more batteries were projected for Oahu in the Hawaiian Islands. Because of their more vulnerable locations, the overseas batteries were given priority over those in the continental United States. Plans and designs for these secondary batteries were not finalized and construction authorized until August 1942.

The 6-inch batteries were numbered in the same geographic order within the 200 series. BCNs 201, 202, and 203 were planned for Portland Harbor. BCN 201 was to be built on Cape Elizabeth near Twin Lights, several hundred yards from projected Battery 101. Battery 202 was sited on the south end of Jewell Island, while Battery 203 was to be located a few hundred yards from Battery 102 on Peaks Island. These 6-inch guns, enclosed on three sides by cast-steel shields to protect the weapons and crews, were considered adequate to counter cruisers, destroyers, and lesser naval vessels at up to 15 miles.



Field of fire for Battery Craven (BCN 203) and fields of observation of its base end stations. *NARA*

The remaining 3 and 6-inch barbette batteries in Portland Harbor, 6-inch Batteries Carpenter at Fort McKinley and Ferguson at Fort Levett, and 3-inch Batteries Mason at Fort Preble, Keyes at Fort Williams, and Abbott at Fort Lyon, were to be provided with new splinter-proof shields covering their fronts, sides and overheads. Upon completion of the modernization program, the 12-inch disappearing gun batteries at Forts Williams, Levett, and McKinley, and the remaining 12-inch mortars at Forts Preble and McKinley, along with Battery Acker's 6-inch disappearing guns at Fort McKinley, were to be taken out of service.(335)



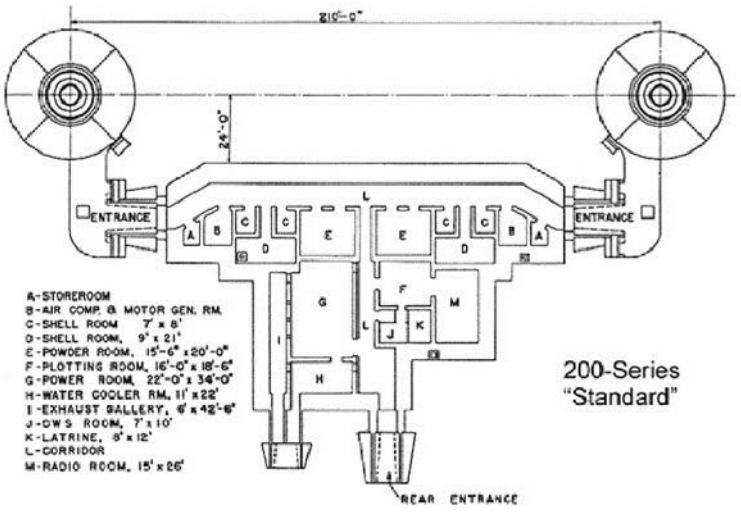
Battery C, 240th CA Regiment, loading one of Battery Ferguson's 6-inch guns at Fort Levett.
Author's Collection

1940 Program Altered

The program progressed slowly. Planning, constructing, and emplacing big guns was a lengthy process and the program lagged as it vied with other construction projects as the nation geared up for war. By August 1941, the War Department had decided to continue construction on only those 16-inch batteries that could be brought to completion by the end of June 1944. Construction of the others was deferred.(336)

Because of the August reductions, it was necessary to re-prioritize the projects, and several battery sites were relocated. At Portland, the site on Cape Elizabeth for BCN 101 had still not been acquired. Consequently, that battery was dropped to 33rd on the priority list, which would have the ultimate effect of dropping it from the program altogether. The Peaks Island site had, however, been acquired and the priority ranking of BCN 102 rose to 15th on August 11. By the fall of 1942, the batteries deferred in August 1941, including BCN 101 on Cape Elizabeth, were canceled altogether.

The 200-Series Battery Program of 6-inch guns was also delayed. The 51 continental batteries were held up until the Corps of Engineers could develop a satisfactory standardized battery plan. Once this had been developed in August 1941, the program was again delayed by the higher priority for some 20 batteries to be constructed at newly acquired overseas bases.(337)



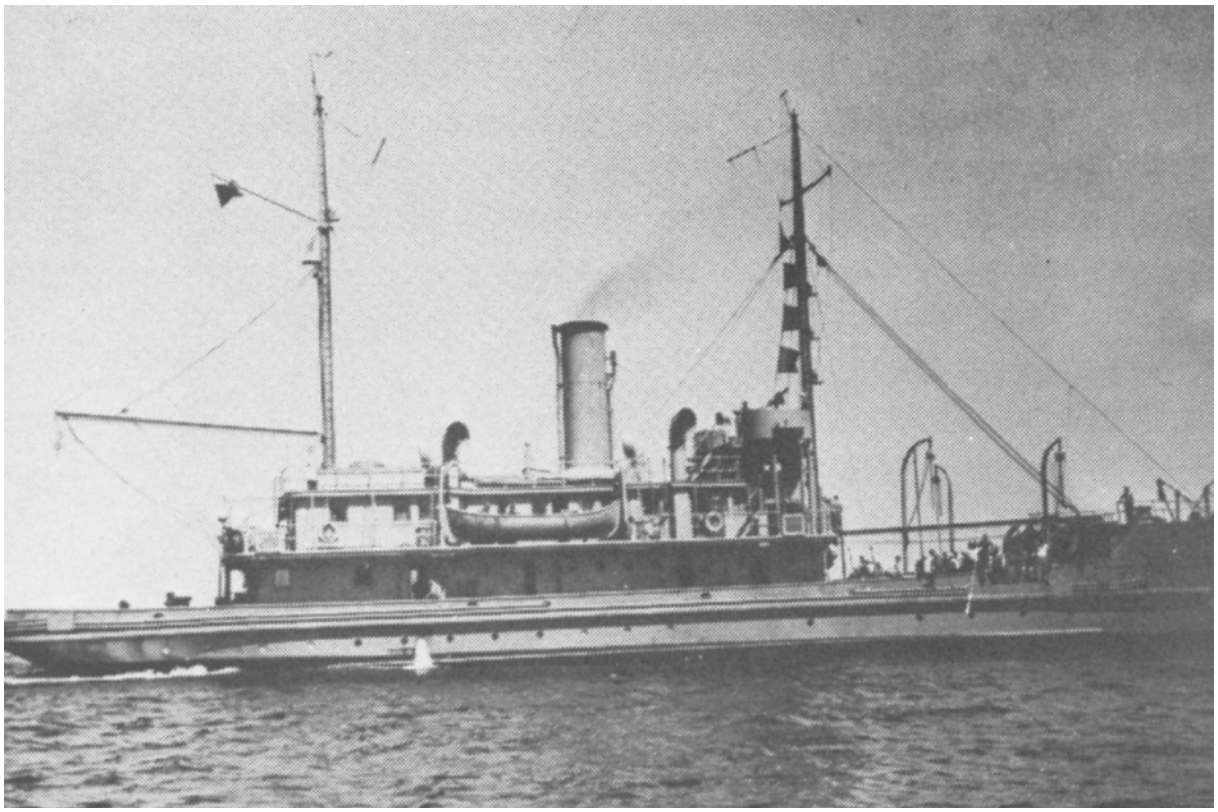
Standard plan for 200-series 6-inch batteries. *CDSG Journal*

World War II

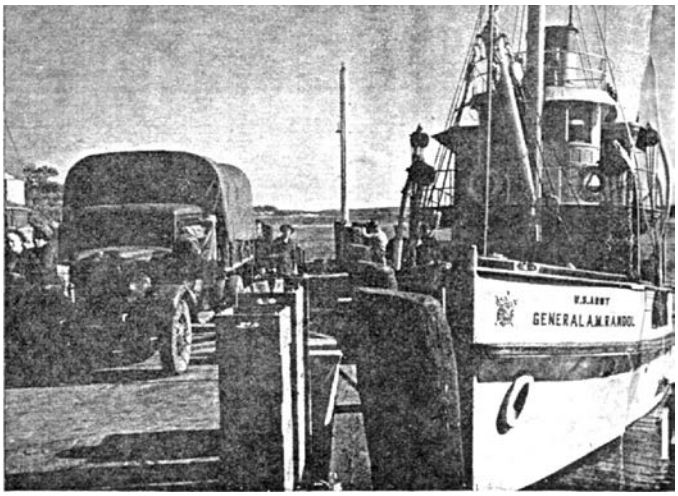
When the United States entered World War II in December 1941, the HD of Portland were still organized in accordance with the 1938 revision of the 1932 Harbor Defense project. However, various improvements were carried out in accordance with War Department directives in 1940 and 1941. Most of these were related to the War Department's projected 1940 Harbor Defense Program and centered around temporary measures to be implemented pending completion of the new defense projects. The primary changes were concerned with fire control sites, searchlight installations, and temporary batteries for 155 mm mobile seacoast guns. In connection with these modifications, several changes were made in the organization of the tactical and command elements.

The various coast artillery posts and installations were increasingly busy as the last months of 1941 passed. Much of the previous year had been spent rehabilitating the gun and mortar batteries that had been in caretaking status for the past two decades. In May 1941, the harbor defenses were placed on "Watch Status," which required manning the "H" station constantly, with at least one observation station and one seacoast battery continuously manned and ready to fire. The harbor defense antiaircraft group was also prepared for immediate action. The 8th and 240th CA went to increased states of alert in October and in effect assumed war condition.(338)

Preparing the harbor defenses for active service involved major expenditures of time and money. During the latter part of 1941, the 8th and 240th CA began camouflaging the exposed surfaces of the old Endicott works from aerial observation. Tone-down paint was applied to concrete loading platforms and blast aprons, as well as sidewalls. Frames were erected over batteries and roadways in their rear and covered with garnished nets. Wooden camouflage panels on rollers for quick removal were set in place on the blast aprons to break up the "flat-top hill" appearance of the Endicott batteries. It was also necessary to conceal batteries that had been previously abandoned to prevent them being utilized



USAMP *General Absalom Baird*. *Author's collection*



Army quartermaster harbor boat *General A.M. Randol* at Fort McKinley. *Author's Collection*

as reference points. When completed, the installations were considered virtually invisible at an altitude of 20,000 feet and at lateral distances of four and one-half miles.(339)

When the First Army ordered the harbor defenses to implement the submarine mine projects on December 8, 1941, that process was already well advanced. As early as the summer of 1940, preparations were made to plant minefields at the entrances to the main ship channel and Hussey Sound. The submarine mine project had been approved and all required material was on hand. On August 8, 1940**,** the only mine planter in New England, USAMP *General Absalom Baird,* arrived at Portland and Battery A of the 8th CA began planting and activating controlled ground mines in the main ship channel.

Battery A, 240th CA Regiment, and mines ready for planting. *Author's Collection*

Distribution box boat L-47 assisted with mine planting. *Author's Collection*

During the summer of 1941, buoyant mines were planted across the entrances to Hussey Sound and Portland's main ship channel. Once the United States entered World War II, mine planting was hastened. In spite of severe winter conditions, the remainder of the minefields were laid using the quartermaster vessel *General A.M. Randol* that had been adapted to serve as a "junior mine planter." During one 24-hour period alone, in excess of one and one-half mine groups were planted. By the end of December the entire mine project was in place.(340)

The buoyant mines were moored approximately 40 ft. deep in the center of the channel and 20 ft. on each flank. The mines guarding Hussey Sound were kept on contact unless ordered deactivated; those in the main ship channel were only activated at night. Between February and May 1943, these buoyant mines were replaced by magnetic ground mines. The ground mine's magnetic sensors proved very sensitive, alerting the mine casemate to all vessels entering or leaving the harbor.(341)

Prior to the outbreak of World War II, the harbor defense commander at Portland reported to the commander of the First Coast Artillery District at Fort Banks, in Boston. The district commander reported through the corps area and the army commander to the War Department in Washington. On December 11, 1941, the First Coast Artillery District was redesignated the New England Sector of the Northeast Defense Command (NDC), commanded by Maj. Gen. Thomas A. Terry. The district generally corresponded geographically to the First Corps Area. This organization was short-lived, however, for on December 24, 1941, the NDC was redesignated part of the Eastern Theater of Operations.

Shoulder patch of the 1st Coast Artillery District. *Author's Collection*

The New England Sector continued as one of four sectors of the Eastern Theater of Operations until March 20, 1942, when the Eastern Theater of Operations was redesignated the Eastern Defense Command (EDC). This organizational structure was retained until March 27, 1944.(342)

The HD of Portland and Portsmouth constituted the Portland Sub-sector of the New England Sector. The sub-sector was commanded by Brig. Gen. Harold F. Loomis until July 15, 1942, when he was succeeded by Brig. Gen. Thomas H. Jones who commanded until February 1944. The sub-sectors were disbanded in March 1944 and the various harbor defenses reported directly to sector headquarters. On April 1, 1945, the sectors were abolished and the harbor defenses reported directly to the EDC until the end of the war.(343)

The year before the United States entered World War II, the commander of the HD of Portland changed with some frequency, as the position was held by the senior officer present. Col. Otto Schrader, commanding the 8th CA, was succeeded by Col. Robert C. Garrett of the 68th CA (AA) from December 5, 1939, until the 68th CA moved to Camp Edwards September 16, 1940. In the meantime, Colonel Schrader had been succeeded by Col. Franklin Kemble. Col. George E. Fogg, a National Guard officer whose 240th CA had been activated for federal service in September 1940, was senior to Col. Kemble who commanded the 8th CA. Fogg therefore served as harbor defense commander from Colonel Garnett's departure until December 1941, when Garrett, promoted to Brigadier General, was reassigned to command of the HD of Portland. He was posted at Portland for only a few months, however, before he was transferred to command the Hawaiian Seacoast Artillery Command.

Inspection of Battery A, 68th CA Regiment, at Fort Williams. *Author's Collection*

With the outbreak of war, the headquarters moved from Fort Preble to Fort Williams, where the harbor defense command post (HDCP), the harbor entrance control post (HECP), the Antiaircraft Intelligence Service (AAIS) command post, and other tactical command functions were situated. Fort Williams remained the headquarters post of the HD of Portland through the end of the war.

When the United States entered World War II, General Garrett's harbor defense garrison consisted of two regiments of coast artillery. The 8th CA (HD), commanded by Colonel Kemble, was headquartered at Fort Preble, with seven batteries at Forts McKinley and Preble, while Colonel Fogg's 240th CA (HD) garrisoned Forts Williams and Levett:(344)

HHB, 8th CA (HD) – Ft. Williams
- HHB, 1st Bn, 8th CA (HD)– Ft. Preble
  - Battery A – Ft. Preble – Mines I
  - Battery B – Ft. McKinley – Mines II
  - Battery C – Ft. Preble – Battery Phillip Mason & AA Battery
- HHB, 2nd Bn, 8th CA (HD) – Ft. McKinley
  - Battery D – Ft. Preble – Batteries Kearny and Chase
  - Battery E – Ft. McKinley – Battery Ingalls
  - Battery F – Ft. McKinley – Battery Carpenter
  - Battery G – Ft. McKinley – Battery Acker

HHB, 240th CA (HD) – Ft. McKinley
- HHB, 1st Bn, 240th CA (HD) – Ft. Levett
  - Battery A – Ft. Levett - Battery Foote
  - Battery B – Ft. Levett - Battery Bowden
  - Battery C – Ft. Levett - Battery Ferguson
- HHB, 2nd Bn, 240th CA (HD) – Ft. McKinley
  - Battery D – Ft. McKinley – Battery Berry
  - Battery E – Ft. Lyon – Battery Abbot & AA Battery
  - Battery F – Ft. Williams – 155 mm Battery
- HHB, 3rd Bn, 240th CA (HD) – Ft. Williams
  - Battery G – Ft. Levett
  - Battery H – Ft. Williams – Battery Erasmus Keyes
  - Battery I – Ft. Williams – Battery Blair
  - Battery K – Ft. Williams – AA SL
  - Band – Ft. McKinley

Unit Assignments

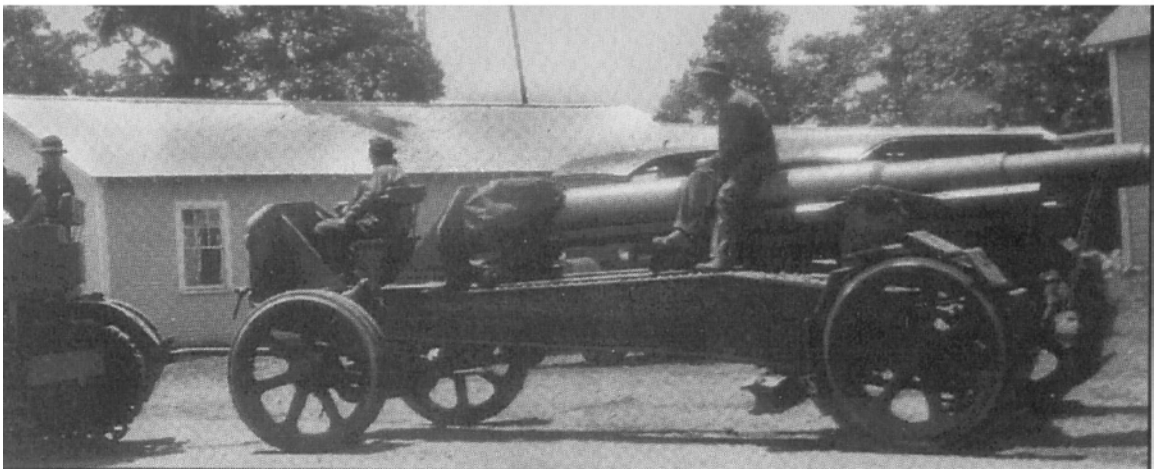
As the tactical situation changed during the war, the elements of the 8th CA and 240th CA were shifted. The 8th CA was primarily posted at Forts Preble and McKinley until the declaration of war, when some of its batteries were deployed to other locations, and one of the 8th CA's batteries manned the 3-inch AMTB battery on Peaks Island. The 240th manned Batteries Foote, Bowdoin, and Ferguson at Fort Levett; Battery Berry at Fort McKinley, and Batteries Blair, DeHart, and Sullivan at Fort Williams.

HQ and HQ Battery (HHB), 8th CA, had moved to Fort Williams from Fort Preble to operate the HDCP, HECP, and signal station, but on December 19, 1941, the battery moved to Fort McKinley.

HHB, 1st Bn, 8th CA, remained at Fort Preble until January 17, 1944, when it too moved to Fort McKinley. Battery A at Fort Preble, manning the mine defenses of the main ship channel, had a detachment manning Battery Keyes at Fort Williams. Battery B continued to operate Mines II at Fort McKinley throughout the regiment's service at Portland. Battery C manned Battery Mason's 3-inch gun and Fort Preble's fixed 3-inch AA battery until December 17, 1943, when it moved to Fort McKinley.

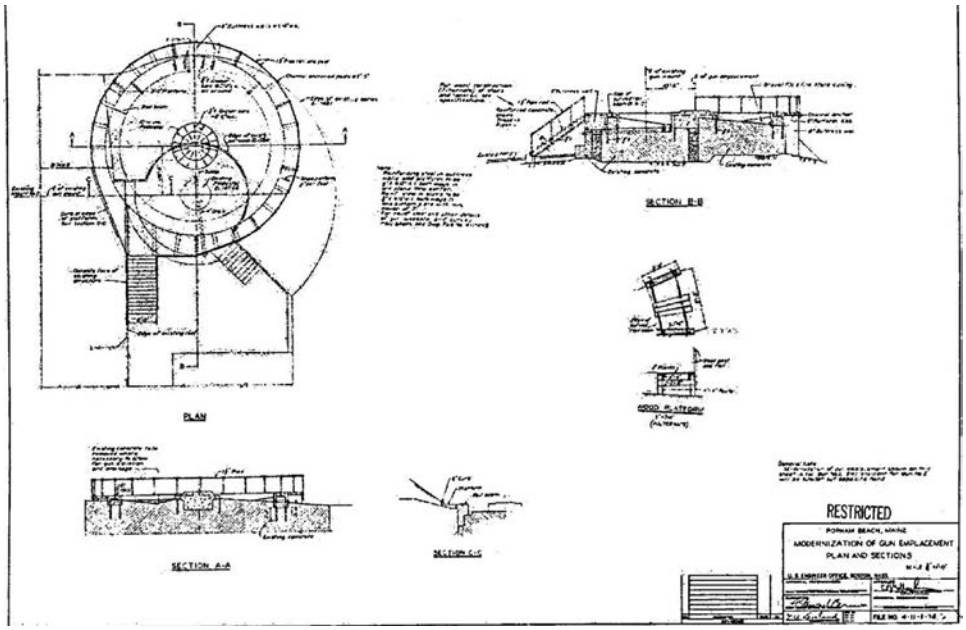
HHB, 2nd Bn, 8th CA, was posted at Fort McKinley until August 18, 1943, when it moved to Peaks Island, before returning to Fort McKinley on February 15, 1944. Battery D was the first battery of the regiment to deploy out of the immediate confines of Casco Bay. During 1941, sixteen batteries

of 155 mm GPF mobile guns were procured for New England harbor defenses. To protect the farthest limits of Portland Harbor, three four-gun batteries were sent to Portland in late 1941. One battery position selected was at the mouth of the Kennebec River, where the once-abandoned Fort Baldwin had been leased back from the State of Maine, reactivated, and manned by Battery D, 8th CA, which moved there from Fort Preble on December 11, 1941.

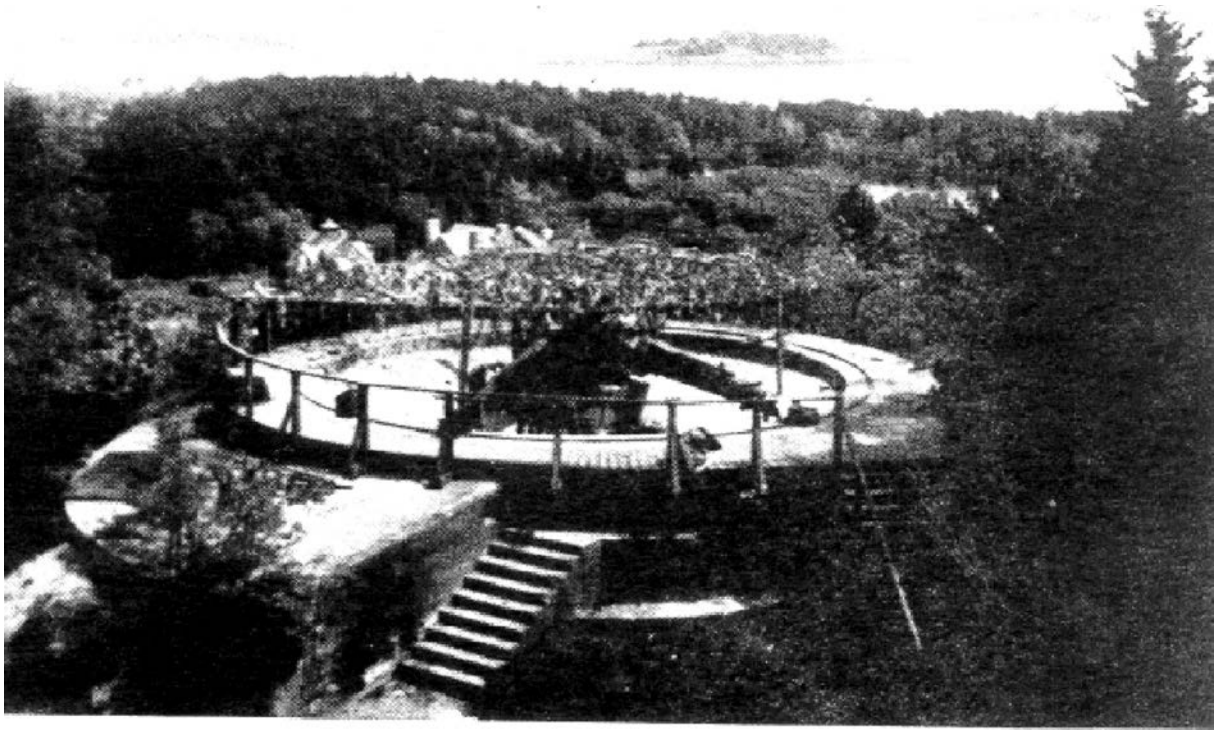


155 mm GPF gun in tow. *Joel Eastman Collection*

Battery Hawley's two loading platforms at Fort Baldwin, formerly for 6-inch R-F guns on pedestal mounts, were raised to accommodate two 155 mm guns on Panama mounts. The other two 155 mm guns were emplaced on Panama mounts in front of the fort's Endicott-era batteries. These emplacements served the dual purpose of extending the field of fire for Portland's defenses and defending the mouth of the Kennebec River, downstream from the important Bath shipyards. Battery D, 8th CA, manned the GPF battery at Fort Baldwin until June 25, 1943, when it was relieved by Battery D, 243rd CA, transferred from the HD of Long Island Sound. In September 1943, Battery D, 243rd CA, was redesignated Battery I, 8th CA.

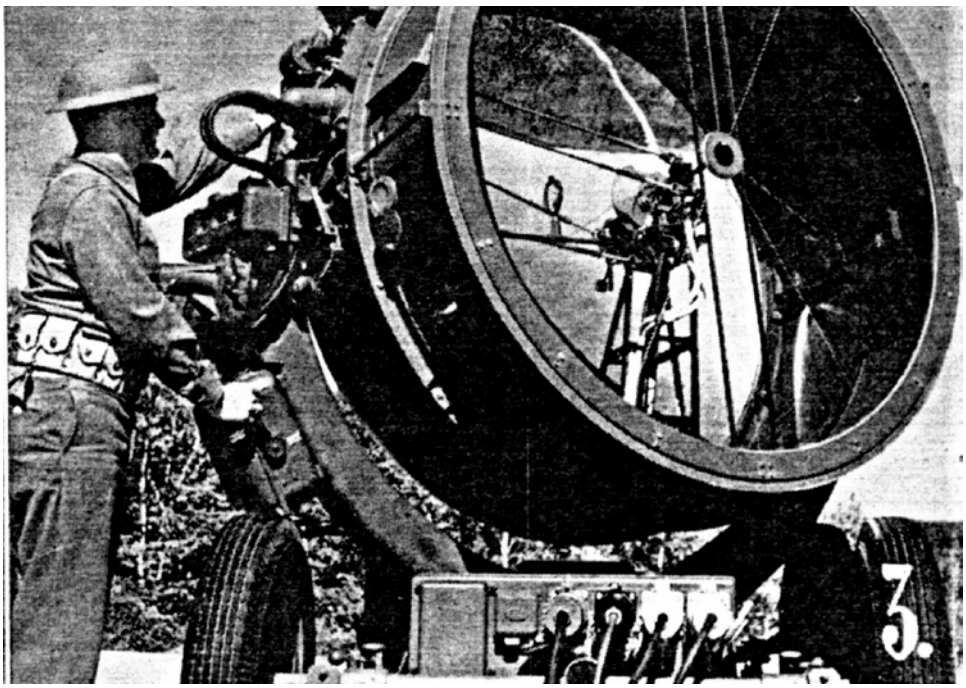


Modernization of Battery Hawley for 155 mm gun. *NARA*



A 155 mm gun of Battery D, 8th CA, in the modernized emplacement at Battery Hawley. *Author's collection*

Battery E moved from Fort McKinley to Peaks Island, June 26, 1942, returning on February 18, 1944. Battery F was posted at Fort McKinley until it was transferred to Peaks Island from September 13, 1943, until February 18, 1944.



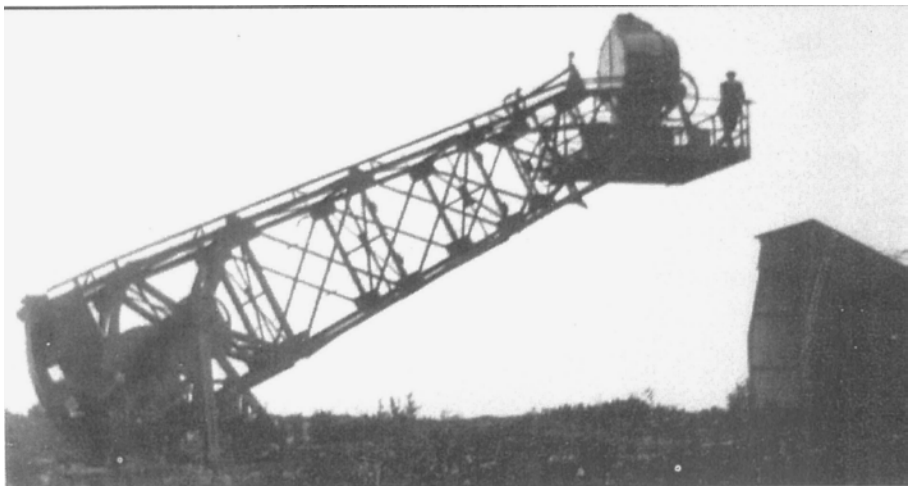
60-inch portable Sperry searchlight of Battery G, 8th CA. *Author's Collection*

Battery G, the regimental searchlight battery, was transferred from Battery Acker at Fort McKinley to Fort Preble on April 3, 1942, but its searchlight detachments were posted throughout the harbor defenses. When the 8th CA was expanded to a three-battalion regiment in September 1943, Battery G was redesignated Battery K, but remained the regimental searchlight battery. The new Battery G was the former Battery K, 241st CA. Battery G(II) was posted at Fort Preble from September 1943 to February 3, 1944, when it moved to Fort McKinley.(345)

In the summer of 1943, the 8th CA Regiment was reorganized and expanded, and its battery assignments were changed. On June 25, 1943, Battery D moved from the 155 mm position at Fort Baldwin to Peaks Island, where it took over the new AMTB battery.

Battery E, 10th CA, HD of Narragansett Bay, was detached from Fort Church, RI, on August 26, 1943, and assigned to Portland. Upon arrival in the Portland Sub-sector, Battery E was sent to Bailey's Island to relieve Battery B, 240th CA, which then moved to Fort Levett.

On July 10, 1943, S.O. No. 137, New England Sector, temporarily transferred Battery M, 241st CA, from Fort Andrews in Boston Harbor to Portland. A week later, on July 17, 1943, New England Sector transferred HHB, 4th Bn, and Battery K, 241st CA, from Boston to Portland. The arrival of these units foresaw the expansion of the 8th CA from a two-battalion Type-B regiment to a Type-A regiment with three battalions, on September 13, 1943. This required permanent changes of station for the Narragansett Bay and Boston batteries and their redesignation as elements of the newly constituted 3rd Bn, 8th CA. HHB, 4th Bn, 241st CA, was redesignated HHB, 3rd Bn, 8th CA. Battery K, 241st CA, was redesignated Battery G(II) of the 8th CA; Battery M of the 241st became Battery H of the 8th; Battery D, 243rd CA, became Battery I, and Battery E, 10th CA, was redesignated Battery L, 8th CA.(346)



Partially elevated bascule-type searchlight tower for fixed 60-inch Sperry searchlight.
Joel Eastman Collection

Batteries of the 240th CA Regiment occupied various positions in the HD of Portland during the first year of training. By the end of summer 1941, firing batteries were at Forts Levett, Williams, and Lyons. The regimental HHB was at Fort McKinley at the beginning of the war, but on January 2, 1942, HHB and the regimental band moved to Fort Williams, where its personnel worked with the headquarters elements of the harbor defenses to operate the harbor defense command. By the time the nation entered World War II, the firing batteries were already on a war footing. The regimental medical section at Fort McKinley was moved to Fort Levett from December 19, 1941, until August 11, 1942, when it moved across the channel to Fort Williams.

HHB, 1st Bn, 240th CA, manned the command post for the gun group at Fort Levett, while Battery A manned Battery Foote's 12-inch long-range guns. Battery B was also posted on Cushing Island, manning the 12-inch disappearing guns of Battery Bowdoin. On July 6, 1942, in response to reports of German submarines in Penobscot Bay, Battery B, commanded by 1st Lt. Guilford B. Sawyer, traveled to Fort Point near Stockton Springs, ME, on the right bank of the Penobscot River near the head of Penobscot Bay. Here the battery encamped adjacent to the site of old Fort Pownall (erected in 1759 and reduced to total ruins by 1779). Shortly thereafter, the unit was equipped with two 155 mm GPF guns and a coincidence range finder set up in field emplacements at Fort Point.

Battery B had been living under canvas for nearly a month when it was ordered to Bailey's Island with its two 155 mm guns. The battery was succeeded at Fort Point by a detachment of the antitank platoon of the 211th FA, armed with 37 mm guns, which remained at Stockton Springs only until they relocated to Bucksport across the Penobscot River on December 19, 1942. The August 3 movement to Bailey's Island was to guard the easternmost entrances to Casco Bay in response to reported U-boat sightings in June. The troops got a break; they were quartered in a hotel near the battery site. Battery B of the 240th left Bailey's Island on July 26, 1943. It was replaced by Battery E, 10th CA, from Fort Church, RI, and subsequently redesignated Battery L, 8th CA. Battery B returned to Fort Levett on Cushing Island, where it resumed manning Battery Bowdoin. Battery C was also posted at Fort Levett at the beginning of the war, manning Battery Ferguson's 6-inch guns.

HHB, 2nd Bn, 240th CA, moved from Fort McKinley to Fort Williams on December 19, 1941. It provided command and control of the batteries at Fort Williams until November 2, 1942, when it moved to Chebeague Island to man one of the temporary 3-inch AMTB batteries. Battery D, 240th CA, manned the 12-inch disappearing guns of Battery Berry until December 19, 1941, when it moved to Fort Lyon to assist Battery E in manning the 3-inch seacoast and AA batteries on that island. Battery D manned Fort Lyon's batteries until July 13, 1943, when it was ordered to Jewell Island. Battery E, 240th CA, was posted at Fort Lyon, manning the 3-inch AA guns and Battery Abbot's 3-inch R-F guns that covered the interior waters of Hussey Sound. December 12, 1941, Battery F, 240th CA, placed a battery of 155 mm GPF guns at Biddeford Pool, southwest of Fort Williams, near the Fletcher's Neck fire control station some 16 miles southwest of Cape Elizabeth, thus extending the harbor defenses' coverage. Battery F maintained the battery at Biddeford Pool until February 12, 1943, when it moved to Fort Levett and the GPF guns were taken over by Battery E, 22nd CA, from Fort Foster at Portsmouth. Battery E of the 22nd maintained the battery position until October 28, 1943, when the position was inactivated and the guns returned to Fort Williams and Battery E, 22nd CA, departed for Pulpit Rock in the HD of Portsmouth.(347)

When the war began, HHB, 3rd Bn, 240th CA, was stationed at Fort Williams, where it helped operate the defenses. Battery G, 240th CA, manned Fort Levett's three 3-inch AA guns. Battery H manned the 3-inch guns of Battery Keyes (the harbor defense examination battery) at Fort Williams until transferred to Chebeague Island May 27, 1943. Battery I manned Battery Blair. In addition, early in the fall of 1941 Battery I had been assigned collateral duties as a mobile security unit, part of a provisional battalion that would constitute a first response in the event of an enemy landing in the harbor defense area. Battery K, 240th CA, manned the antiaircraft searchlights at Fort Williams. Early in the fall of 1941, Battery K was also assigned as part of the first response battalion.(348)

By mid-January 1942, the War Department was planning to constitute and activate additional coast artillery battalions. The 26th CA (HD) Bn, slated for service in Iceland, was to be partially formed in the HD of Portland. HHB and Batteries A and B were to be organized at Fort McKinley from personnel of the 8th CA, and Batteries C and D from the 22nd CA at Portsmouth. However,

each firing battery was to be composed of only two guns in two sections, giving them about half the strength of a regular firing battery. HHB was to be augmented with four officers and 44 enlisted men to operate four searchlight sections, each with two 60-inch portable searchlights.

The Portland elements of the 26th CA Bn were organized at Fort McKinley on January 28, 1942. Within a few weeks, Batteries C and D joined the battalion, which continued to train at Fort McKinley until May 1942. On May 2, an advance party departed for the staging area at Fort Slocum, NY, preparatory to the battalion's movement, and the batteries moved piecemeal throughout the summer of 1942. Battery C moved out for Camp Curtis Guild at Wakefield, MA, July 25 and Battery D left on August 1 for Fort Slocum. HHB and Batteries A and B left for Camp Myles Standish, MA, on August 12.(349)

New Harbor Defense Sites

The 1940 Harbor Defense Modernization Program created a need for land along the coastline east and west of Portland for fire control stations for projected long-range batteries. More than a dozen channels between the islands of Casco Bay could be used by small vessels to reach the anchorage at Portland. To cover these, the army planned to acquire numerous sites for AMTB batteries.

Prior to December 1941, in addition to the four principal coast artillery posts, the army controlled five smaller reservations. The two sites had been acquired in 1922 for base end stations for Battery Foote: one on Jewell island, the other on Trundy Point.

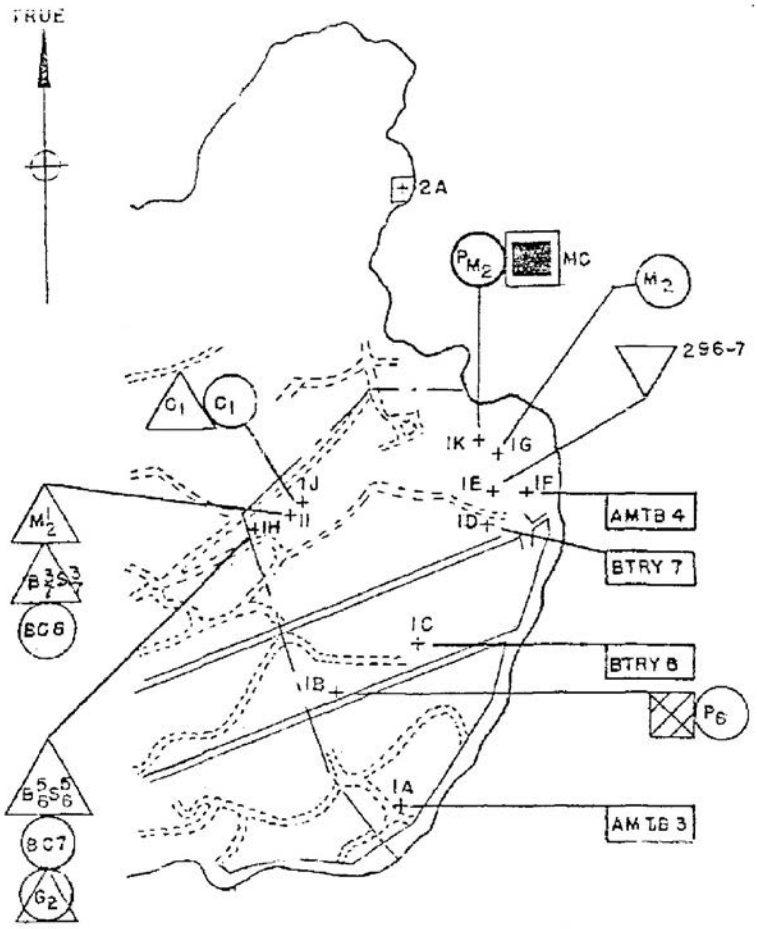
On Long Island, another small tract purchased in 1903 was utilized by a pair of 60-inch seacoast searchlights on cars that ran along a tramway, with a shelter at the mid-point of the tramway. A fourth piece of land on Peaks Island, acquired in 1906 as a searchlight and R-F gun battery site, overlooked Hussey Sound. Crow Island, a fifth site off the mouth of Diamond Cove on Great Diamond Island, had been acquired in 1913 but was unused.

Once the new sites for the modern seacoast batteries were determined in 1940, the army began to determine locations where base end stations and their associated installations would be required. With the outbreak of war, the War Department authorized the Corps of Engineers to acquire additional tracts along the coastline for the scores of fire control stations, searchlights, gun batteries, and radar stations that would become part of the harbor defenses. During the next 18 months, 25 additional tracts of land in the HD of Portland would be acquired by purchase or lease.(350)

Peaks Island, Location 163

In 1906, a small 19.76-acre tract overlooking Hussey Sound was acquired for a two searchlights on Peaks Island. A 36-inch light was mounted on a wooden tower and transferred on December 26, 1905, and a 60-inch light on a bascule-type disappearing steel tower was transferred on June 19, 1909. Electric power was supplied by a pair of gasoline motors that powered 25 kW G.E. generators. In 1916, the commanding general of the Eastern Department recommended to the War Department Board of Review that three 6-inch guns be emplaced on either Peaks or Cushing Island to protect the searchlights.(351)

Although the guns were not emplaced, the site was utilized in 1940 for a temporary AMTB battery of 3-inch R-F guns in conjunction with the Hussey Sound minefield. Its central location in Casco Bay between the two principal passages into Portland Harbor gave Peaks Island a major role in the projected harbor defense program.



Peaks Island in World War II. *NARA*

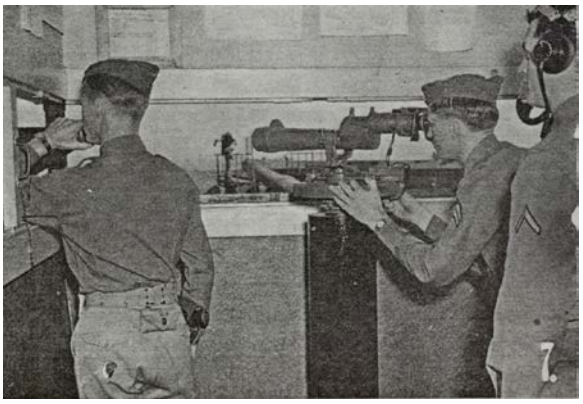
On December 2, 1941, the War Department authorized the Corps of Engineers to purchase an additional 146.29 acres for 16-inch battery BCN 102 (later named Battery Steele) and 6-inch BCN 202 (later named Battery Cravens), along with support and fire control facilities. Also slated for the site was the new mine casemate for the Hussey Sound minefield and the primary station for Mines II. The Corps of Engineers carried out the necessary negotiations in late December and in early 1942 the required land was ceded to the federal government. On April 18, 1942, purchase of an additional 1.95 acres was authorized, and by 1943, the reservation had grown to 168 acres. The island was also the location of 90 mm and 37 mm AMTB batteries.

Peaks Island soon became a major installation in the harbor defenses. A new mine casemate for Mine Group II was built on Peaks Island and the control facility was moved from Fort McKinley early in 1942. Throughout 1942 and 1943 the island was a beehive of construction as temporary barracks, mess halls, and warehouses were erected to accommodate a coast artillery battalion with 21 officers and 615 enlisted men. The massive gun batteries and their tall concrete fire control and radar towers began to rise above the island in the later part of 1942.(352)

Cape Porpoise, Location 155

On June 22, 1943, the War Department authorized leasing .56 acres at Cape Porpoise, in Kennebunkport, for an eight-story fire control station disguised as a windmill. The 67-foot splinterproof

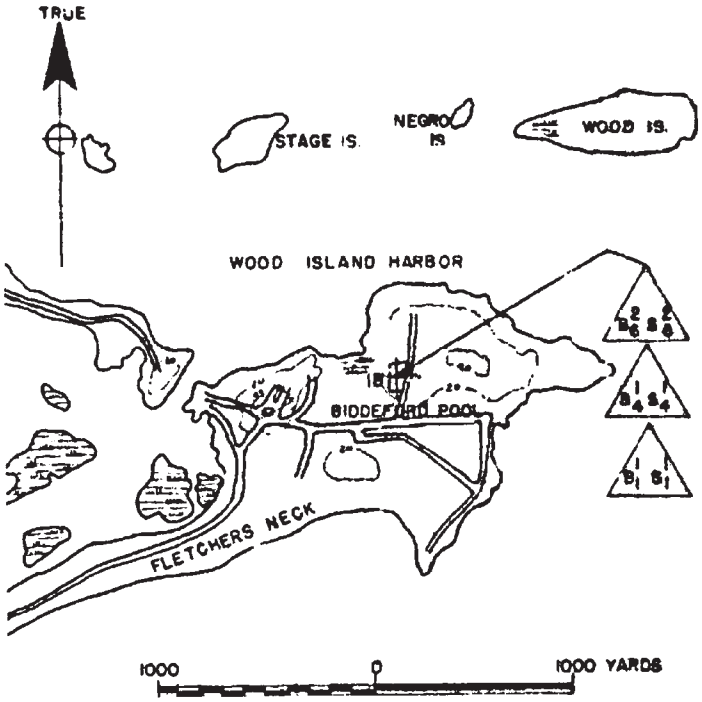
concrete building with two observation floors and a fire control switchboard, manned by four men, served as B^1S^1 for Battery Steele, the 16-inch gun battery on Peaks Island, as well as an AAIS observation post. The observation tier for Battery Steele was equipped with an M2 depression position finder (DPF) and an M1910A1 azimuth instrument.(353)



M1910A1 azimuth instrument operated by Battery B, 240th CA. *Author's Collection*

Fletcher's Neck, Location 156

A temporary battery of four 155 mm GPF guns was emplaced on Panama mounts at Fletchers Neck on the seaward side of Biddeford Pool, ME, in accordance with the January 1, 1941, recommendations of a local board report on the modernization of the HD of Portland. Battery F, 240th CA, brought four 155 mm GPF guns from Fort Williams in mid-December 1941. On February 12, 1943, Battery F was relieved by Battery E, 22nd CA, who continued to man the guns until October 28, 1943. Battery F then returned to Fort Williams. The guns remained in place until their removal was authorized December 31, 1943. A 0.57-acre tract on Fletchers Neck was leased by the War Depart-

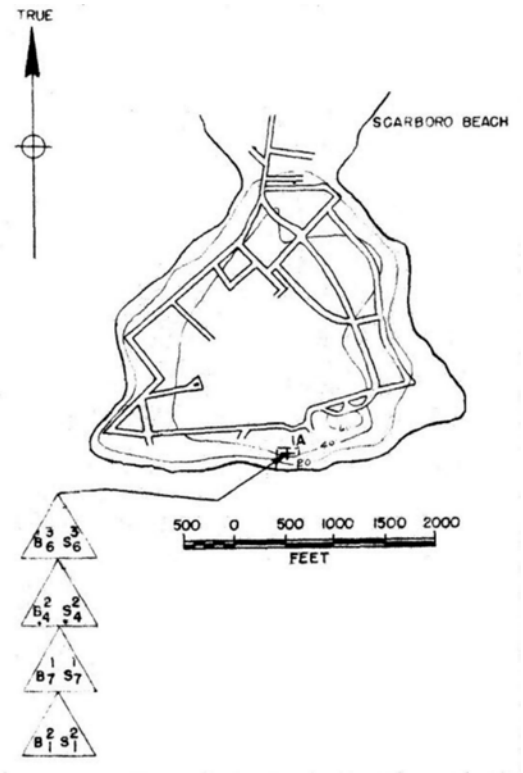


Fletcher's Neck. *NARA*

ment as a fire control site on May 10, 1943. The station that rose some 50 feet above the neck was a six-story splinterproof-concrete tower with three observation levels. The uppermost tier served as B^2S^2 for Battery Steele, the middle tier as B^1S^1 for Battery Foote, and the lowest tier served as B^1S^1 for BCN 201. Each tier was equipped with an M1910A1 and an M2A1 azimuth instruments. These stations were manned by details from the range sections of the batteries they served.(354)

Prouts Neck, Location 157

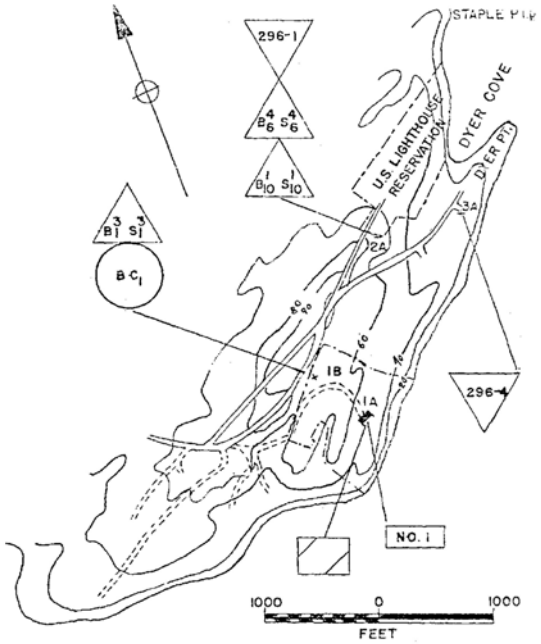
Southwest of Cape Elizabeth, near Scarboro Beach, a 0.23-acre tract was purchased on a promontory known as Prouts Neck, in accordance with War Department orders dated July 23, 1942. The seven-story concrete tower was built at a site some 60 feet above the water, with four observation levels. The upper tier, about 122 feet above sea level, served as B^3S^3 for Battery Steele. The next tier served as B^2S^2 for Battery Foote. The lower two tiers served as B^1S^1 Battery Cravens (BCN 203) and B^2S^2 for BCN 201. Battery Cravens' B^1S^1 was provided with an M2 DPF and an M1910A1 azimuth instrument. The other base end stations were each equipped with one M1910A1 and one M2A1 azimuth instrument. Portable 60-inch Searchlight No. 3 and its portable power plant were also positioned on Prouts Neck.(355)



Fire control elements at Prouts Neck. *NARA*

Cape Elizabeth, Location 158

This reservation consisted of four separate tracts on the southeast point of the cape. On July 23, 1942, the purchase of 30 acres near Dyer Point was authorized for an SCR-296A fire control radar atop a 106-foot steel-frame tower. The modulator and other equipment were housed in a small structure near the tower's base. The primary assignment of the radar was to provide target ranges and bearings for Battery Foote, a little more than five miles north.

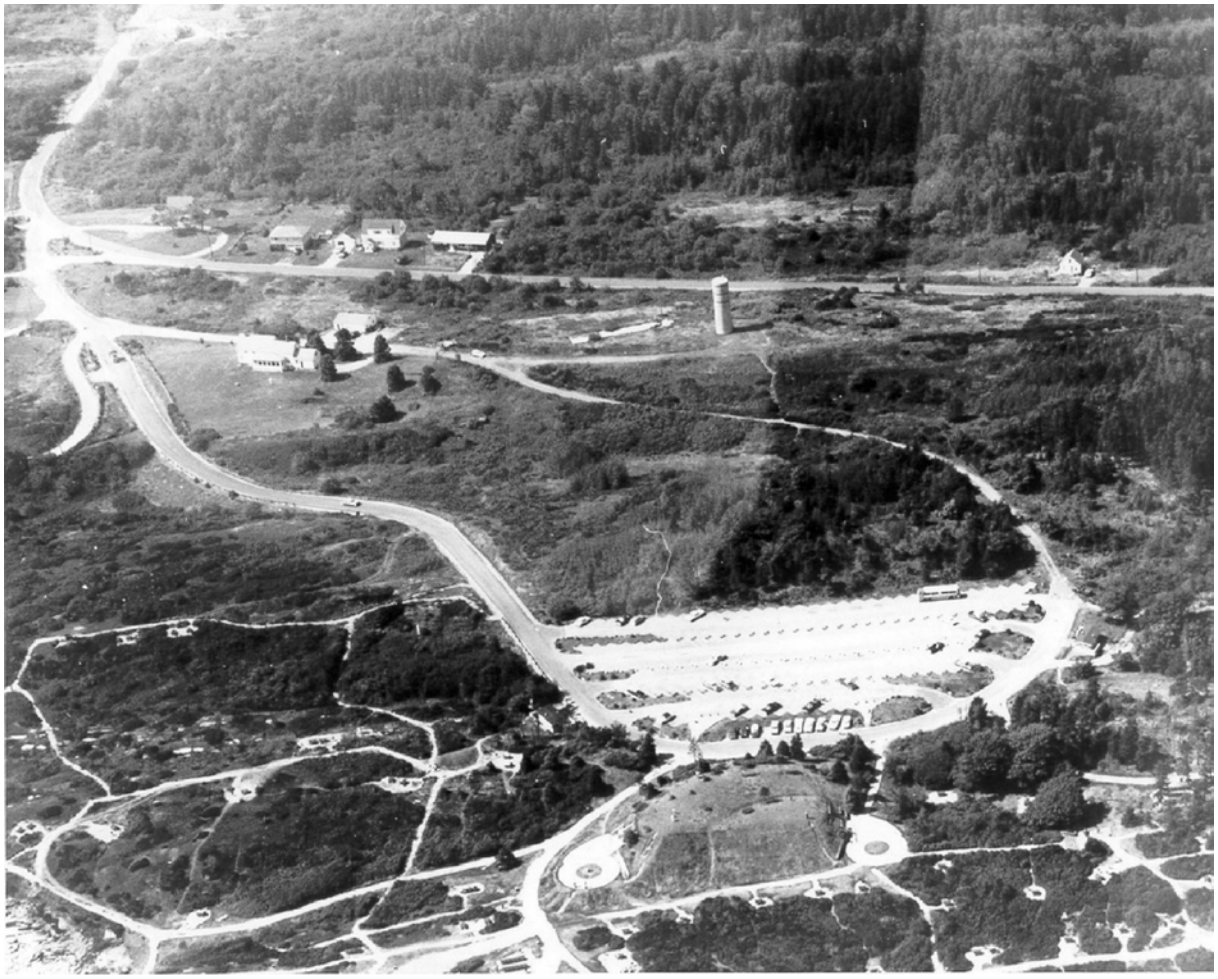


Cape Elizabeth. *NARA*

The navy agreed, probably in 1942, to modify the upper portions of the southernmost lighthouse of the twin lights with an observation and spotting station. This fire control station was probably in service for a very short period, and may have served as a base end station for the 155 mm battery at Biddeford Pool.

The lighthouse tower at Twin Lights modified as a base end station. *Author's Collection*

By a March 3, 1943, agreement with the U.S. Navy, the army was allowed to erect a six-story concrete tower with two observation tiers on the southern-most corner of the Coast Guard lighthouse reservation at Cape Elizabeth. The upper tier served as B^4S^4 for Battery Steele; the lower station served as BCN 202's B^1S^1. Each tier was provided with an M2 DPF and a M1910A1 azimuth instrument. The antenna for an SCR-296A fire control radar on a steel-frame tower atop the fire control tower served BCN 201 at Cape Elizabeth. This radar had secondary missions to provide target data to Battery Steele and BCN 202.



Cape Elizabeth State Park, ca. 1960. BCN 201 is in foreground and the six-story fire control tower in upper center. C*ourtesy of E.R. Lewis*

On September 29, 1943, the War Department authorized purchase of the third and fourth tracts approximately 1,000 feet south of the two radar installations (Sites 2A and 3A). Site 1A for BCN 201 encompassed 32.62 acres. Site 1B, 7.3 acres on the landward side of 1A, was a fire control site with a six-story concrete tower. Two observation tiers served BCN 201, the upper tier as B^3S^3, the lower as the BCS. Each station was provided with an M2 DPF and an M1910A1 azimuth instrument. In addition to the battery and fire control towers, the reservation was also the site for portable 60-inch searchlights Nos. 4, 5, and 6.(356)

Trundy Point, Location 159

As early as January 21, 1914, the commanding officer of the CD of Portland recommended two 60-inch searchlights for Trundy Point. After considerable study, the decision was made to procure two portable searchlights and generator sets on Cadillac trucks, but to defer their installation at Trundy Point until wartime. The searchlights, however, were never moved to Trundy Point.(357)

In 1921, however, 3.97 acres were purchased as a fire control site for Battery Foote, and designated a military reservation in 1937 by War Department G.O. No. 8. After the outbreak of World War II, the initial site was enlarged by purchase of an additional 1.69 acres, designated 1B, authorized by the War Department on July 24, 1942. Site 1A, 125 feet above the water, was the location of Battery

Foote's B^3S^3, a small one-story splinterproof concrete observation and spotting building on a 65-foot steel-girder tower, equipped with an M2 DPF and an M1910A1 azimuth instrument.

Original B^3S^3 base end station for Battery Foote at Trundy Point. *Author's Collection*

Six-story Trundy Point fire control tower, 1942. *Bolling W. Smith*

A six-story concrete tetrahedral fire control tower with two observation levels was built in 1942 at Trundy Point. The lower level, B^1S^1 for Battery Ferguson at Fort Levett, was equipped with an M1 DPF and an M1910A1 azimuth instrument. The upper tier, reserved for Battery Craven's B^2S^2, was similarly equipped.(358)

Jewell Island, Location 167

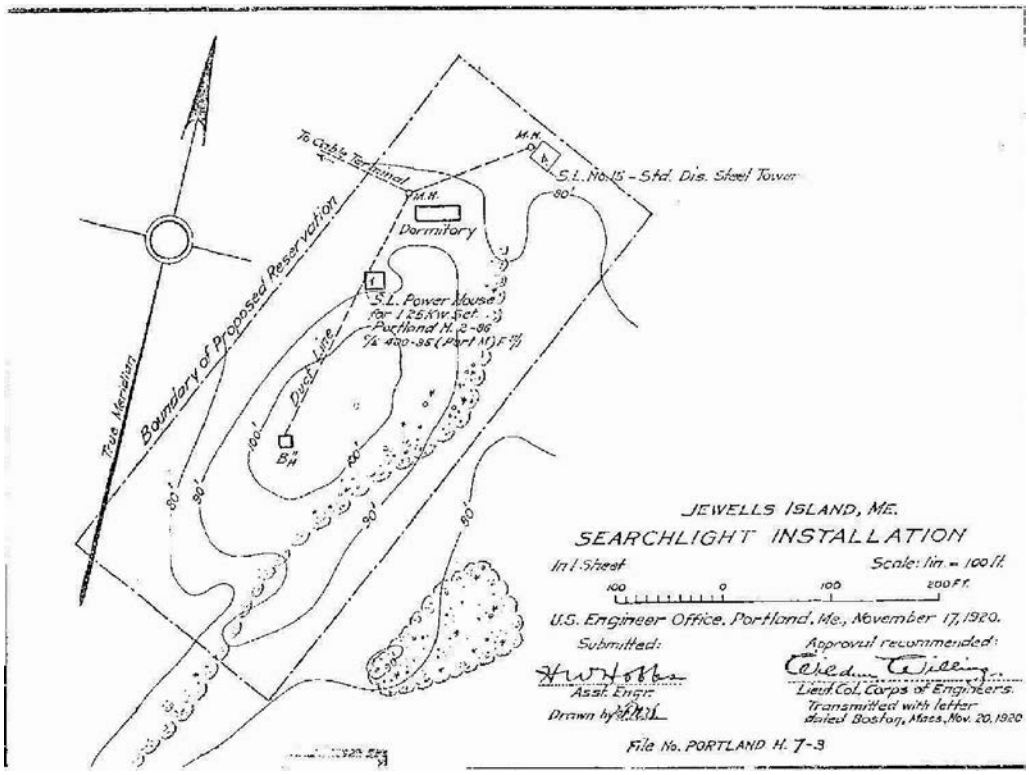
Jewell Island is nearly one and a half miles long and about one-third of a mile wide at its widest part. About 100 feet above sea level at its highest point, much of the island is between 50 and 70 feet in elevation.

The first searchlight on Jewell Island was emplaced at the northeastern end of the initial tract; its 60-inch light was on a standard disappearing steel tower. A dormitory was built nearby for the range section assigned to the secondary station for Battery Foote and the searchlight detachment. During WWI 60-inch portable searchlights Nos. 19, 20, and 21 were also sited at Jewell Island to illuminate the approaches to Hussey, Luckse, and Broad Sounds. Although the searchlights were removed following the war, a 60-inch searchlight on a bascule-type disappearing steel-frame tower and a small generating plant was reinstalled on the island between the world wars.

In 1922, 3.71 acres were acquired for the initial fire control station on the island, B'' for Battery Foote, some 100 feet above the shoreline. Built about 1934, this was initially a two-story stone building with a single observation tier looking toward the southern end of the island. With crenellated battlements, it resembled a Middle Ages fortress tower, or perhaps the summer residence of a wealthy eccentric.

The structure was increased to four stories with three observation levels during the World War II. The uppermost tier was B^5S^5 for Battery Foote; the middle tier served as B^5S^5 for BCN 201. The lowest level was for Gun Group 7, which controlled the AMTB batteries on Jewell, Chebeague, and Bailey Islands, as well as the 37 mm guns at Drinkwater Point.

On January 15, 1942, the War Department authorized the engineers to purchase an additional 56 acres on the island's southern half to build BCN 202 and a second fire control station, an eight-story concrete tower with three observation tiers. On April 1, 1943, 54 more acres were purchased and another 122 acres leased; ultimately, the entire island was acquired. In addition to the batteries and fire control stations, SCR-296A fire control radar was installed adjacent to the eight-story tower. Temporary theater-of-operations barracks, officers' quarters, latrines, and mess halls for 20 officers and 251 enlisted men were constructed, along with a fire station, several warehouses, and a wooden pier. Electric power was supplied by a concrete central power plant with two 2,000-gallon fuel tanks.

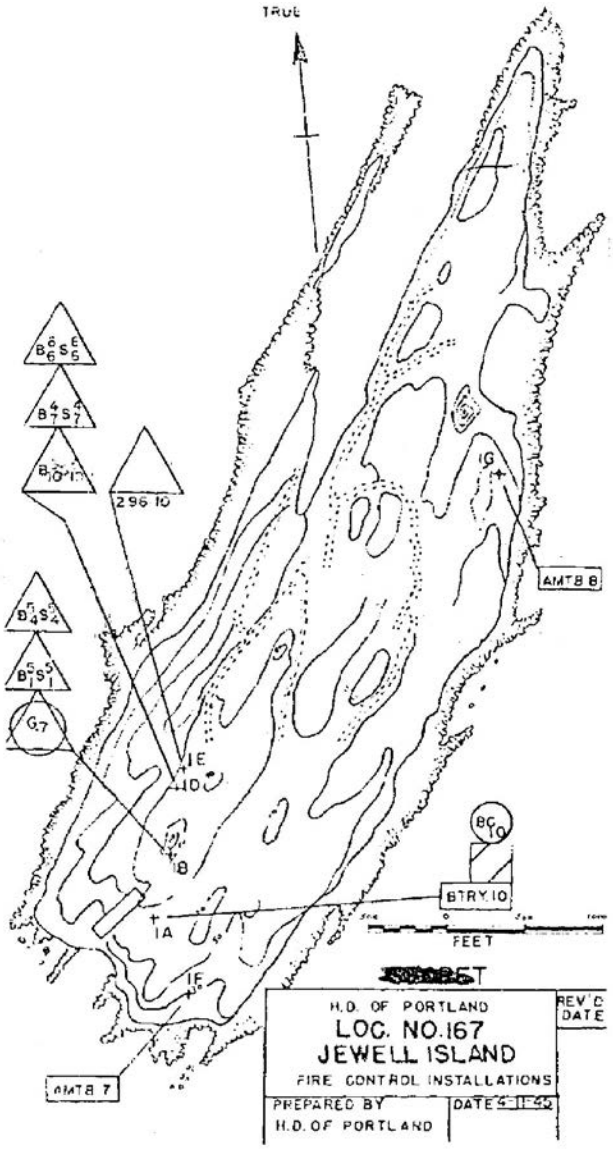


The military reservation at Jewell Island in 1920. *NARA*

BCN 202, about 400 feet south of the old 1920s fire control station, contained the fire control switchboard for Jewell Island.

The new 8-story tower built in 1943 was some 600 feet north of the original fire control station at 87 feet elevation. This splinterproof concrete tower was nearly 80 feet high, with three observation tiers. The upper tier served as B^6S^6 for Battery Steele, the middle tier was B^4S^4 for Battery Craven, and the lowest tier was BCN 202's B^3S^3. Each tier was provided with an M2 DPF and an M1910A1 azimuth instrument.

In 1944, near the eight-story tower, SCR-296A radar was established 90 feet above sea level on a 106-foot steel-frame antenna tower. Support facilities such as its power plant and modulator were on the lower floors of the eight-story tower.

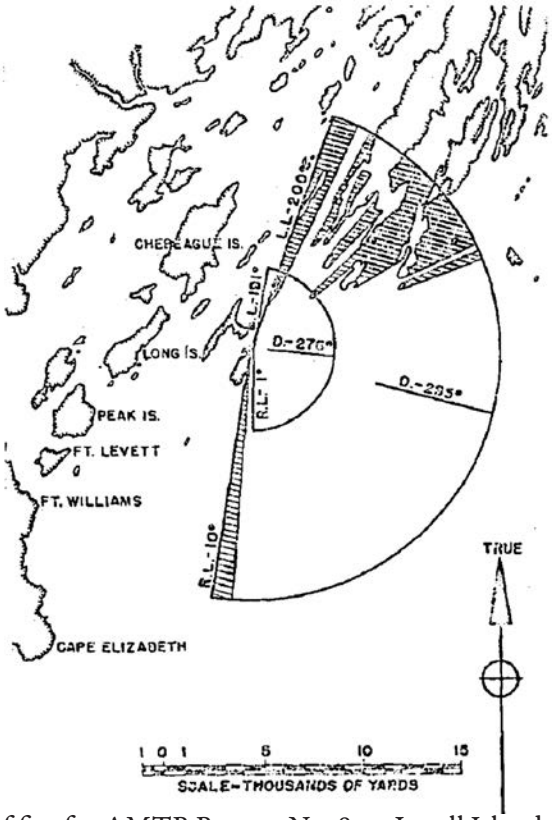


Jewell Island in 1945. *NARA*

Two AMTB batteries, Nos. 967 and 968, were also established on Jewell Island. Battery 967 (Tactical AMTB Battery No. 7) was about 30 feet above the southern shore, 400 feet southeast of and downhill from BCN 202. Battery 968 (Tactical No. 8) was on the island's east-central coast. Each battery consisted of two 90 mm dual-purpose M1 guns on fixed M3 carriages and two M1 guns on M1A1 mobile carriages. Each fixed-mount gun was on a 14-foot circular concrete loading platform. Each battery also had a section of two 37 mm M1A2 automatic weapons on M3 mobile carriages. The 37 mm section of Battery 968 was on Jewell Island but the automatic weapons of Battery 967 were detached and emplaced on the north end of Chebeague Island.

The magazines of the AMTB batteries were frame buildings six feet long and four feet wide, with about four feet of overhead space. They were coated with tarpaper and covered with earth to camouflage them and protect the ammunition from the salt air, which also served to render the magazines somewhat splinterproof.(359)

The three observation levels of Jewell Island's 8-story base end station. *Author's collection*



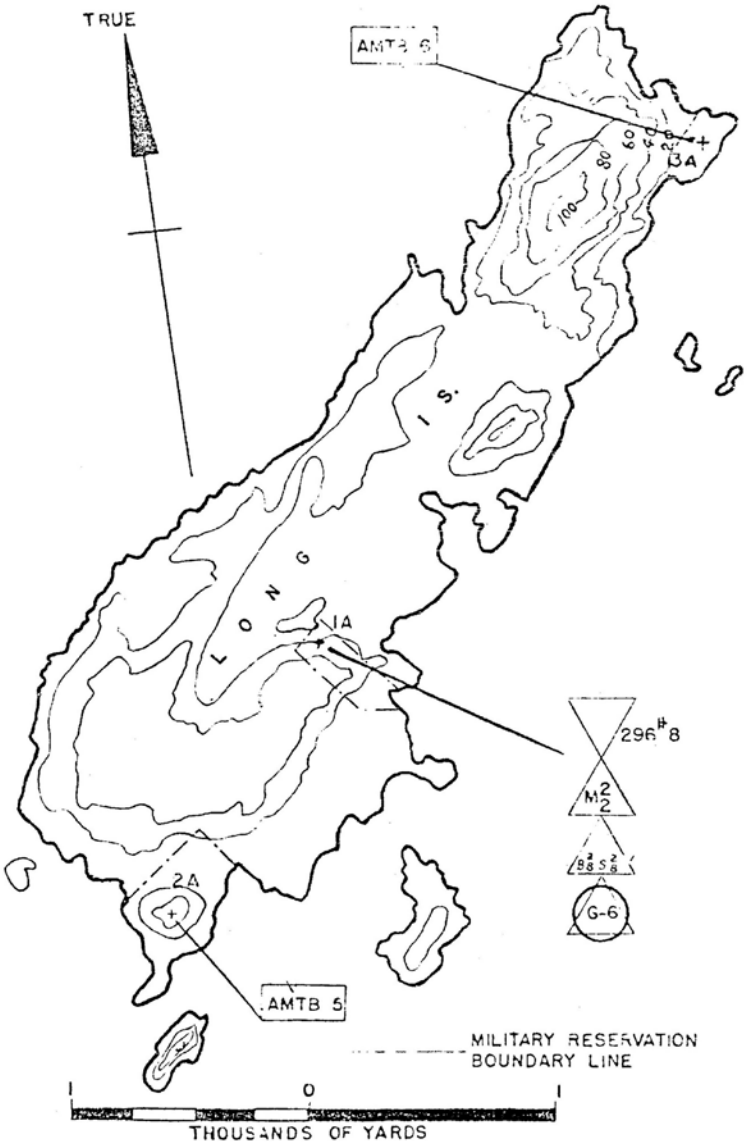
Field of fire for AMTB Battery No. 8 on Jewell Island. *NARA*

Long Island, Location 166

The reservation on Long Island consisted of three small tracts, near the island's midpoint (1B), at the south end (2A), and at the northeast end of the island (3A). The oldest army tract (1B) was near the middle of the island, about 80 feet above the water. This site had been established in 1915 for searchlights covering the approaches to Hussey Sound, and Searchlight Nos. 15 and 16 and their 25 kW power plants were funded in May.(360) The two 60-inch Sperry searchlights were on cars that

moved along a 320-foot long narrow-gauge tramway connecting the two searchlight emplacements. At the midpoint of the railway was a small searchlight storage shelter, protected by an earth revetment on its seaward side. To the rear of the shelter, a one-story concrete structure housed the two 25 kW gasoline-powered generators. A small Sewell dormitory behind the power plant housed the searchlight detachment. Controller booths for the searchlights were near the northern and southern boundaries of the reservation at opposite ends of the railway track. This installation was transferred to the coast artillery June 16, 1917.(361)

On April 18, 1942, the secretary of war authorized the Corps of Engineers to acquire a second tract (Site 2A) on Long Island for the defense of Hussey Sound, a 32.73-acre parcel on Hunger Hill at Jerry Point, the island's southwestern tip. Here a battery of three M1902M1 3-inch R-F guns were temporarily emplaced on M1902 pedestal mounts to cross fire with a battery across the channel on the northeast end of Peaks Island. The gun detachment was housed in two theater-of-operations barracks, 20 feet wide and 76 feet long, with a mess hall. This was the site for AMTB Battery No. 965, Tactical



Long Island in 1945. *NARA*

No. 5 in 1943, when 90 mm dual-purpose guns became available and the 3-inch guns were replaced by four new M1 90 mm guns, two fixed and two mobile.

The third tract (Site 3A) on Long Island, authorized May 5, 1943, was a 3.23-acre tract at the northeast tip of the island. Initially for a single 3-inch gun, later the four M1 90 mm and two 37 mm guns of AMTB Battery No. 966 were emplaced to cover the waters of Luckse's Sound as well as the passage between Chebeague and Long Islands.

When a new basic harbor defense project for Portland was developed in 1944 and 1945, five additional acres were to be added to the AMTB site at the north end of the island and 15 acres to the AMTB site at the island's south end. Efforts to acquire the northern addition were abandoned on March 4, 1947, when the battery was deleted from the program.

A circular seven-story splinterproof concrete fire control tower was erected on Long Island in 1943, on the highest point of the old searchlight reservation, 89 feet above sea level. The upper of its three observation tiers was the secondary station of Mines II (M2); its M1 DPF was 148 feet above sea level and 59 feet above the ground. B^2S^2 for Battery Carpenter was in the middle tier, and the lowest tier, some 99 feet above sea level, served Gun Group 6. Battery Carpenter's station and the G-6 command post were equipped with M1 DPFs and M1910A1 azimuth instruments.

Atop the tower, an SCR-296A fire control radar antenna mounted in 1944 was the primary radar for Battery Carpenter and backup radar for Battery Ferguson.(362)

Great Chebeague Island

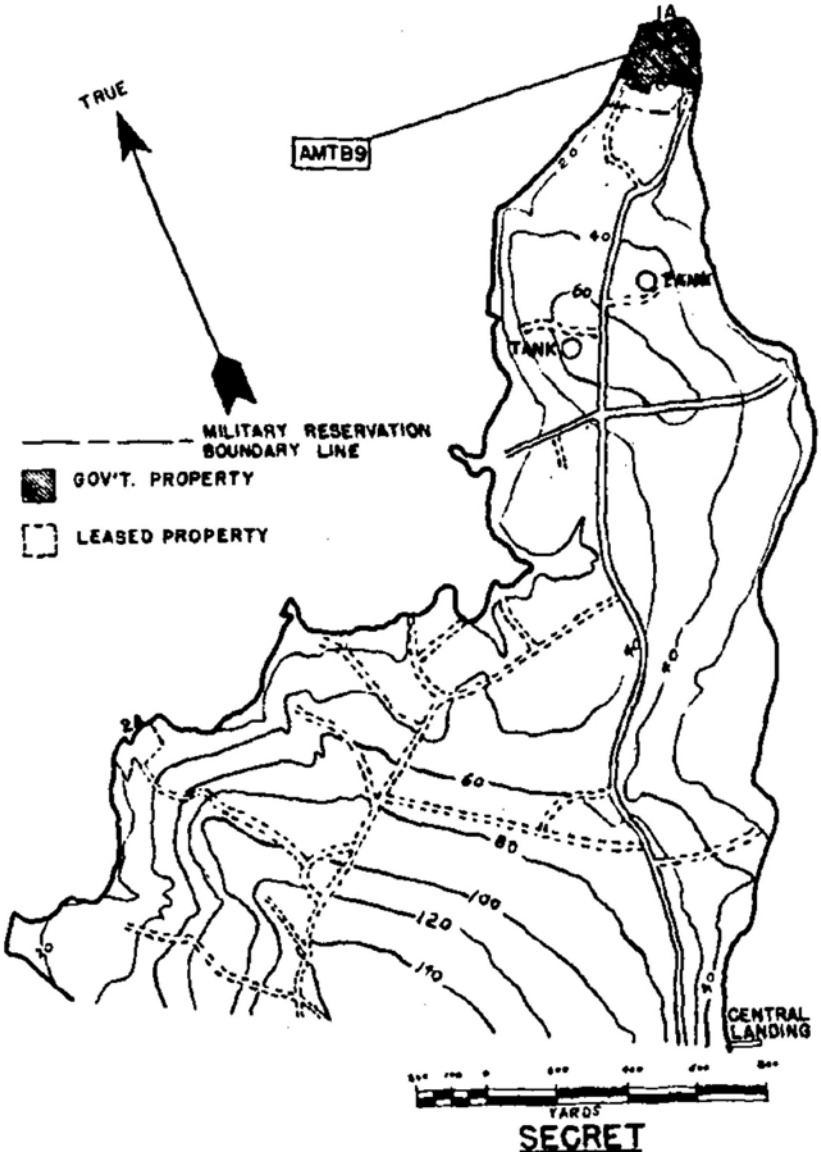
In 1942, two sites were acquired at Merriam Point, the northern tip of Great Chebeague Island. One tract of 5.42 acres was purchased while another 5.75 acres was leased in the spring for a temporary AMTB battery consisting initially of one, later two, 3-inch M1902 guns on an M1902 pedestal mounts. A combination magazine and BCS was built between the two concrete gun blocks. Two 20 by 76-foot barracks and a 20 by 100-foot mess hall and kitchen, with a pump house and 4,200 gallon underground water storage tank, were also constructed. In 1943, plans were completed for AMTB Battery No. 969, Tactical No. 9. The 3-inch guns were removed and replaced by four 90 mm and two 37 mm guns. A frame magazine was splinter-proofed with a thick covering of earth. Two additional 20 by 100-foot barracks were built, with a 40-foot addition to the mess hall. In addition to the AMTB detachment, the camp also quartered 40 men from the battalion HHB, two men from the medical detachment, and eight men from the service command.

A site for searchlights was selected on the island's west shore just north of Division Point. Here a half-acre was leased in October 1942 for 60-inch portable Searchlights Nos. 22 and 23, positioned to illuminate the passage between Chebeague and Little John Islands. The 37 mm gun section of AMTB Battery 967 at Jewell Island was emplaced here to cover the narrow passage.(363)

Bailey Island, Location 168

The southern point of Bailey Island was occupied in the late summer of 1942 by a battery of two 155 mm guns manned by Battery B, 240th CA. The two guns were positioned in field emplacements on a pair of concrete slabs poured on the rocks that formed the shoreline. Battery B was succeeded by Battery E, 10th CA, in July 1943, shortly before Battery E was redesignated Battery L, 8th CA. Battery L manned the position until February 1944, when it moved to Fort McKinley.

Several additional installations were required to support the new batteries planned in the early 1940s and to protect the passage through Jaquish Cut into Casco Bay's eastern reaches. In the summer

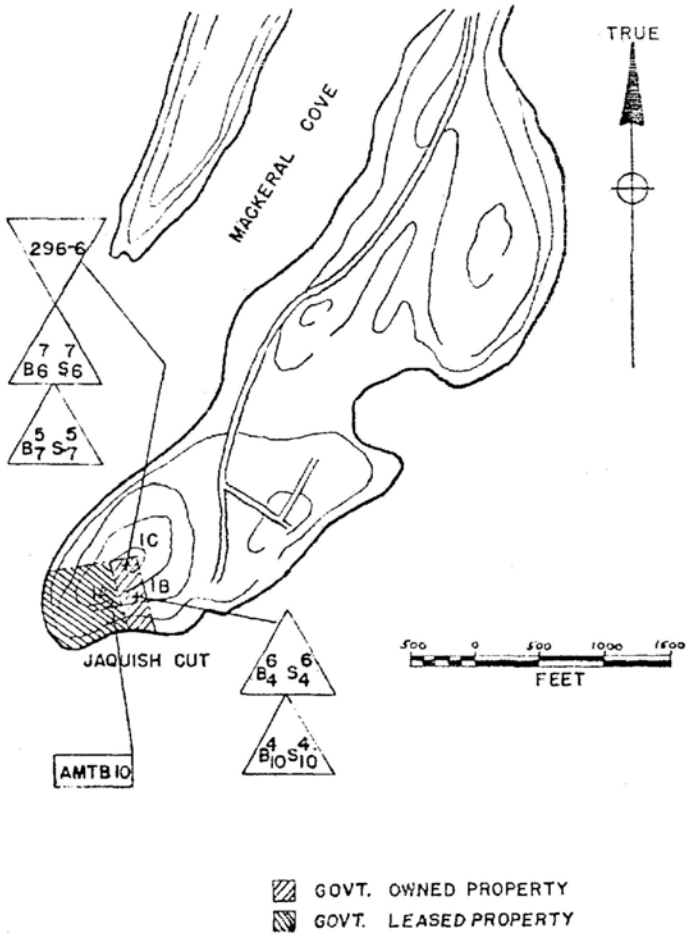


AMTB Battery No. 9 at Merriam Point on Chebeague Island. *NARA*

of 1942, 2.87 acres were purchased at the southern end of Bailey Island and two fire control towers were planned. Scarcely had the government taken possession of the site when authorization was granted on August 25 to lease an adjoining 4.5 acres as an AMTB site.

One eight-story fire control tower rose some 60 feet. The upper tier serving Battery Foote was equipped with an M2 DPF and an M1910A1 azimuth instrument. The lower tier, B^4S^4 BCN 202, was equipped with M2 and M1910A1 azimuth instruments. Each tier was manned by four enlisted men, quartered and messed at the camp at the AMTB battery, as were the six men assigned to Searchlight No. 24 and two men from the medical detachment.

The second fire control tower was atop a 70-foot hill some 200 feet northwest of the first tower. Similar to its mate down the slope, this tower was six stories tall. Its upper observation tier served as B^7S^7 for Battery Steele, with M2 DPF and M1910A1 azimuth instruments 138 feet above sea level. The lower station, Battery Cravens' B^5S^5, its northeastern-most base end station, was similarly equipped. Each observation tier was manned by four enlisted men who were also quartered and messed at the AMTB battery.

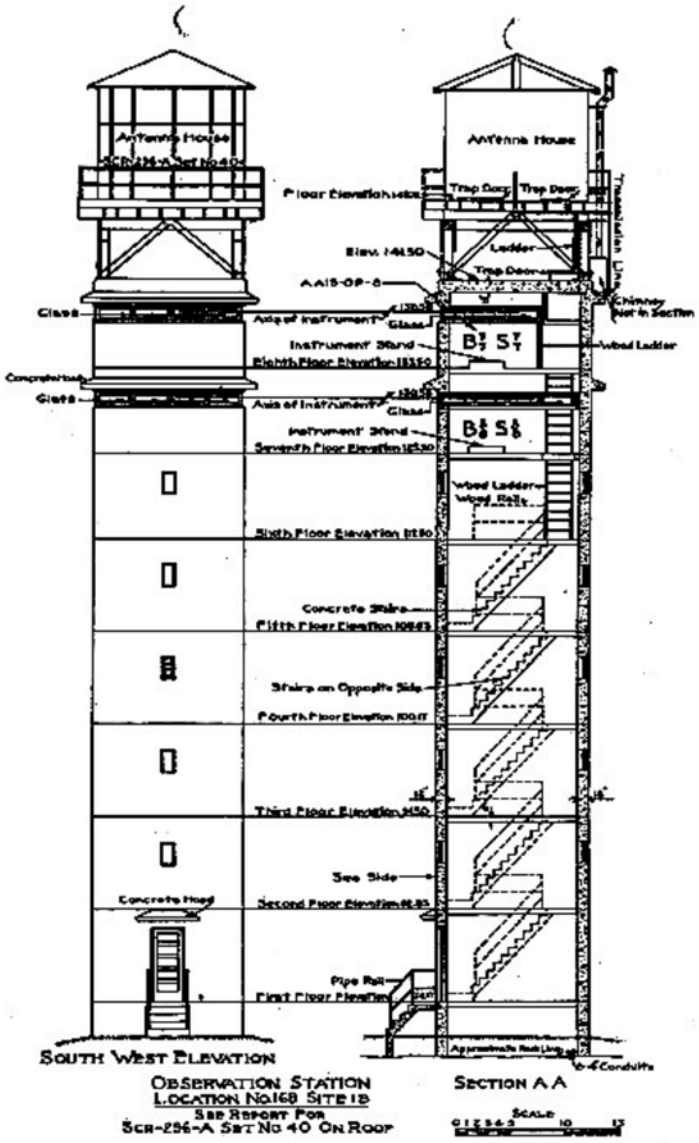


Government owned and leased land on Bailey Island. *NARA*

The leased tract occupied the southern tip of Bailey Island overlooking Jaquish Cut. When the new AMTB batteries were established in 1943, AMTB Battery 970 was the most northeasterly AMTB battery protecting Portland, replacing the 155 mm guns manned by Battery L, 8th CA, which took over the four 90 mm guns emplaced just west of the fire control towers. Two 20 by 76-foot barracks and a 20 by 100-foot mess hall and kitchen were constructed. A frame magazine was splinter proofed with a thick covering of earth. Two additional 20 by 100-foot barracks were built, with a 40-foot addition to the mess hall to accommodate the 160-man detachment on the island. Battery 970's two 37 mm guns were emplaced at Drinkwater Point near South Freeport on the mainland.(364)

Small Point, Location 169

Initially a temporary wooden fire control station sheathed in tarpaper was built on .81 acres atop an 86-foot hill. The site eas later selected as the location for permanent fire control stations and leased on April 23, 1943. Two more structures were erected at the site. A two-story splinterproof concrete combination observation station and fire control switchboard room supported the temporary 155 mm GPF battery at Fort Baldwin. In addition, a six-story tower with two observation levels served as B^8S^8 for Battery Steele's 16-inch guns and as B^5S^5 for BCN 202. The 86-foot structure was equipped with an M2 DPF and an M1910A1 azimuth instrument on each tier. The fire control switchboard room was on the first floor of the tower after removal of the 155 mm guns. The government undertook to purchase the site by 1945.(365)

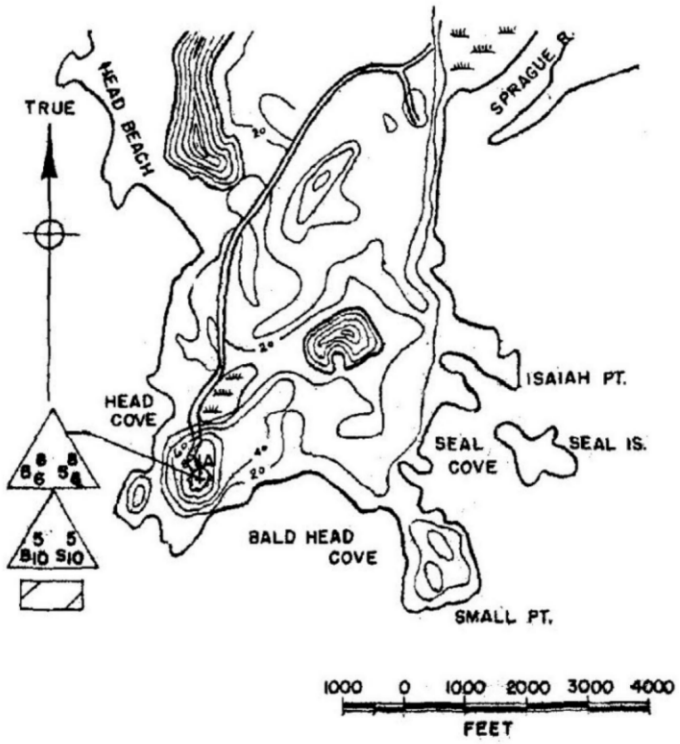


Eight-story fire control tower on Bailey Island. *NARA*

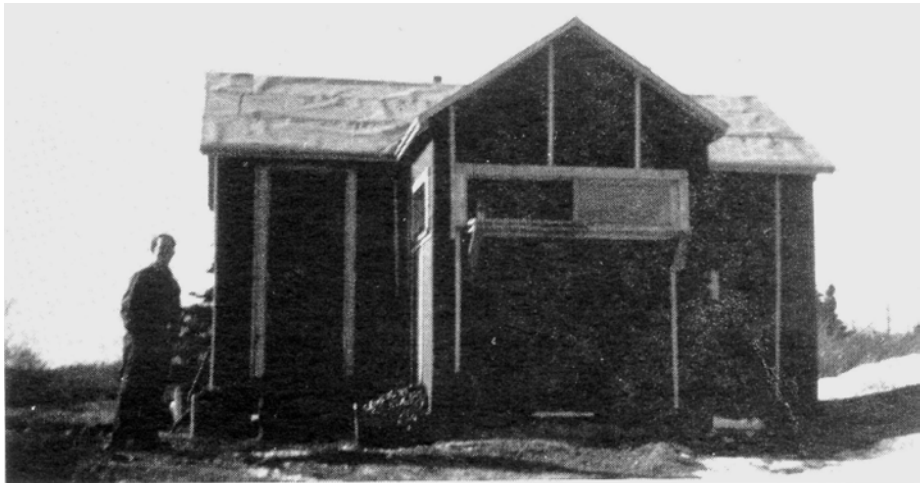
Fort Baldwin Reactivated

The federal government reclaimed the 38.18-acre Fort Baldwin Reservation upon the outbreak of World War II. On December 11, 1941, Battery D, 8th CA, was dispatched to Fort Baldwin with four 155 mm GPF guns to protect the entrance to the Kennebec River and the ship-building facilities upstream at the Bath Iron Works. The War Department leased the tract from the State of Maine on April 3, 1942**.**

The 155 mm guns remained emplaced as temporary batteries until the completion of the modernization program. Sometime in 1943, the number of guns was reduced to two. Battery D, 8th CA, remained at Fort Baldwin until June 25, 1943, when it was transferred to Peaks Island, replaced by Battery D, 243rd CA, on June 23, 1943. Battery D of the 243rd was redesignated Battery I, 8th CA, in September 1943 and continued to man the 155 mm guns until early 1944, when the unit moved to Ft. McKinley. The guns were removed on January 17, 1944.

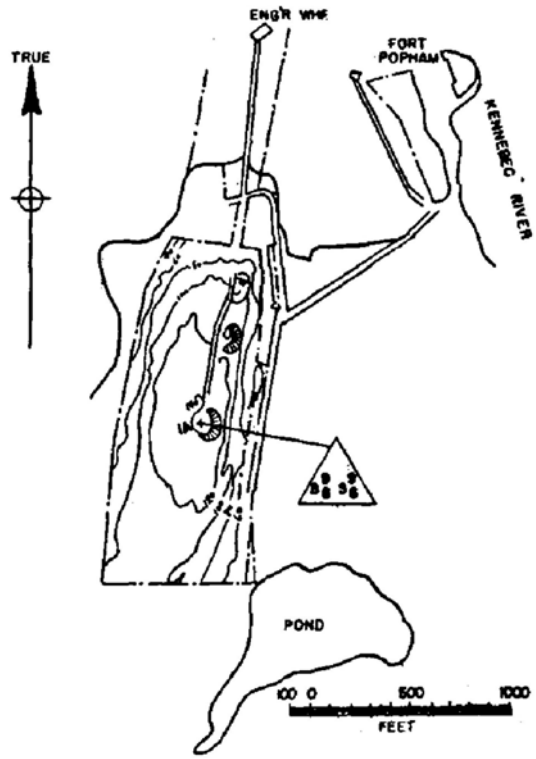


Small Point Military Reservation. *NARA*



The initial Small Point base end station for 155 mm guns at Fort Baldwin. *Author's collection*

A five-story concrete fire control tower was built at the south end of the reservation. Its single observation level served as B^9S^9 for Battery Steele, with an M2 DPF and an M1910A1 azimuth instrument. In 1945, the War Department sought permanent ownership of the 1.7-acre parcel upon which the tower stood.(366)



Fort Baldwin in World War II. *NARA*

The 5-story base end station at Fort Baldwin. *Author*

Command Posts

The first command posts for the defense of Portland were the fort command stations established at each fort shortly after the turn of the century. These stations had, shortly after the commencement of World War I, given way to a single coast defense commander's station at Fort Williams. This command post, termed the "H" station, was a small splinterproof concrete structure partially dug into the east end of the granite ledge that bisected the Fort Williams Reservation. From this vantage point the coast

defense commander, or harbor defense commander as he was termed after 1925, had a good view of the seaward approaches to the harbor. The space allotted even for the relatively simple 1920s command functions was found to be rather cramped. When additional activities and functions were added, such as antiaircraft defense, the "H" station proved far too contracted to accommodate the personnel and equipment. By 1940, the need for larger facilities was critical.

In the system that evolved in World War II, the harbor entrance control post (HECP) was the joint-service command post that controlled all shipping in and out of the harbor, as well as any military or naval response to a threat to the harbor. The army command post was the harbor defense command post, or HDCP.

When the War Department ordered the activation of HECPs in the summer of 1941, the old "H" station was found suitable, but the HDCP command functions for the harbor defenses would have to be relocated. In the 1932 basic harbor defense project for Portland Harbor, Battery Sullivan was inactive and its three 10-inch disappearing guns were slated for removal, although still in place in the fall of 1941. The War Department strongly encouraged harbor defense commanders to utilize existing structures for HDCP functions whenever such were available, and Battery Sullivan met many of the requirements. Its magazines and shot galleries were bombproof and sufficiently commodious to accommodate the expanded command elements of the harbor defenses. It had its own generators; it could be made gas proof at relatively small expense, and it was within few hundred feet of the HECP being established in the old "H" station and the command posts for Mines I and the Mine Groupment (which in the fall of 1941 was still located at Fort Williams).

Between October and December 1941, Battery Sullivan's armament was removed while the AAIS command post prepared to occupy part of the battery. For several months, the AAIS was the sole occupant of the battery. In the early spring of 1942, the conversion of the structure to house the HDCP began in earnest. The powder magazines and shell rooms were converted into a plotting room, message center, radio room, offices, as well as dormitory rooms. The interior was air conditioned and the Chemical Warfare Service (CWS) gas proofing equipment supplied a small airlock between the exterior and interior rooms, sealed by refrigerator-type gaskets on the doors. The airlock was connected to a centrifugal blower and filters, or "collective protectors." When a soldier stepped on a floor plate, a blast of filtered air released through holes in a four-inch pipe blew any contaminants off the man. The air pressure then forced the air and the contaminants from the room and the man could enter the interior of the structure.

The Portland Harbor Defense Command was a prime example of a dispersed command arrangement. Although the majority of the HDCP elements were housed in Battery Sullivan, other command elements could not be accommodated in the old battery. The HECP, signal station, and fire control switchboard were all housed in separate structures on the reservation. All these activities could be adequately housed in existing structures with only minor reconstruction and renovation. An observation post (HDOP) was erected on top of Battery Sullivan. As the renovation work was completed by July 1942, some thought was given to locating the fire control switchboard room in Battery Sullivan, but it was finally decided to leave this in its own structure.(367)

As early as 1935, defensive sea areas around the nation's major harbors were authorized and established by joint agreement between the army and navy. These defensive areas were to be activated when necessary to control the harbor approaches. The importance of joint army and navy action regarding the harbor defenses was reiterated in 1940, and both the War and Navy Departments favored HECPs. (368) By early summer of 1941, a joint directive from the chief of naval operations and the chief of staff of the army defined the mission of HECPs. On June 26, 1941, First Naval District and First

Coast Artillery District directed the New England harbor defenses to test HECP operations during the summer of 1941. In response to an October 2, 1941, War Department directive, Lt. Gen. Hugh Drum, commanding the Northeastern Defense Command, ordered the HECPs under his command operational October 23 to prepare for war, with partially trained army and naval personnel.(369)

As the HECP was to be established at Fort Williams, the army was responsible to provide the signal station and its equipment along with the requisite landline and submarine cable as well as teletype and radio communications. The navy was to provide specialized equipment over and above that provided by army tables of basic allowances, such as additional landline, submarine cable teletype, and radio equipment. The harbor defense command also provided quarters for the naval contingent assigned to the HECP. In addition to naval personnel, four army officers and 24 enlisted men drawn from the 8th and 240th CA Regiments were assigned to the HECP, one officer and eight enlisted men during each four-hour watch period. The HECP Section operated as part of the Headquarters of the Harbor Defenses of Portland until establishment of the HHD, Portland Subsector, New England Sector of the Eastern Defense Command on August 15, 1943, to which the HECP section was attached.(370)

The mission of the HECP was:(371)

> To collect and disseminate information of activities in the defensive sea area, to control unescorted merchant vessels in the defensive sea area, to take prompt and decisive action and, to operate the elements of the harbor defenses in order to deny enemy action within the defensive sea area.

The HECP maintained close contact with navy offshore and inshore patrols. Shipping was controlled by flag hoists and semaphore flags during daylight, and blinker lights, searchlight, or radio at night. The HECP was linked by telephone and radiotelephone with the HDCP, the harbor defense signal station, and the harbor defense examination battery which, like the HECP, was manned around the clock to assist the examination vessel to "bring to" vessels that failed to comply with the instructions of either the HECP or the examination vessel to "enforce obedience to the restrictions imposed in the procedure for conducting the examination of entering vessels."(372) Battery Erasmus Keyes, manned by Battery H, 240th CA, was initially designated the examination battery (373), but in 1943 this function was assumed by AMTB Battery 961 (Tactical Battery No. 1) in front of Battery Blair on the cliffs southwest of the Portland Head Lighthouse.

As early as May 1941, the HECP was on "watch status," which called for all headquarters to be manned continuously, along with observation stations and searchlights necessary to maintain continuous coverage of all harbor approaches. One or more seacoast batteries were also to be ready to fire on targets approaching vital water areas. All other materiel was to be prepared for immediate action.(374)

In ordering watch status, First Coast Artillery District emphasized:(375)

> Under this directive Army forces will engage in combat only when necessary for their own protection, or for that of other United States military or naval forces, or for the prevention of attack on United States flag shipping by belligerents. Intervention in or interference with armed belligerents will be avoided.

These instructions were altered significantly on October 4, 1941. First Coast Artillery District instructed the harbor defenses to "engage in combat all German and Italian naval vessels and aircraft which appear within range of the batteries of the harbor defenses."(376)

When the old "H" station was converted for use as the HECP in the winter of 1941, a signal mast was erected adjacent to the station, along with a platform for signal searchlights. New communications equipment was installed and additional telephone lines established. The cost of renovating the "H" station was projected at $14,000 in October 1941.(377)

Radar received serious consideration by the army as early as 1937, and late in 1942 Portland was authorized an SCR-582A surface search surveillance radar with a maximum discovery range of 40,000 yards. Its parabolic antenna was 94 feet above sea level, near the HECP inside a light plastic blister six feet high and six feet in diameter atop an 18-foot tower. The modulator and indicator were inside the HECP, with a generator nearby. Ten army enlisted men operated and maintained the set.(378)

The third element of the dispersed HECP command facilities was the signal station. This single-story splinterproof concrete building adjoining the HECP was partially dug into the top of the ledge and contained the message center and radio rooms. The signal station contained an SCR-543 radio for communication with the primary gun batteries and the antiaircraft command post, and an SCR-281 for communication with the secondary and AMTB batteries, the mine groupment, and its two mine groups. The various military installations around Portland Harbor were linked by submarine telephone cables, and within each major reservation, there were post-wide telephone switchboards. Submarine cables were also used for the fire control telephone network, to coordinate and direct the fire of the gun and mortar batteries. The critical fire control switchboard at Fort Williams linked the HDCP with the rest of the harbor defenses.

When the peace magazine, built just after the turn of the century, was moved to a more isolated site, it left a well-protected bombproof structure burrowed into the north slope of the ledge that bisected the Fort Williams reservation. The old fire control switchboard room was moved from a small brick building near the magazine into the larger, more secure former magazine. The pre-war post telephone switchboard exchange at the post headquarters building was also relocated. Although some consideration was given to relocating the post switchboard to the HDCP in July 1942, it was finally moved to the new protected switchboard room in the bombproof former peace magazine. The new combined post and fire control switchboard room was provided with gas proofing materials by CWS.(379)

In concert with the harbor defenses, the U.S. Navy took advantage of the strategic location of Portland Harbor, and ultimately created the fifth largest naval installation in the country starting in 1941. Portland became headquarters for all destroyers in the North Atlantic, particularly those on convoy duty as far as Iceland, where British destroyers would pick up the convoy escort duties. U.S.S. *Denebola* (AD-12) arrived in Casco Bay, Maine on September 12, 1941, to serve as tender to destroyers and other ships until July 5, 1944. The admiral commanding the destroyer fleet, COMDESLANTS, was headquartered on U.S.S. *Denebola*. The U.S.S. *Reuben James* (DD-245), home ported in Portland but based in Iceland, was torpedoed and sunk on October 31, 1941, while on convoy duty, with a loss of 100 of its 144-man crew.

A number of North Atlantic Fleet facilities were located in Portland and in Casco Bay. Among these were the Naval Shore Activities, Navy Section Base, and Naval Station, Portland. A navy net tender depot was on Little Diamond Island, a naval barracks and fleet training center on Great Diamond Island, and recreation facilities and a fire fighting school on Little Chebeague Island. A naval fuel annex was located on Long Island. The two navy magnetic loop stations were located on Bailey Island and at Fort Williams, and a navy magnetic range was located at Fort Preble. The harbor was mined with both contact and controlled mines and anti-submarine nets positioned, two with gates controlled by navy gate tenders.

Of the six naval air facilities in Maine, two were in Casco Bay, the largest being NAS Brunswick commissioned on April 15, 1943 at the north end of the bay, as well as the naval auxiliary air facility for seaplanes commissioned May 14, 1943, on Long Island. These bases coordinated their efforts with both the fleet and the harbor defenses.(380)

Seacoast Gun and Mine Defenses

When war between the United States and the Axis erupted in December 1941, the primary armament of the harbor defenses was three batteries of 12-inch disappearing guns, one battery of 12-inch guns on long-range barbette carriages, and three tactical batteries of 12-inch mortars. The disappearing guns covered the interior waters of Casco Bay and the seaward approaches out to 17,000 yards, while the long-range 12-inch guns had a range of some 27,000 yards. The mortars covered all the channels and passages into Casco Bay within 15,000 yards of the batteries.

Nine secondary batteries of 3 and 6-inch guns covered the main channel, the Hussey Sound approaches, and most of the lesser passages into the bay. Four batteries of 155 mm mobile guns temporarily emplaced in December extended the harbor's defenses an additional 17,000 yards to the northeast and southwest. The tactical organization of the gun defenses was essentially the same as in the 1938 revision to the 1932 harbor defense project, with the addition of the 155 mm guns.

In 1940, U.S. Army Mine Planter *General Absalom Baird,* based at Boston, was the only mine planter available in the First Coast Artillery District. A practice field of controlled mines was established in the summer of 1940 when the *Baird* visited Portland. Two fields of controlled mines were initially projected for Portland Harbor, one in the approaches to the main ship channel, the other in the channel approaches to Hussey Sound. Initially, each minefield was to consist of two grand groups of controlled mines planted in three lines. A field of contact mines was to be placed in Whitehead Passage between Peaks and Cushing Islands.

When war broke out, the mine defenses consisted of a mine groupment of two mine groups. Mines I controlled the fields in the main ship channel from its observation posts, plotting rooms, and mine casemate at Fort Williams; Mines II controlled the Hussey Sound minefields from Fort McKinley. On December 8, 1941, First Coast Artillery District ordered the activation of the underwater defenses. Work was initiated immediately in spite of severe weather, with the 98-foot quartermaster harbor vessel *General A.M. Randol* pressed into service as a "junior mine planter." Later in the month, the USAMP *Baird* arrived and during one 24-hour period one and one-half groups of buoyant mines were planted by the mine batteries of the 8th CA aboard *Baird, Rando*l, the distribution box boats, and mine yawls. With the completion of mine planting at Portland, *Baird* departed December 31 to mine the entrance to Portsmouth Harbor. The two mine batteries of the 8th CA and "junior mine planter" *Randol,* along with the handful of mine yawls and distribution box boats, provided the bulk of the minefield maintenance in Portland Harbor until the arrival of newly commissioned USAMP *Armistead*. The buoyant mines in Hussy Sound were left on contact unless ordered deactivated, while those in the main channel were only activated at night. Beginning in February 1943 and continuing until May, the buoyant mines were replaced with magnetic ground mines.(381)

In early 1942, the mine groupment command post was moved from Fort Williams to Peaks Island. The command element of Mines II at Fort McKinley was also ordered to Peaks Island, where it occupied a mine casemate, observation posts, and plotting rooms completed in the early spring of 1942. Mines I continued to control the main ship channel minefields from Fort Williams.

During the first year of the war the prevention of the Hussey Sound minefields from being swept or swift passage by motor torpedo boats was limited to the secondary 3 and 6-inch R-F guns at Forts McKinley and Lyon, and the newly emplaced 3-inch guns at the south end of Long Island and the north side of Peaks Island. The main ship channel minefields were protected by the 3 and 6-inch guns at Forts Levett, Williams, and Preble. During 1943, some of the 3-inch gun batteries were replaced by 37 mm and 90 mm AMTB batteries.

By the fall of 1942, the probability of an attack on Portland by a large enemy surface fleet had diminished markedly. A review of the defense needs indicated that several older gun batteries could be deactivated without endangering the defense of the harbor, especially after the modern batteries of the 1940 Program were in service.

Among the first of the outmoded batteries to be removed were the 10-inch guns of Batteries Sullivan and DeHart at Fort Williams and Kendrick at Fort Levett. Battery Sullivan had been out of service for several years when the war began and on November 11, 1942, its guns were authorized for dismounting and salvage. Oddly, the guns of Battery Sullivan were not actually salvaged until March 16, 1949. Batteries DeHart and Kendrick had been maintained in reserve without manning detachments for a decade when they were finally deemed surplus on November 6, 1942, and on December 15, 1942, their salvage was ordered.

The 1932 Basic Project had called for, and the secretary of war had authorized, salvage of the 8-inch guns at Fort McKinley. It was not until early December 1942 that this armament was finally dismounted, but the gun tubes themselves were not actually salvaged until September 13, 1945. The magazines of Batteries Honeycutt, Thompson, and Weymouth continued to be used, however, to store TNT for submarine mines.(382)

After the first year of the war, on December 15, 1942, the harbor defense commander was authorized to deactivate the three 12-inch mortar batteries when the one remaining 16-inch gun battery of the 1940 Modernization Program was ready for service. More than a year would elapse, however, before the new battery was activated, and Batteries Kearny, Chase, and Ingalls remained armed into 1944.

The 1940 program report had identified 12-inch disappearing-gun Batteries Blair, Bowdoin, and Berry and 6-inch Battery Acker as among those that could also be salvaged when the 16-inch and 6-inch batteries were completed. On August 31, 1943, Battery Berry at Fort McKinley was the first large-caliber battery ordered salvaged. Battery Blair at Fort Williams and Battery Bowdoin at Fort Levett were both ordered salvaged March 1, 1944. Although out of service and authorized for salvage, Battery Bowdoin's guns were not shipped to Watervliet Arsenal until January 14, 1945.(383)

With the outbreak of World War II, the need for additional defenses against torpedo boats took on special significance. Only a few batteries of small-caliber R-F guns capable of engaging fast, manuverable, small targets had been retained in service between the two world wars. New battery sites for several 3-inch guns held in storage had been acquired, however, to cover the relocated minefields in Hussey Sound.

In the spring of 1942, the army adopted the M1 90 mm antiaircraft gun as the army's primary anti-motor torpedo boat weapon, to be used with M7 and later M9 gun directors, and M1 height finders. On October 24, 1942, the War Department authorized 90 mm AMTB batteries at various overseas installations in the Atlantic and Pacific Theaters. Soon afterward, this authorization was broadened to encompass the continental harbor defenses, and ten 90 mm batteries were authorized for Portland Harbor. The standard AMTB battery was two M1 90 mm dual-purpose guns on M3 fixed AMTB shielded carriages and two guns on M1A1 mobile carriages. Additionally, each battery was provided with a pair of 37 mm M1A2 automatic weapons, another antiaircraft gun modified for surface targets. Later, 37 mm automatic weapons were replaced by 40 mm. Until production of 90 mm guns was sufficient, however, the harbor defense commands had to rely on older 3-inch R-F guns and a few 37 mm automatic weapons in temporary batteries.

At the beginning of World War II, there were three batteries of small-caliber R-F guns in service. In addition to their primary function of protecting the minefields, these batteries were also assigned an

AMTB mission. As the controlled main-channel minefields were advanced seaward, Battery Mason's 3-inch M1903 gun and barbette carriage at Fort Preble were relocated to the 1870s East Barbette Battery and emplaced between two of the old traverse magazines, one of which was used as the magazine for the gun.

Battery Keyes at Fort Williams covered the main-channel minefields. Battery Abbot at Fort Lyon covered the controlled minefields in the inner portion of Hussey Sound as well as the navy contact minefields north and east of Cow Island.

As an interim measure until 90 mm guns became available, 3-inch M1902MI guns and barbette carriages Nos. 3, 5, 12, 14, 49, and 50 were taken out of storage at Aberdeen Proving Ground and sent to Portland April 18, 1942. They were emplaced in the four temporary AMTB batteries proposed in the 1932 harbor defense project to cover the principal unguarded channels between the islands of Casco Bay. Later in August 1942 when 37 mm automatic weapons were made available, they were added to existing AMTB batteries.(384)

The Peaks Island temporary AMTB battery was at the northeast end of the island on a tract purchased in 1906 to guard the Hussey Sound minefield. The site remained unoccupied, however, until a pair of 3-inch M1902 guns was emplaced in late April 1942 to protect the advanced minefield at the entrance to Hussey Sound and exclude enemy motor torpedo boats.

The Southeastern Tip temporary AMTB battery, on a 0.27-acre site at the southeastern end of Long Island, was occupied by a pair of 3-inch M1902 R-F guns and pedestal carriages in April 1942. The site was purchased March 8, 1943. The army constructed six temporary buildings, two cottages, a BCS, magazine, storeroom, and pump house and underground water tank.

Northeastern Tip AMTB battery for one more M1902 3-inch R-F gun was similarly emplaced on .35 acres acquired by permit from the navy on the northeast tip of Long Island, covering Chandler Cove and the passage between Long and Great Chebeague Islands. This battery was increased to two guns later in 1942.

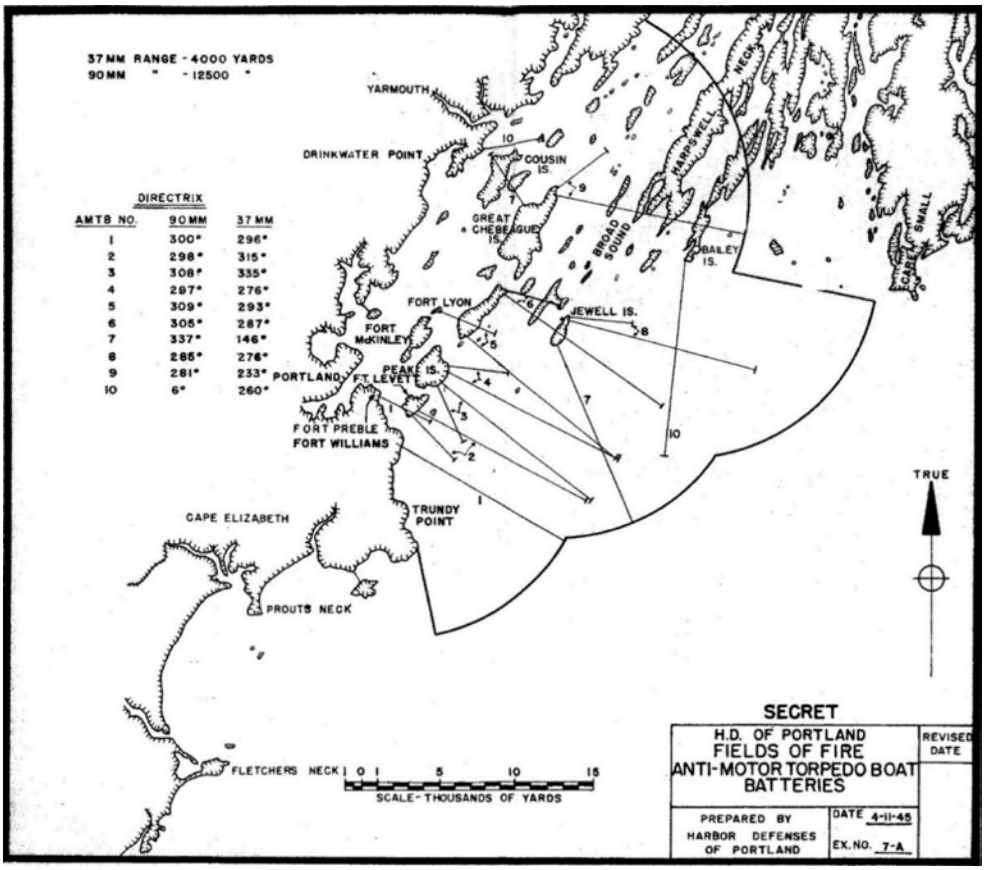
The Great Chebeague Island temporary AMTB battery was established on Merriam Point, the northern tip of the island with one 3-inch M1902 gun and carriage. This gun guarded the channel between that island and Little John Island. Later, a second 3-inch gun was emplaced.

On October 24, 1942, the adjutant general instructed all major commands to plan for the emplacement of M1 90 mm guns, along with 37 mm automatic weapons, as defenses against enemy motor torpedo boats. Each harbor defense was to prepare a mission statement for AMTB armament and establish the vital areas to be defended and the priorities of those areas. Whenever possible, these batteries were to have a secondary mission of antiaircraft defenses, especially against low-flying torpedo or mine-laying aircraft.

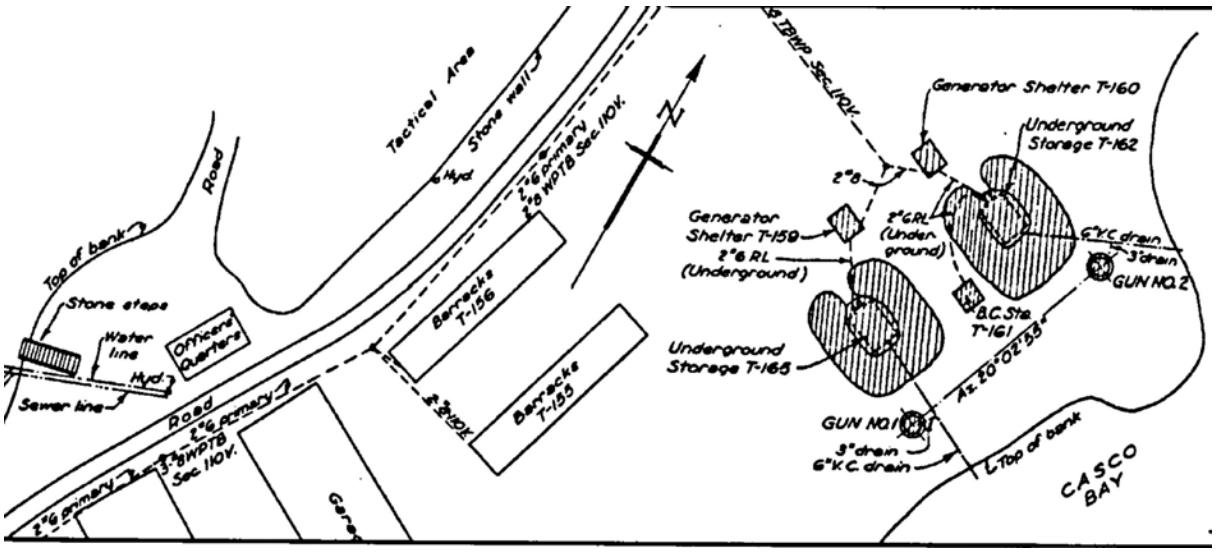
The 90 mm guns were electrically directed with generator sets to power both the guns and their directors. Initially, target data was supplied by continuous-wave 10-centimeter SCR-547 fire control radar on two-wheeled trailers with rotating central housings, on each side of which were large circular parabolic antennae. The radar was directed by an operator using a sighting telescope. Later, the SCR-547 was replaced by the SCR-584 radar in a mobile van with a truck-mounted generator.

Because of the 250-yard minimum range of M7 and M9 directors, other 90 mm batteries, 37 mm, or 3-inch R-F guns were to be emplaced to cover the dead areas. Other restrictions were imposed on the torpedo boat defense project. No additional searchlights, however necessary, could be made available; only those searchlights already available could be used to illuminate for the 90 mm guns.

Because there were so many locations in the Portland Harbor-Casco Bay area where they could be used effectively, the 10 AMTB batteries made available were double the number provided such major



Fields of fire for 90 mm AMTB Batteries. *NARA*

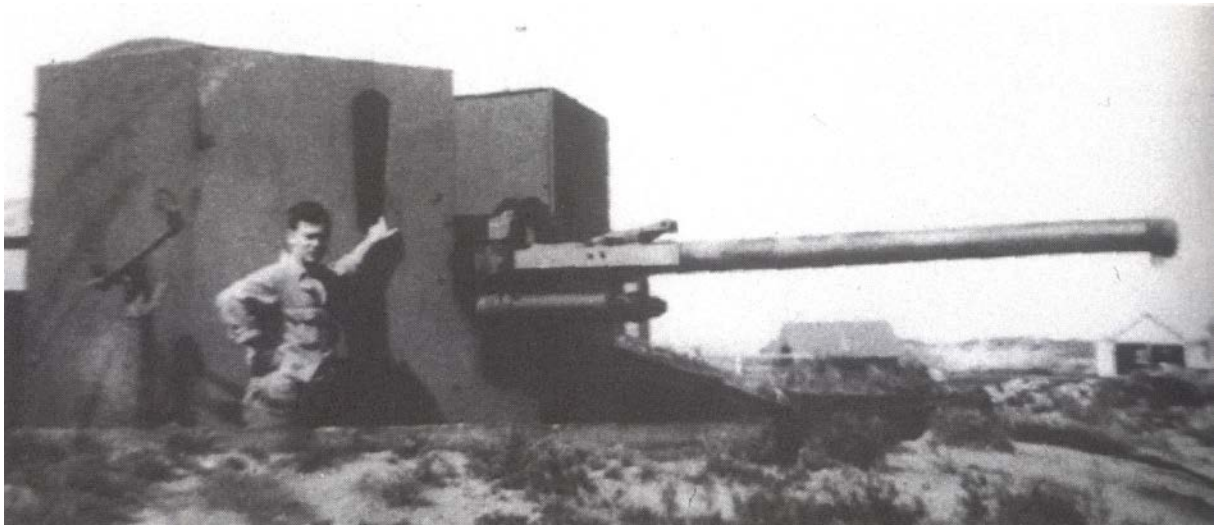


Fixed-mount 90 mm AMTB guns at AMTB Battery No. 1 at Fort Williams. *Author's Collection*

harbors as Boston and New York. Beginning in June 1943 the Portland harbor defenses were supplied with 90 mm armament.(385)

AMTB Battery 961 with four 90 mm guns was emplaced in 1943 in front of decommissioned Battery Blair. In addition to the two concrete gun blocks for the M3 fixed mounts, two frame magazines, splinter-proofed with earth, were built, as well as two electric generator plants, a BCS, and two

temporary barracks. The battery was designated AMTB Tactical Battery No. 1, and upon completion it became the examination battery for the harbor defenses. Along with AMTB batteries on Cushing and Peaks Island that covered the approaches to the main ship channel, it formed AMTB Gun Group No. 5. Battery 961's 37 mm section was detached to Fort Preble and positioned to cover the waters off Spring Point inside the minimum range of relocated Battery Mason.



Fixed 90 mm emplacements at Fort Williams. *NARA*

AMTB 90 mm Battery 962, Tactical No. 2, was at Fort Levett, about 40 feet above sea level between the secondary station for Mines I and the shore. It covered the interior waters of the main ship channel as well as the seaward approaches as an element of AMTB Gun Group No. 5.

AMTB Battery 963, Tactical No. 3, was on the south shore of Peaks Island. Its 37 mm and 90 mm guns covered the seaward approaches to the main ship channel and its minefields, as an element of AMTB Gun Group No. 5.

AMTB Battery 964, Tactical No. 4, the second battery on Peaks Island, was on the east end of the island near the primary station for Mines II, the mine casemate, and SCR-296A fire control radar. Its four 90 mm and two 37 mm automatic weapons commanded the seaward approaches to Hussey Sound. With AMTB Battery 965 on Long Island and the 3-inch guns of Battery Abbot on Cow Island, it constituted AMTB Gun Group No. 6.

Nine acres on the southeast end of Long Island adjacent to the temporary two-gun 3-inch AMTB battery were acquired by condemnation leasehold on April 27, 1943. The two fixed 90 mm guns of AMTB Battery 965, Tactical No. 5, were placed on the gun blocks formerly used by the 3-inch guns. The 37 mm section covered the waters of the sound inside the minimum range of the 90 mm guns. This was part of AMTB Gun Group 6.

On April 27, 1943, a 32.73-acre tract was acquired by condemnation on the southwest end of Long Island for AMTB Battery 966, Tactical No. 6, a pair of fixed and a pair of mobile 90 mm guns, and a pair of 37 mm guns. Two wooden towers, one a BCS and the other an observation station, were erected. Two barracks and another smaller structure were also built. The two 37 mm automatic weapons on Cow Island covered the waters inside the minimum ranges of the 90 mm guns and the 3-inch guns of Battery Abbot. Its armament was removed and stored at the end of the war. The leasehold was terminated September 15, 1948.

On Jewell Island, AMTB Battery 967, Tactical No. 7, part of AMTB Gun Group No. 7, was about 30 feet above the southern shore, 400 feet southeast and downhill from BCN 202. The battery consisted of two fixed and two mobile 90 mm guns, with a detached two-gun 37 mm section. The frame magazines, six feet long and four feet wide with about four-foot ceilings, were coated with tarpaper and covered with earth to splinterproof them. Battery No. 967's 37 mm section was detached to the northwest end of Chebeague Island.

Battery 968, Tactical No. 8, on Jewell Island's east central coast, was armed the same as Battery 967, but its 37 mm section was also on Jewell Island. Its magazines were also the same as 967's, and it too was part of AMTB Gun Group No. 7.

A half-acre site was leased in October 1942 for 60-inch portable Searchlights Nos. 22 and 23 to illuminate the passage between Chebeague and Little John Islands. Another 5.75 acres were leased in the spring of 1942 for AMTB Battery 969, Tactical No. 9, and plans were completed in 1943 for the emplacement of the battery at Merriam Point. The two 3-inch guns were replaced by the four 90 mm and two 37 mm guns, with an earth-covered wood magazine. Two additional barracks were built and the mess hall enlarged. The 37 mm section was at the island's northwest end.

On August 25, 1942, soon after the government took possession of the fire control site on the south end of Bailey Island, authorization was granted to lease an adjoining 4.5 acres for AMTB Battery 970, Tactical No. 10. The leased tract on the southern tip of the island overlooked Jaquish Cut. Battery 970 became the most northeasterly AMTB battery protecting Portland. Its two 37 mm guns at Drinkwater Point on the mainland covered the passage between that point and Cousin's Island.

New Tactical Organization

The changes implemented in 1940 and 1941 in response to the harbor defense modernization program continued into 1942. As the defenses grew stronger with additional batteries and their supporting elements, the organizational structure was changed. In 1942, new intermediate levels of command were established, the number of subordinate elements increased, and the character of their missions was refined or changed altogether.

After reactivation of the harbor defenses in 1940, some changes in the tactical organization altered the 1938 Revision. The gun and mortar "groups" were derived from the old "fire commands" of World War I. An intermediate command level, termed a "groupment," was interposed between the harbor defense commander and the various group commands, exercising tactical command and control over two or more groups, somewhat analogous to the "fort commands" prior to World War I. Two groupments controlled the gun and mine groups in the harbor defenses: Groupment One (C_1) at Peaks Island, and Groupment Two (C_2) at Fort Williams.

Groupment One was one of the first commands to occupy the expanded reservation on Peaks Island. The command post was established in a single-story Sewell-type stucco building some 90 feet above sea level overlooking Hussey Sound. From this vantage point, the groupment commander had a good view of the seaward approaches to the sound through the Gulf of Maine. The command post was equipped with two M1910A1 telescopes and connected to the various gun groups and the HDCP by telephone and by SCR-281 radio. Groupment One was comprised of Gun Groups 1, 2, and 3.

Gun Group No. 1 (G_1) was composed of the primary seacoast batteries at Fort Levett. The group command and observation post was in a single-story splinterproof concrete structure some 106 feet above the water on Cushing Island. A 10-foot tower atop the structure provided additional elevation for the two M1910A1 azimuth instruments. From this station at the beginning of the war, Group 1 exercised tactical control of Battery Foote's two 12-inch long-range barbette guns, and Battery Bowdoin's

three 12-inch disappearing guns. The group's third battery, Battery Kendrick's two 10-inch disappearing guns, was in reserve status, unmanned.

The modernization plans for Portland Harbor called for casemating Battery Foote's two guns. When this project and 16-inch Battery Steele on Peaks Island were completed, both Battery Bowdoin and Kendrick were to be decommissioned. Battery Kendrick was retained in reserve only until November 1942, when it was taken out of service and, over the following weeks, its armament was salvaged.

No. 2 Casemate of Battery Steele, 1946. *Angelo Cantalupo Collection*

From December 1942 until the completion of Battery Foote's casemates, Battery Blair at Fort Williams, formerly assigned to Gun Group 2, was assigned as the second battery of Group 1. In July 1943, when Battery Foote was casemated and Battery Steele placed in commission, decommissioning both Batteries Bowdoin and Blair was authorized. On December 31, 1943, the adjutant general ordered both batteries "discontinued [and their] equipment and accessories to be disposed of to the best interest of the government." The guns were taken out of service on January 25, 1944, and salvaged. From January 1944 through the end of the war, Group 1 consisted of the four long-range guns of Batteries Steele and Foote.

When the United States entered World War II, Gun Group 2 (G_2) was composed of the heavy-caliber guns and mortars at Forts Williams and Preble. The group's command and observation post was in a one-story splinterproof concrete structure 88 feet above the shoreline near the eastern crest of the granite ledge, 50 feet behind and just above the HECP. The observation post was provided with two M1910A1 azimuth instruments. Of the four batteries comprising the group, Battery Blair was the group's only active battery at Fort Williams. Battery DeHart's two 10-inch disappearing guns were in inactive or reserve status; Battery Sullivan's 10-inch guns were still in place, but the battery was out of service. The other two batteries of the group, Batteries Kearny and Chase at Fort Preble, were each armed with four 12-inch mortars.

Group 2 retained the above organization only until December 1942. Batteries DeHart, Kearny, and Chase were all authorized for decommissioning in November 1942, and were taken out of service

by December. Battery Blair was then reassigned to Group 1 and Group 2 had no armament assigned to it in December 1942 and January 1943.

In January, Group 2 took over tactical command and control of the 6-inch batteries at Forts Levett and McKinley. To better direct these batteries, the group command post was moved to a three-story concrete tower near the western boundary of the Peaks Island Military Reservation. The observation post of the group was at the top of the tower, some 136 feet above the Gulf of Maine. From this height, the M1910A1 azimuth instruments covered the main ship channel, Whitehead Passage, and Hussey Sound.

The restructured Group 2 controlled the fire of Batteries Acker (two 6-inch R-F guns) and Carpenter (two 6-inch R-F guns) at Fort McKinley and Battery Ferguson (two 6-inch R-F guns) at Fort Levett. Upon completion of the 1940s 6-inch modernization program batteries in 1944, they were added to the group. On August 15, 1943, decommissioning Battery Acker on Great Diamond Island was authorized once the modern 6-inch batteries were placed in service, while Batteries Carpenter and Ferguson were retained as active elements of the group.(386)

The command post for Group 3 (Mines) (G_3) was initially in a double mine observation station above Ship Cove at Fort Williams. This splinterproof concrete structure also served as the command post of Mines I, which controlled the minefields of the main ship channel. The second element of the group, Mines II, was initially at Fort McKinley.

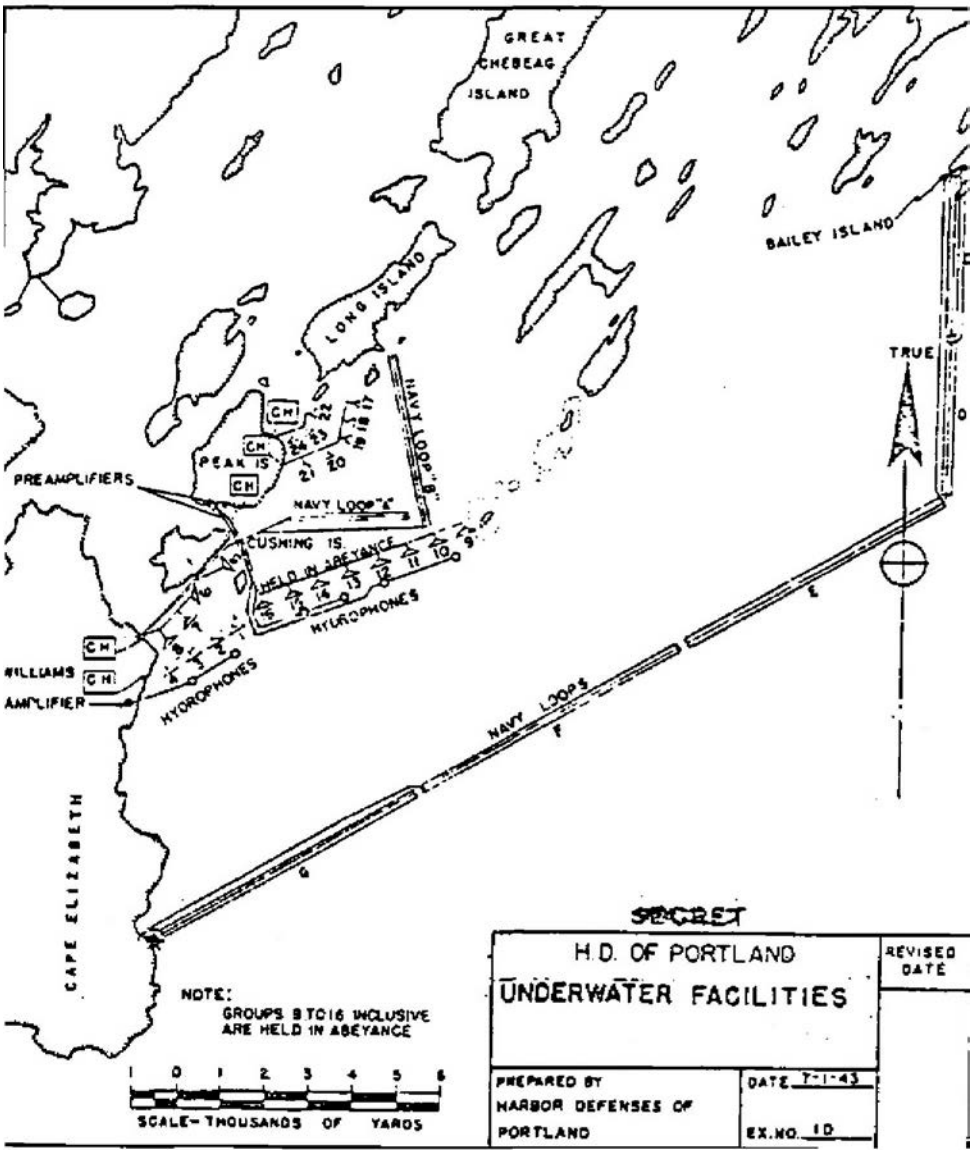
Following the reorganization of the mine defenses in 1941, Group 3 and Mines I remained at Fort Williams, but Mines II moved to Peaks Island. The support facilities for the Hussey Sound minefield remained at Diamond Cove, Fort McKinley. *General A.M. Randol* served from the beginning of the war as an ad hoc mine planter to maintain the minefields. When USAMP *Colonel George Armistead* (MP-3), manned by the 24th CA Mine Planter Battery (CAMP), arrived in the latter part of 1942, it improved the ability to maintain the numerous groups of mines in the harbor approaches. *Randol*, however, continued in service as a "junior mine planter" until Junior Mine Planter *FP-63* was commissioned in July 1943. On July 14, the officers, warrant officers, and enlisted men formerly assigned to *Randol* were transferred to *FP-63. FP-63*, based at Fort McKinley, continued to maintain the Hussey Sound minefield until October 7, 1944, when it was inactivated and its personnel reassigned to the 24th CAMP aboard USAMP *Armistead*.(387)

USAMP *Colonel George Armistead* (MP-3) on the Ohio River enroute to Maine in 1942. *Author's collection*

A new mine project planned in the late spring of 1943 called for 312 new controlled ground mines in 24 groups, arranged in three lines across the entrances to Hussey Sound and the main ship channel.

The outer line was to consist of 12 groups, the second line nine groups, and the inner line three groups. Each group was to contain 13 mines. This project was advanced slowly over the following months. As material for each group of new ground mines was made available, the older group of buoyant mines was raised, and the ground mines planted. Because of the changing strategic situation, the proposed outer line of ground mines was not planted.

USAMP *Armistead* remained assigned to Portland until January 1945, when it was turned over to the U.S. Navy and re-commissioned in March as the USS *Barbican* (ACM-3). The men of the 24th CAMP were again assigned to the *FP-63,* which resumed maintaining the mines in Portland Harbor. On March 20, 1945, orders were received to remove all submarine minefields at Portland, work carried out over the next several months by *FP-63* and the 24th CAMP Battery.(388)



Submarine mine defenses of Portland Harbor, 1945. *NARA*

Groupment Two (C_2) was organized in 1943 with a command post at Fort Williams. The batteries of 3-inch guns that had covered the minefields as part of the mine groupment were incorporated into AMTB Groups 5, 6, and 7.

From its command post on Cushing Island, Gun Group 5 (G_5) (AMTB Main Channel) provided command and control of AMTB Batteries 961 at Fort Williams, 962 at Fort Levett, and 963 on Peaks Island, along with 3-inch Batteries Keyes at Fort Williams and Mason at Fort Preble. The 37 mm section of Battery 961 at Fort Preble guarded against enemy torpedo boats and reinforced the coverage of Whitehead Passage and to some extent the inner minefield of the main ship channel.

Gun Group 6 (G_6) (AMTB Hussey Sound) consisted of AMTB Batteries 964 at Peaks Island, 965 and 966 on Long Island, and 3-inch Battery Abbot at Fort Lyon. The 37 mm section of Battery 965 was at Fort Lyon on Cow Island. These batteries protected the minefields at the entrance to Hussey Sound and guarded the sound against passage of enemy torpedo boats.

The command post for Gun Group 7 (G_7) (AMTB Broad Sound) was on Jewell Island along with Batteries 967 and 968. Battery 969 was on Chebeague Island and 970 was on the south end of Bailey Island. Battery 967's detached 37 mm gun section on Chebeague Island covered the bar. The 37 mm section of Battery 970 on Drinkwater Point covered the passage between Cousin's Island and the mainland.

Group 4 (G_4) (AA Gun) commanded the AA defenses, with its command post at the HDCP at Fort Williams. The group was comprised of three three-gun batteries of 3-inch M1917 guns on fixed carriages. Battery No. 1 was at Fort Preble at decommissioned Battery Jacob Rivardi. Battery No. 2 was at Fort Levett, between Batteries Kendrick and Bowdoin. Battery No. 3 was at Fort Lyon on Cow Island's western tail. A platoon of five 60-inch mobile AA searchlights was attached to each gun battery. A detachment at Fort Williams manned .50-caliber AAMGs.

50th CA

The 50th CA, a 155 mm gun regiment, was posted at Dude Ranch at Montauk Point on Long Island, NY, in October 1943. There was inadequate winterized housing for the regiment at Montauk and orders were issued October 4, 1943, for the transfer of Headquarters Battery and the 1st and 2nd platoons of Battery G to Fort McKinley, where they arrived on October 6. Those units remained there until January 13, 1944, when they were ordered to Fort Devens, MA, where they were inactivated on January 21 and their personnel reassigned. The two battalions of the 50th CA remained at Montauk until January, when they were also inactivated and their personnel reassigned to the 42nd and 43rd CA Bns (155 mm Gun). (389)

Defense Project Revised in 1944

With the development of the 1940 harbor defense modernization program, the harbor defense command was directed to prepare a new basic harbor defense project for Portland in September 1942, which was generally complete by early 1944. The new project was in many ways a reiteration of the 1938 revision of the 1932 basic project, with supplementary directives issued in 1940, 1941, and 1942. It established Batteries Foote and BCN 102 (Battery Steele) as the primary armament of the harbor defenses, and 6-inch 200-series long-range barbette BCN 201, 202, and 203, 6-inch barbette Batteries Ferguson and Carpenter, and 3-inch R-F Batteries Keyes, Mason, and Abbot as the secondary armament. Forty 90 mm dual-purpose AMTB guns were to be added, along with some twenty 37 mm automatic weapons that were to be replaced by 40 mm guns when available.

The project called for the eventual abandonment of the 155 mm batteries at Fort Williams and Small Point when the new 6-inch batteries came in service. Most of the older remaining harbor armament was to be placed in maintenance status. The AA defenses would continue to consist of the three, three-gun batteries of fixed M1917 3-inch AA guns at Forts Preble, Levett, and Lyon supplemented by AA machineguns at Fort Williams.

Upon completion of the basic project, the annexes had been generally completed by 1945. The war's tide had turned by early 1944 and the threat of attacks on American shores was no longer likely. In light of these developments, several changes took place in the Portland harbor defenses.

The new annexes called for seven batteries of coast artillery to fully man the harbor defenses in the revised basic project. These batteries were to be assigned to either the Portland Group or the Channel Group. This structure was never implemented; because of the rapidly changing course of the war, it remained on paper only.

With the war being carried to France in the summer of 1944, there was an increasing need for personnel in Army Ground Forces, concurrent with the decreased need for coastal defenses. The first reduction in the nation's harbor defenses came in March 1944 when the number of harbor defense troops was reduced by 60 percent. On October 1, 1944, a major reorganization in the coast artillery troops posted in the harbor defenses began. Most of the harbor defense regiments were inactivated and then disbanded, their constituent batteries being redesignated as elements of newly constituted separate battalions. Excess personnel were reassigned to field artillery and infantry.(390)

On January 12, 1944, the adjutant general ordered the activation and organization of a harbor defense headquarters in those harbor defenses that did not already have such organizations separate from the regiments stationed there. In Portland Harbor, the HHBs of the 8th and 240th CA Regiments had performed that function, and these two regiments had provided a provisional HQ Battery for the harbor defenses. In the early 1944 reorganizations, this unit's cohesiveness would be destroyed by the transfer of the 8th CA and the reorganization of the 240th CA.

The new harbor defense HQ was formed by retaining selected officer and enlisted personnel from the 8th and 240th CA regimental HHBs. With the departure of the 8th CA in March 1944, HQ, HD of Portland, was organized and activated. This unit operated the harbor defenses from Fort Williams through the spring and summer of 1944. On October 1, 1944, the unit was reorganized. A new HHB was organized using personnel of HHB, 240th CA, which was inactivated.(391)

At the beginning of 1944, the 8th CA was serving in Portland Harbor. Regimental HHB operated Groupment One at Peaks Island. The regimental searchlight battery, Battery K, had details throughout the harbor defenses but was headquartered at Fort Preble. HHB, 1st Bn, was also posted at Fort Preble, where it controlled the "mine battalion," Batteries A, B, and C. Battery A serviced the mines of Mines I at Fort Preble, Battery B the mines of Mines II at Fort McKinley. Battery C manned Battery Mason's 3-inch gun and the three M1917 3-inch AA guns at Fort Preble.

HHB, 2nd Bn, and Batteries D, E, and F were at Peaks Island, where they operated Gun Group 2, Batteries Steele and Foote.

Gun Group 1 at Fort Levett on Cushing Island was operated by HHB, 3rd Bn, 8th CA, with Batteries H, I, and L.

On February 22, 1944, after an existence of just under two decades, the 8th CA, less Battery B, was ordered to Camp Shelby, MS, to be inactivated, its personnel reassigned to IX Corps, 2nd Army, Army Ground Forces. Battery B was transferred to Fort Jackson, SC, to be inactivated and its personnel reassigned to IX Corps. Many of the officers and enlisted men of the regimental HHB were retained at Portland and reassigned to HHB, HD of Portland.

The batteries of the regiment were ordered to Fort McKinley and spent the next three weeks getting ready for the permanent change of station. On March 24, 1944, a detachment of regimental HHB, 1st Bn HHB and attached medical detachment, and Batteries A, C, and K departed for Camp Shelby, arriving March 27.

HHB, 2nd Bn, and attached medical detachment, and Batteries D, E, and F left Portland March 28 by troop train and arrived at Camp Shelby on March 31. On April 18, the 8th CA Regiment was inactivated and its personnel reassigned to the 546th, 745th, 746th, 747th, and 748th FA Bns. The 546th FA Bn was a 155 mm truck-drawn unit; the other battalions were truck-drawn 8-inch howitzer battalions. The 3rd Bn, 8th CA, followed the rest of the regiment to Camp Shelby, entraining about April 11.

Battery B was the last element of the 8th CA to depart, leaving Fort Preble May 18. The officers remained in the HD of Portland, but the enlisted personnel arrived at Fort Jackson May 19. Battery B was inactivated May 20 and the enlisted men were reassigned to the newly constituted 294th FA Observation Bn. On May 31, 1944, the 8th CA (HD) Regiment was disbanded and removed from the army rolls.(392)

The 240th CA continued to operate the harbor defenses until October 1944. On October 1, the regiment was inactivated and on October 7 its elements were redesignated. Most of the officers in regimental headquarters were transferred to the reorganized HHB, HD of Portland. HQ Battery was then redesignated Battery E, 186th CA (HD) Bn.

The 1st Bn was redesignated 185th CA (HD) Bn, and 2nd Bn was redesignated 186th CA (HD) Bn. The elements of the 240th CA Regiment were redesignated:

HHB, 1st Bn, redesignated HHD, 185th CA Bn
- Battery A redesignated Battery A, 185th CA Bn
- Battery B redesignated Battery B, 185th CA Bn
- Battery C redesignated Battery C, 185th CA Bn
- Battery D redesignated Battery D, 185th CA Bn
- Regimental HHB redesignated Battery E, 185th CA Bn

HHB, 2nd Bn, redesignated HHD, 186th CA Bn
- Battery E redesignated Battery A, 186th CA Bn
- Battery F redesignated Battery B, 186th CA Bn
- Battery G redesignated Battery C, 186th CA Bn
- Battery H redesignated Battery D, 186th CA Bn
- Battery K redesignated Battery E, 186th CA Bn

The remaining elements of the 240th CA were disbanded October 1. The 185th and 186th battalions were retained in the Portland defenses, constituting the harbor's garrison until April 1, 1945.(393)

With the collapse of Nazi Germany imminent on March 29, 1945, the harbor defenses were downsized by about 50 percent in accordance with G.O.s 4 and 5, HQ, Northeastern Sector. The 185th and 186th CA (HD) Bns were inactivated and their personnel reassigned effective April 1:

HHB, HD of Portland; authorized 26 officers, three warrant officers, and 190 EM.

Battery A, 185th CA Bn, redesignated Battery A (Mine), HD of Portland; authorized six officers, one warrant officer, and 159 EM.

Batteries B and C, 185th CA Bn, inactivated, personnel reassigned to active batteries of the HD of Portland.

Battery D, 185th CA Bn, redesignated Battery D (6-inch Gun), HD of Portland; authorized four officers and 129 EM.

Battery E, 185th CA Bn, redesignated Battery E (6-inch Gun), HD of Portland; authorized four officers and 129 EM.

Battery A, 186th CA Bn, redesignated Battery B (AMTB), HD of Portland; authorized three officers and 126 EM.

Battery B, 186th CA Bn, redesignated Battery C (AMTB), HD of Portland; authorized three officers and 126 EM.

Batteries C and D, 186th CA Bn, inactivated, personnel reassigned to active batteries of the HD of Portland.

Battery E, 186th CA Bn, redesignated Battery F (Searchlight), HD of Portland; authorized two officers and 48 EM.(394)

The new harbor defense project for Portland was to remain only a plan in the last months of World War II. With the garrison reduced to less than 800 officers and enlisted men in the HHB and six firing batteries and the threat of attack negligible, the primary batteries in the harbor, along with most of the secondary ones, were placed in maintenance status. Only a few 90 mm guns and the two 200-series 6-inch gun batteries were actively manned, and all but the 90 mm AMTB battery at Fort Williams were deactivated when the HECP was discontinued on August 18, 1945, with the defeat of Japan.

Harbor Defense Supports

Soon after the Japanese attack on Pearl Harbor, infantry supports were assigned to the various sectors of the Eastern Theater of Operations. The 26th Division, Massachusetts National Guard, was assigned to the New England Sector and one battalion combat team from three of its four regiments, the 101st, 181st, and 182nd Inf., was assigned to each of the sector's three sub-sectors.

The U.S. Army was still converting the National Guard's "square" infantry divisions of two infantry brigades, each with two infantry regiments, and an artillery brigade into the new triangular divisions composed of three infantry regiments. One infantry regiment of the old square division was projected to be reassigned, some of them to the Eastern Theater of Operations/EDC as harbor defense supports. On February 5, 1942, the original combat teams were replaced by the 104th Inf. Regiment, the fourth regiment of the 26th Division, with artillery, engineers, quartermaster, and medical elements attached to form three battalion combat teams.

On March 7, the 104th Inf. was succeeded by the 101st Inf. Regiment until May 11, when it was relieved by the 181st Inf. for the next 18 months. In December 1943, the 181st Inf. Regimental Combat Team was relieved by the 16th Cav. Reconnaissance Group, which served as a mobile reconnoitering and striking force, but did not regularly patrol the beaches as the infantry combat teams had. The 16th Cav. Gp served until May 1944, when it was released from the EDC for reorganization, redesignation, and shipment to Europe. After the four EDC sectors was reorganized into the Northeastern and Southeastern Sectors in 1944, the 143rd Cav. Reconnaissance Troop was assigned to the Northeastern Sector.(395)

As part of the war effort, the dim-out program was started in April 1942; all lights within three miles (later extended to 15 miles) of the coastline were extinguished or covered, and a "vital defense

area" was established along the Maine coast to about 40 miles inland, with an "active air defense zone" covering the remainder of the state. (396)

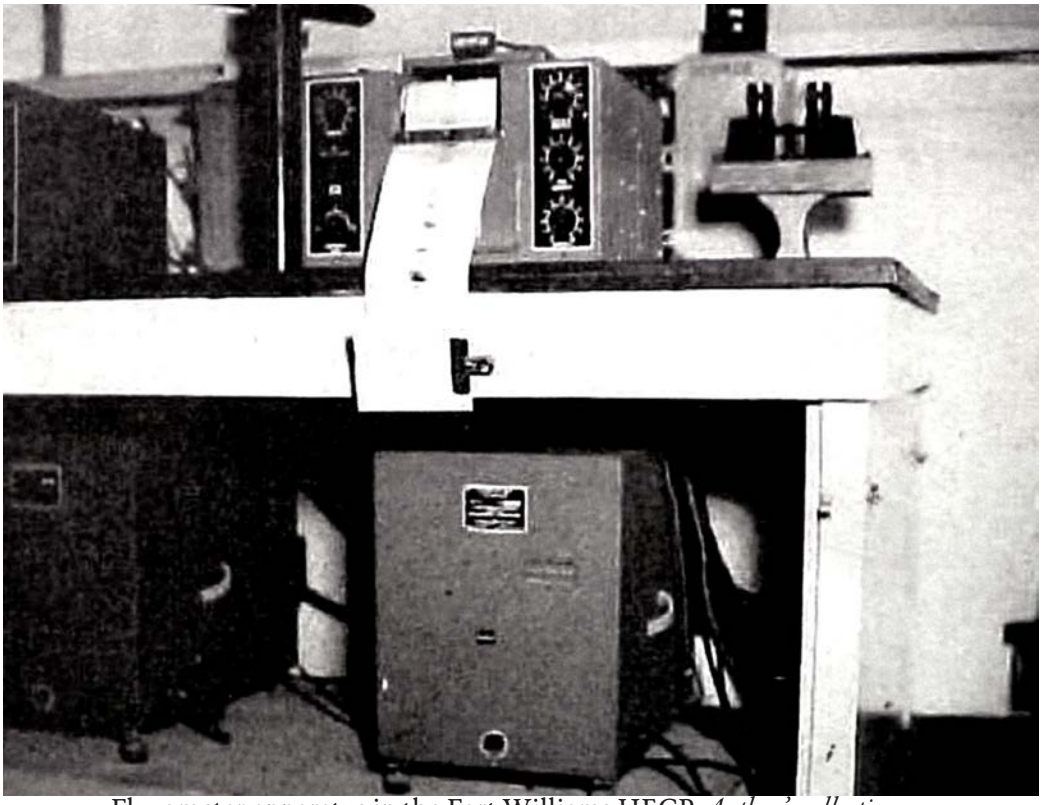
German Submarines off Casco Bay

Portland Harbor served as a major naval installation during World War II, and the destroyer base in Casco Bay supplied escorts for Atlantic convoys in the early months of the war. Later the harbor served as a base for elements of the submarine hunter-killer groups that sought out U-boats in the North Atlantic. Portland also served as a minor port of embarkation. The Gulf of Maine, of which Casco Bay is a part, was regularly traversed by German U-boats between their hunting grounds off Halifax and New York-Boston, and German spies were landed in coastal Maine.

U-87 was one of three German submarines sent May 19, 1942, to mine American harbors.(397) In the early afternoon of June 22, *U-87* was off the entrance to Portland's main ship channel when it caused first one and then a second signature on the navy's magnetic loop fluxometer apparatus in the HECP at Fort Williams. Visual searches revealed no vessels and a submarine alert was sent to the navy's senior officer present afloat and to the HDCP.

Nothing occurred for another two hours, then *U-87* was sighted by sailors at the magnetic loop receiving station on Bailey Island, running on the surface in intermittent fog charging her batteries, some two and one-half miles south of Bailey Island. She appeared to be on an easterly course for the entrance to the Kennebec River and was soon visible to a fire control detachment of Battery D, 8th CA, at the Seguin Island Lighthouse, the secondary station for Battery D's 155 mm GPF guns at Fort Baldwin.(398)

The 155 mm guns at Fort Baldwin were manned and ready to fire, and the HECP gave the authority for battery commander's action. Unfortunately, a clear shot was not immediately possible with



Fluxometer apparatus in the Fort Williams HECP. *Author's collection*

the flat trajectory GPFs, for the intervening 115-foot elevation on Small Point effectively masked the enemy vessel. Before the U-boat changed position relative to the barrier, however, the order to fire was countermanded by the HECP, because destroyers were moving into the area.

Seven destroyers concentrated off the mouth of the Kennebec. The "tin cans" arrived within 30 minutes and began a massive search for the elusive U-boat. Although depth charging continued into the night, *U-87* escaped, continuing toward Halifax. *U-87* was attacked by a Lockheed Hudson light bomber of Canadian Air Force Squadron 11 shortly after dawn the next day, catching the U-boat on the surface. Three depth charges landed close aboard the sub's stern, knocking the sub's port diesel off its mountings, wrecking the stern tube and its torpedo, and damaging the after main storage battery. *U-87* was forced to abort her patrol early and limp home.(399) The reception afforded the *U-87* may have prompted caution, as there were no more close encounters between the U-boats and Portland's harbor defenses.

The German foreign intelligence service, the *Abwehr,* endeavored to land agents from U-boats along the Atlantic seaboard. Two such ventures were successful on Long Island, NY, and in Florida. The earliest known attempt to land an *Abwehr* agent, Oskar Mantel, on the Maine coast was by the *U-1229,* an IXC/40 boat that sailed from Kiel, Germany, on July 13, 1944. Enroute, on August 20, the U-boat fell victim to a TBF bomber from a hunter-killer group centered on the escort carrier USS *Boague* (CVE-9). The TBF caught *U-1229* on the surface and attacked with rockets, machine guns, and then two depth charges when the sub attempted to crash dive. Two hours later the U-boat was forced to surface and was immediately attacked by six aircraft from *Boague*. The sub was scuttled and *Boague's* escorts picked up 41 survivors of the 59-man crew, including Mantel.

U-1230 sailed for America about a month after the demise of *U-1229,* with two more *Abwehr* agents, William C. Colepaugh and Erich Gimple. The agents were to land down east near Frenchman's Bay. On the night of November 29, 1944, the two agents were paddled ashore in a rubber dingy and landed on Hancock Point. Although their landing was discovered rather quickly, the two were able to make their way to New York City where Colepaugh turned Gimple and himself into the FBI. After landing the *Abwehr* agents, *U-1230* proceeded with anti-shipping operations in the Halifax area.

As the war progressed, U-boat activity along the American coastline steadily declined. Not until the closing months of the war was there an upsurge in U-boat activity in the Gulf of Maine. Type IXC/40 *U-853* sailed from Stavanger, Norway, on February 23, 1945, for New England. Soon after arrival, she sank the old 450-ton *Eagle*-class patrol boat *PE-56* off Portland before turning southward toward Boston. The sinking serving as a stern reminder that the war was still active along the American seaboard.(400)

Portland's Harbor Defenses 1946-1985

The end of World War II saw a rapid inactivation of the HD of Portland. On March 1, 1946, the EDC passed to the command of AGF and the HD of Portland were reassigned to First Army. On March 15, 1946, the harbor defenses were assigned to the 39th HQ and HQ Detachment, Special Troops, First Army. While some posts were retained as active military reservations, most were abandoned. On June 30, 1946, HHB, HD of Portland, was inactivated by First Army, replaced by a coast artillery caretaking detachment from the Portland defenses. On that same date the last remaining coast artillery battery, AMTB Battery No. 1 at Fort Williams, was inactivated. Surplus personnel were sent to the Replacement and Service Command for reassignment.(401)

In June 1946, Brig. Gen. Rollin L. Tilton, who had commanded the Chesapeake Bay Sector during World War II, chaired the War Department Seacoast Defense Armament Board to survey the nation's

future harbor defense needs. The Tilton Board visited each of the continental harbor defenses and submitted its report in November 1946. With regard to the HD of Portland, the board reported:(402)

> The Harbor Defenses of Portland exist for the defense of Portland Harbor, which is a major fleet anchorage and destroyer base. Portland is also an important North Atlantic port, a ship-building center and the American terminus of the oil pipelines to Canada. Being one of the best deep-water harbors on the coast, it has always been considered a possible landing area. The harbor proper lies to the west of Casco Bay and offer ideal anchorage for large numbers of ships. There are two main channels to the harbor and many lesser channels among the island. While the heavier armament covers Casco Bay completely, its many islands and lesser channels complicate the AMTB defense and necessitate a greater light armament than elsewhere and a widely distributed defense.

The Tilton Board noted the vast amount of money spent on the defenses, and recommended that Batteries Steele and Cravens on Peaks Island, Battery Foote at Fort Levett, and BCN 202 on Jewell Island be retained in the harbor defense project and that BCN 201 at Cape Elizabeth be completed and retained as well. It noted that the batteries were well sited with excellent fields of fire and the 6-inch batteries were capable of all around fire. The bulk of the army personnel in the harbor defenses, 15 officers, one warrant officer, and 232 enlisted men, were at Forts Williams and McKinley, with 10 enlisted men as caretakers at outlying forts and military reservations. Special maintenance and work details were carried out by a roving detail from Fort Williams. All installations were sub-posts of Fort Williams.

The older 6-inch batteries were considered of limited tactical value and their fields of fire were covered by the numerous AMTB batteries. Tilton noted that most of the AMTB emplacements were improvised and their armament should be stored except for the permanent batteries on Peak Island that should be retained for training. The board also recommended replacing the fixed 90 mm AMTB guns with mobile guns, and with the exception of the training battery on Peaks Island, removing them to Fort Williams for storage to ease maintenance. The battle allowance of 300 rounds per gun was also considered excessive and the board recommended this be "reduced to 100 rounds per gun stored locally and the balance retained in depot stocks." Tilton also noted that the old 3-inch AA guns were still in position, although unmanned, and recommended that they, as well as the three 3-inch seacoast batteries, be removed.

The submarine mine defenses were also considered by the board. While relocation of the mine facilities from Fort McKinley to Fort Preble would be more economical in the end, for the time being they should remain as they were. While the mine flotilla for the harbor was established at two mine planters, four distribution box boats, and six mine yawls, there were only two DB boats, four yawls, and six other small craft.

The development of radar meant that many of the 23 base end stations could be discontinued, their DPF and azimuth instruments stored in heated buildings at Forts McKinley and Preble. Of the radar sets in the harbor defenses, the SCR-682 surveillance radar that had succeeded the SCR-582A surveillance set was still in operation at the HECP, while three of the seven SCR-296A sets were still installed on their towers. All seven antennas were still in place.

The fire control switchboards in the defenses had all been modernized since 1941 and the fire control telephones and radios were stored at Fort Preble. Also stored were some 42 portable M1942 Sperry 60-inch searchlights with spread beam attachments and power plants, 37 at Fort Preble and five at Fort Williams. In addition, seven 24-inch beach-defense searchlights with portable power plants were stored at Fort Williams.

The board also inspected the posts themselves and made numerous recommendations. The tactical importance of Fort Williams, a major installation during the war, had diminished as the large-caliber guns were decommissioned. After early 1943, the principal elements of the defenses were centered on the HDCP and HECP, the signal station, the examination battery, and the AAIS center. However, in addition to supplying rations to some 22 satellite stations and installations, Fort Williams also carried some 325 commissary accounts, supervised all military burials in the area, provided third-echelon motor repair for the State of Maine, and served as the main post exchange for some six other posts.

Because the post no longer possessed armament, the Tilton Board recommended the National Guard training site be removed. The concrete tent floors of the National Guard encampment area were temporally used for hard stands for mine cables.

The Tilton Board made cogent recommendations as to how to preserve the great amount of money so recently spent to modernize the coast defenses, at a fraction of the original price. However, the War Department turned a deaf ear. It was a time of stringent budget cuts, and there was no foreseeable naval threat to our coastline. The army was simply uninterested in spending ANY money on coast defense, and so the defenses of Portland, like those around the country, were to be scrapped, with unseemly haste. By 1950, the Coast Artillery Corps itself had ceased to exist.

Today, none of the defense sites remains in military hands. Of the major sites, Forts Scammell, Levett, Lyon, McKinley, and Peaks Island are in private hands. The batteries at Fort Levett have been preserved, at least from intentional destruction; many of the buildings at Fort McKinley have been converted into beautiful homes, and the tactical structures have largely survived. Battery Steele on Peaks Island is owned by a land trust, but BCN 202 has disappeared under a large home.

Forts Gorges and Williams, and the Jewell Island and Cape Elizabeth reservations, are now parks, with varying degrees of preservation and destruction. Fort Preble, now the home of Southern Maine Community College, preserves a number of century-old army buildings, along with the remains of the Second and Third-system works, although regrettably, the mortar batteries have disappeared. In general, the smaller reservations established for AMTB batteries, searchlights, and fire control installations have largely reverted to private ownership.

Notes Part IV

334. George V. Strong to the adjutant general (TAG), April 3, 1940; Walter C. Baker, President of the Harbor Defense Board to TAG, April 25, 1940, RG 407, Archives II, NARA, College Park, MD.

335. Report of the Harbor Defense Board to TAG, July 27, 1940, RG 407, Archives II. U.S. Army, Eastern Defense Command, *History of the Eastern Defense Command* (New York, 1945), pp. 21-22. Stetson Conn, Rose C. Engleman, and Byron Fairchild, *Guarding the United States and its Outposts* (Washington: GPO, 1964.) pp. 47-48. Hereafter: Conn, et al, *Guarding the United States.* Emanuel Raymond Lewis, "American Main Battery Armament: the Final Generation," *Warship International*, No.4 (1976), p. 302.

336. Conn, et al*., Guarding the United States,* p. 49

337. "History of the Northeastern Sector, Eastern Defense Command," RG 338, Archives II. *History of the Eastern Defense Command*, pp. 23-24. For a discussion of the development of the 16-inch gun batteries see Bolling W. Smith, "The 16-inch Batteries at San Francisco and the Evolution of the Casemated 16-inch Battery," *Coast Defense Journal*, Vol. 15, No. 1 (Feb. 2001), pp. 16–83. Conn, et al*., Guarding the United States*, p. 49.

338. "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command," RG 338, Archives II. "History of the Northeastern Sector, Eastern Defense Command."

339. U.S. War Department, Adjutant General's Office (AGO), Harbor Defense Project, Portland Harbor (Revised 1945), Annex A (Armament), RG 407, Archives II.

340. "First Coast Artillery District," *Coast Artillery Journal (CAJ)*, Vol. 83, No. 5 (Sept.-Oct. 1940), p. 474. Charles H. Bogart, *Controlled Mines: A History of their Use by the United States* (Bennington, VT), p. 21. Hereafter Bogart, *Controlled Mines*

341. Bogart, *Controlled Mines*, p. 21.

342. *History of the Eastern Defense Command*, pp. 33-34.

343. "History of the Northeastern Sector, Eastern Defense Command."

344. "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command." Historical Data Sheet and Station List, 8th Coast Artillery (HD) Regiment, Organizational Records Unit, Military Personnel Section, National Personnel Records Center, NARA, St. Louis, MO. *Pictorial History: Harbor Defenses of Portland 1941* (Atlanta: Army-Navy Publishers, 1941), pp. 14, 98.

345. "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command."

346. Field Order No. 18, HQ Portland Sub-sector, 23 June 1943; G.O. No. 2, HQ, 8th Coast Artillery, 29 June 1943, S.O. No. 128, New England Sector, 28 June 1943; S.O. No. 137, New England Sector, 10 July 1943; G.O. 13, HQ New England Sector, 11 August 1943; G.O. No. 23, HQ, New England Sector, 11 September 1943, in "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command." Historical Data Sheet and Station List, 8th Coast Artillery (HD) Regiment.

347. Field Order No. 8, HQ Portland Sub-sector, July 4, 1942; G.O. No. 11, HQ, 240th CA, 13 July 1943, "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command." *History of the Eastern Defense Command*, p. 24. Guilford B. Sawyer to Nelson H. Lawry, December 18, 1972. "History of the 240th Antiaircraft Artillery Group (First Maine), Maine National Guard," unpub., n.d., n.p. "History of the Northeastern Sector, Eastern Defense Command."

348. "History of the 240th Antiaircraft Artillery Group (First Maine), Maine National Guard." "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command."

349. TAG to Commanding Generals, Eastern Theater of Operations and First, Second and Fourth Corps Areas, January 10, 1942, "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command."

350. Harbor Defense Project, Portland Harbor (Revised 1945), Annex A (Armament).

351. Battery Ledgers, Journals, and Memoranda; Electrical Installations Ledgers, Journals, and Memoranda; Searchlight Ledgers, Journals, and Memoranda, Portland Harbor, Coast Defense Fortification File 1898-1920, Entry 220, RG 77, NARA, Washington, D.C. Harbor Defense Project, Portland Harbor (Revised 1945), Annex A (Armament).

352. AGO, Location of Elements, HD Portland, April 11, 1945, Exhibit 4-A, Harbor Defense Project, Portland Harbor (Revised 1945), Annex A (Armament). Robert D. Zink, "Coast Defenses of Portland," *CDSG News*, Vol. 3, No. 2 (Feb. 1989), pp. 10-11. Hereafter: Zink, "Coast Defenses of Portland,"

353. Location of Elements, HD Portland, April 11, 1945. Zink, "Coast Defenses of Portland," p. 13

354. Location of Elements, HD Portland, April 11, 1945. Zink, "Coast Defenses of Portland," p. 13.

355. Location of Elements, HD Portland, April 11, 1945. Zink, "Coast Defenses of Portland," p. 13.

356. Location of Elements, HD Portland, April 11, 1945. Zink, "Coast Defenses of Portland," p. 13.

357. Searchlight Ledgers, Journals, and Memoranda.

358. Location of Elements, HD Portland, April 11, 1945. Zink, "Coast Defenses of Portland," pp. 9, 13.

359. Location of Elements, HD Portland, April 11, 1945.

360. Searchlight Ledgers, Journals and Memoranda. Location of Elements, HD Portland, April 11, 1945.

361. Memorandum of Col. George W. Gatchell assuming custody of the Long Island searchlight installation, June 16, 1917, in author's collection. Site Map of Long Island searchlight installation, February 12, 1935, Exhibit 8-A, Annexes to the Harbor Defense Project 1938, Harbor Defenses of Portland, RG 407, Archives II.

362. Location of Elements, HD Portland, April 11, 1945. Glen Williford, "Modern Defenses of Portland, Long Island," unpub., n.d. Zink, "Coast Defenses of Portland," p. 10.

363. "CG HD Portland to CG New England Sector, December 8, 1942, Re: Housing Requirement for AMTB Batteries," *CDSG News*, Vol. 3, No. 1 (Feb. 1988), p. 13. Location of Elements, HD Portland, April 11, 1945. Zink, "Addendum Coast Defenses of Portland," *CDSG News*, Vol. 3 No. 2 (May 1989), p. 12.

364. "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command." Location of Elements, HD Portland, April 11, 1945. CG HD Portland to CG New England Sector December 8, 1942, "Re: Housing Requirement for AMTB Batteries," *CDSG News*, Vol. 3, No. 1 (Feb. 1988), p. 13. Location of Elements, HD Portland, April 11, 1945. Zink, "Coast Defenses of Portland," p. 9. "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command."

365. Location of Elements, HD Portland, April 11, 1945. Zink, "Coast Defenses of Portland," p. 9.

366. Location of Elements, HD Portland, April 11, 1945.

367. Ibid.

368. Edwin C. Bearss, *Special History Study, Fort Moultrie HECP/HDCP* (Denver: NPS, 1974), pp. 4-7.

369. "History of the Northeast Sector, Eastern Defense Command." *History of the Eastern Defense Command*, p. 36. "Ship Watch Set at 6 Eastern Ports," *New York Times*, October 4, 1941, p. 6.

370. "History of the Northeast Sector, Eastern Defense Command."

371. *History of the Eastern Defense Command*, p. 33.

372. Ibid. Edwin C. Bearss, *Special History Study, Fort Moultrie HECP/HDCP*, pp. 93-124, passim.

373. "Shot Halts Ship in Maine," *New York Times*, December 25, 1941, p. 8.

374. "History of the Northeast Sector, Eastern Defense Command."

375. Ibid.

376. Ibid.

377. Bearss, *Special History Study, Fort Moultrie HECP/HDCP*, p. 24.

378. "History of the Northeast Sector, Eastern Defense Command." Andrew Clement, "Seacoast Artillery Radar," *CAJ*, Vol. 91, (May-June, 1948) pp. 8-12. Danny R. Malone, "Seacoast Artillery Radar, 1938-1946," in Mark A. Berhow (Ed.), *American Seacoast Defense: A Reference Guide, 2nd Edition,* pp. 398-415.

379. Location of Elements, HD Portland, April 11, 1945.

380. The Navy's Long Island seaplane facility was built in 1942 to support the aviation activities of the surface fleet in Casco Bay. It consisted of 300' square paved parking apron, a single hangar, and a seaplane ramp. Personnel were housed in summer residences. After a PBY crash, Casco Bay was deemed unsuitable for PBY operations. It was commissioned in the following year as an auxiliary of NAS Brunswick charged with the support of catapult seaplanes of surface vessels.Information from Kenneth Thompson, Portland, ME. Donna Lee McKinnon, "Portland Defended: A History of the United States Government Fortifications of Casco Bay 1794-1945*,"* master's thesis, 1987, University of Maine.

381. "History of the Northeast Sector, Eastern Defense Command." Location of Elements, HD Portland, April 11, 1945.

382. Gun and Carriage Cards, Entry 712, RG 156, Archives II, NARA. Harbor Defense Project, Portland Harbor (Revised 1945), Annex A (Armament).

383. Harbor Defense Project, Portland Harbor (Revised 1945), Annex A (Armament). Gun and Carriage Cards.

384. *History of the Eastern Defense Command*, p. 25. TAG to Commanding Generals, Caribbean Defense Command, Hawaiian Department, US Army Forces in Iceland, and Newfoundland Base Command, October 24, 1942, RG 407, Archives II. "History of the Northeast Sector, Eastern Defense Command." Gun and Carriage Cards.

385. TAG to CG Eastern Defense Command, October 24, 1943, "Defense of Harbors against Motor Torpedo Boats," RG 407, Archives II. Danny R. Malone, "Addendum to Seacoast Artillery Radar, 1938-1946," *CDSG News*, Vol. No. 2 (May 1990), pp. 37-39. Danny R. Malone, "Seacoast Artillery Radar, 1938-1946," in Mark A. Berhow (Ed.**),** *American Seacoast Defense: A Reference Guide,2nd Edition,* pp. 398-415. "History of the Northeast Sector, Eastern Defense Command." *History of the Eastern Defense Command*, p. 25.

386. Harbor Defense Project, Portland Harbor (Revised 1945), Annex A (Armament). Historical Data Sheet and Station List, Battery "Bowdoin"; Battery "Blair."

387. G.O. No. 11, HQ New England Sector, 10 July 1943, in "History of the Portland Sub-sector, Northeast Sector, Eastern Defense Command." K.L. Waters, "The Army Mine Planter Service," *Warship International*, Vol. 22, No. 4 (1985), pp. 400-11. Historical Data Sheet and Station List, U.S. Army Junior Mine Planter *No. 63*.

388. "History of the Northeast Sector, Eastern Defense Command." Harbor Defense Project (Basic), Harbor Defenses of Portland (Revised 1944). Appendix VII, Station List 1 March 1946, *History of the Eastern Defense Command*. Waters, "Army Mine Planter Service", pp. 400-11.

389. Historical Data Summary and Station List, 50th CA Regiment.

390. *History of the Eastern Defense Command*, p. 28.

391. Historical Data Sheet and Station List, 8th Coast Artillery (HD) Regiment; HQ Harbor Defenses of Portland.

392. Ibid.

393. G.O. 5, HQ Northeastern Sector, 18 February 1944, Encl. No. 17; G.O. 19, Northeastern Sector, 22 September 1944, Eastern Defense Command, in "History of the Northeast Sector, Eastern Defense Command." Official Statement of Lineage and Battle Honors, HQ and HQ Battery, 240th AAA Group, Maine National Guard, Headquarters, Maine Army National Guard, Camp Keyes, Augusta, ME

394. Historical Data Sheet and Station List, HQ and HQ Battery, Harbor Defenses of Portland, Organizational Records Unit. *History of the Eastern Defense Command*, p. 51. Shelby L. Stanton, *Order of Battle, U.S. Army World War II* (Novato, CA: Presidio Press, 1984), pp. 213, 215, 232, 315.

396. Information from Kenneth Thompson, Portland, ME.

397. Clay Blair, *Hitler's U-Boat War: The Hunters, 1939-1942* (New York: Random House, 1996) pp. 602-03.

398. Nelson H. Lawry, "The Kennebec Defended through a Dozen Wars," *Periodical: the Journal of American's Military Past*, Vol. 13 (May 1985) p. 14.

399. Blair, *Hitler's U-Boat War: The Hunters, 1939-1942*, p. 603.

400. Blair, *Hitler's U-Boat War: The Hunted, 1942-1945*, pp. 644-47, 685.

401. Historical Data Sheet and Station List, HQ and HQ Battery, Harbor Defenses of Portland; AMTB Battery No. 1, Fort Williams.

402. Annex B, Encl. 1, "Report of the War Department Seacoast Defense Armament Board," RG 407, Archives II.