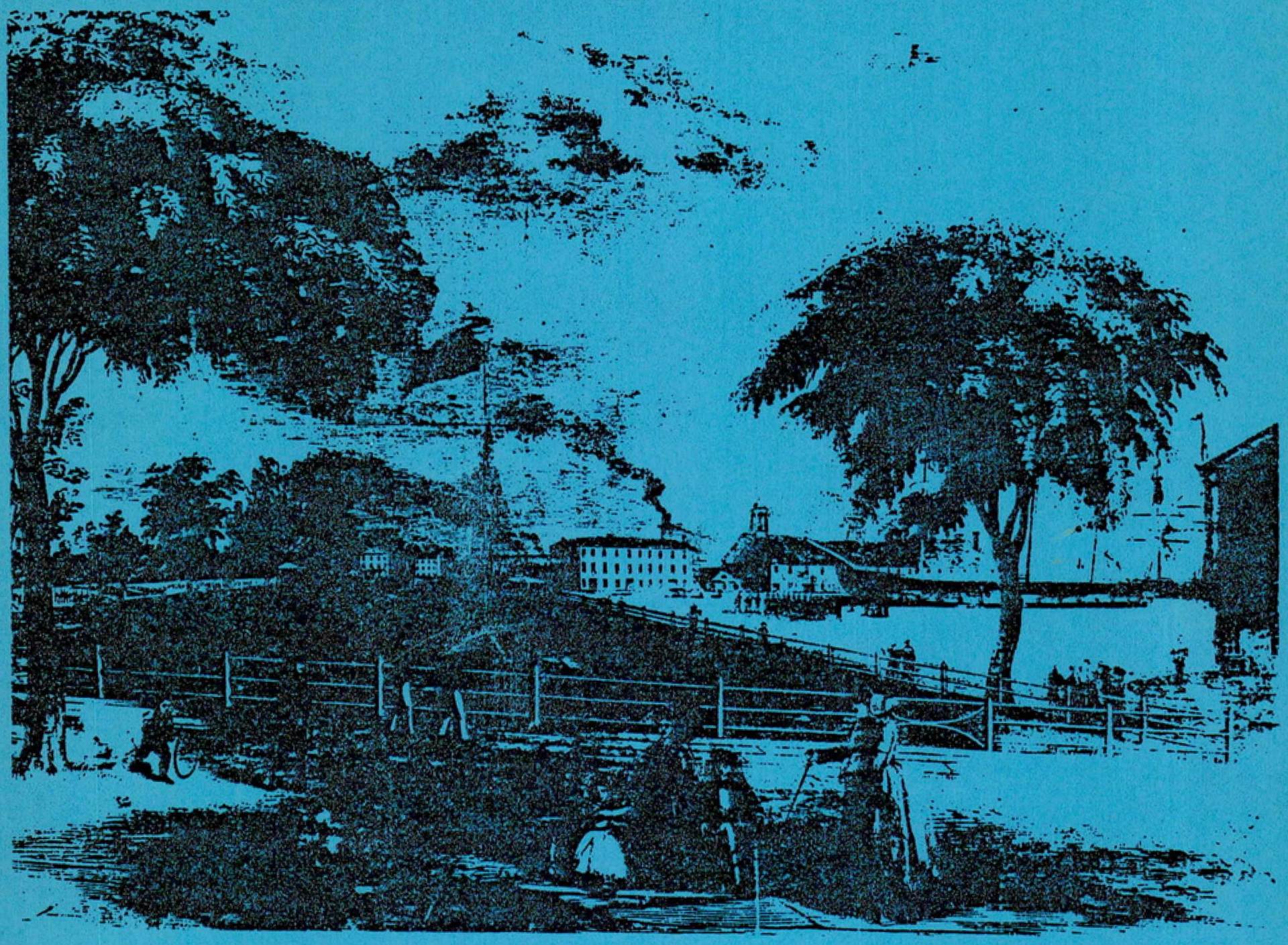
BOSTON NAVAL SHIPYARD



Architectural and Environmental Inventory

BOSTON NAVAL SHIPYARD

Architectural and Environmental Inventory

Prepared for:

National Parks Service
Boston, Massachusetts.

Compiled by:
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David Wright
June 14, 1974

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introduction

The following document has focused primarily upon compiling an inventory of relevant historical/architectural material available within the Boston Naval Shipyard. Where new information, further references, or interesting and potentially useful sidenotes have been unearthed, they have been noted. Each section begins with a copy of very useful notes that architect Orvil Carroll compiled during a brief exposure to the yard in the Summer of 1973. This is followed by my own additions and/or corrections where required. Next are listed all significant photographs and drawings available within the yard, and where they are located. Any relevant published material that has been found concerning the specific subjects has been included. A bibliography arranged by topic is attached at the end of the entire document.

Photographs: The old (and some very recent) photographs and negatives that could prove at all useful to the National Parks (and the National Archives) have been seperated out into three rows of file cabinets in Building 34 (photo lab area, located in the northwest corner of the first floor).

Numbering systems for the photographs have changed over the years. Early, sepia-toned prints, excellent in quality, were simply labeled as to building and date. From about 1900 to 1925, photos were coded according to building (or specific job) followed by the number of the photograph within that sequence. For example, F125 N2 was the second shot taken for Building 125 during its original construction; F401 N26 was the 26th frame taken of the Dry Dock 2 construction sequence. After the mid-1920's, all photographs taken during a year were just numbered consecutively. 504-36 would be the 504th frame taken in 1936. In 1971 there were approximately 16,000 frames recorded.

Two drawers of photographs relate specifically to the buildings and their products and machines, filed according to building number. One drawer contains a series of miscellaneous machinery, equipement, building projects, and important figures; much of the material is wholly worthy of photographic displays. One drawer contains miscellaneous negatives. One drawer has three bound books of prints (and four bound books of negatives) concerning the "Boston Built Ships", ie. those built at the Boston Naval Shipyard. About 95% of all ships built here are represented. There is one box of prints related to the Constitution mostly from the 1927-1932 era of rebuilding. (Virtually all Constitution negatives and prints were seperated out before I arrived and are currently scheduled to be shipped to Portsmouth. An inventory of Constitution photographs, prepared by Jack Dougherty, is included in this report). Three more drawers relate specifically to various ships.

Additional historical photographs have been located in the Files of the Editor of the Boston Naval Shipyard News, in two boxes coded F-10 (#8) and F-10 (#9), labeled "Historic Material from the files of...", currently being stored for the NPS takeover. At the appropriate time, these photos ought to be reintegrated with the major set. Some are duplicates, but many are one-of-a-kind views not recorded or seen elsewhere; at least one view dates back to the pre-1870 period. As well, Preble, in his notes on the Boston Navy Yard, stored in the Old Military Records Div. of the National Archives, includes over 20 photographs of the environment of the shipyard in the year 1874. Copies of these ought to be incorporated into the collection. EFFORTS SHOULD BE MADE TO ARRANGE FOR THE SPECIFIC TRANSFER OF THESE PHOTOGRAPHS FROM THE NAVY DEPARTMENT TO THE NATIONAL PARKS SERVICE.

Drawings: Drawings of the buildings, especially the older drawings, are rather haphazardly distributed between the vault area and the third floor area of Building 200. Seperate lists of each area are included for each building. (The drawings of all dwellings are solely on the third floor, none are in the vault.)

The indexing system for both buildings and drawings has varied over the years. During the early days of the yard, a clear numbering system for the buildings did not exist; letters and numbers used to designate buildings or sites were haphazardly intermixed. In about 1870 the present system began. (In 1867 according to site plans, the old system of 1828 was in effect; in 1868, a transition occurred where buildings were numbered and dwellings lettered, but the numbers do not correspond to present day designations. By 1871 notations on the site plans indicate that the current system had begun.) All buildings then in existence were labeled rather consistantly according to their location on the site plan, from west to east. All living quarters were lettered, and all other structures were numbered. As buildings were torn down, their numbers were not reused. By 1882 the yard had reached number 92. In 1973 the yard had 278 as its final number.

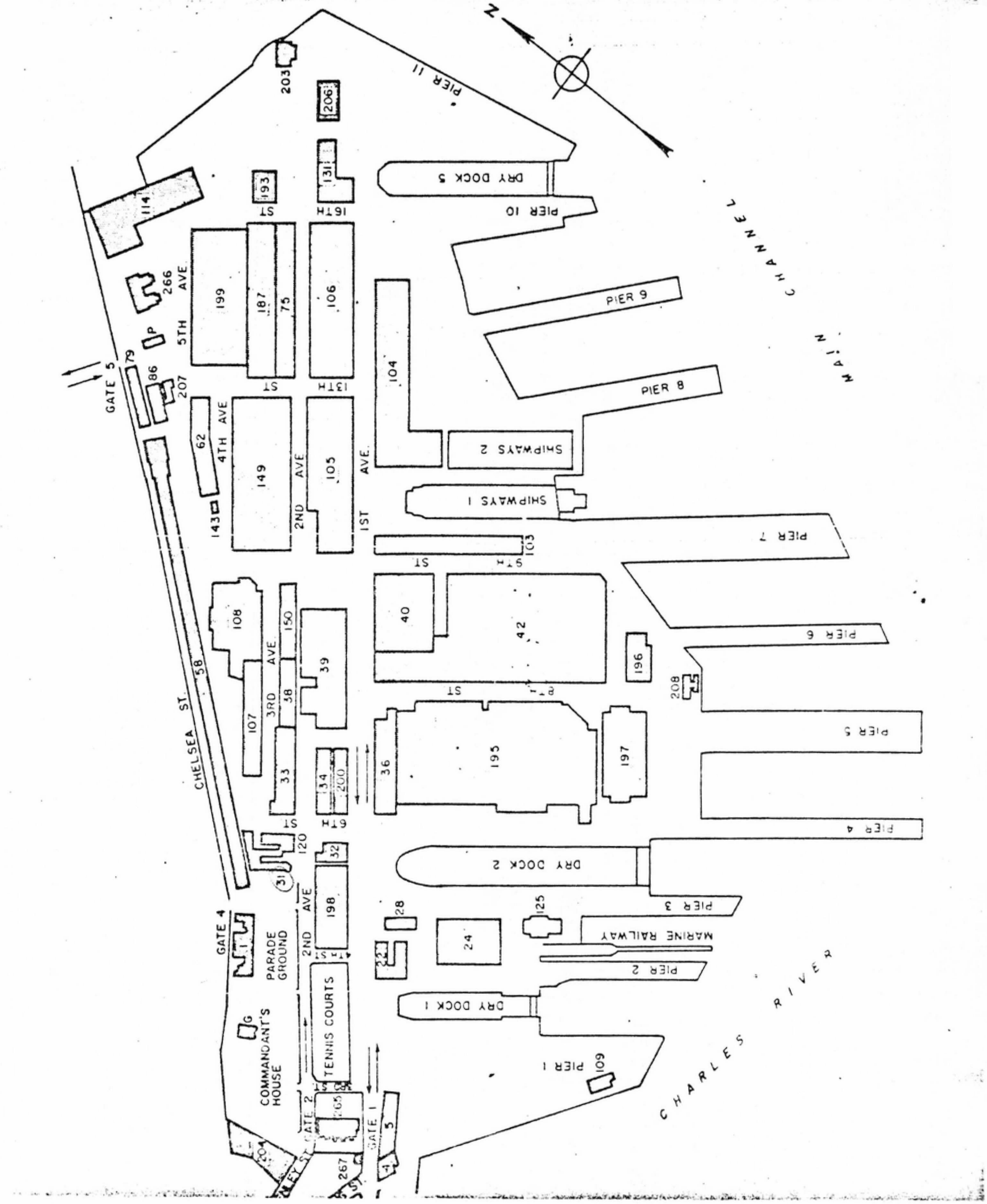
The first visible system of codifying drawings occurred ca. 1870 as well. The system was one of number-letter-number. The exact meaning of the system is unclear, but there seems to have been an attempt made to arrange existing drawings chronologically. When the new labeling system appeared in the late 1890's, all the old numbered drawings were renumbered with a system of "building number-sheet number". Many of the early drawings were misnumbered with respect to their true chronology. Many old maps and plans were used during several different eras, and one must be careful to sort out original information from material added later. Site plans and maps are the most widespread between files, their locations are specifically indicated when not apparent from the code numbers.

At least seven drawings are signed or initialed "Alexander Parris", many others are exquisitely rendered ink washes on parchment. EFFORTS SHOULD BE MADE TO ARRANGE FOR THE SPECIFIC TRANSFER OF DRAWINGS FOR PARKS BUILDINGS TO THE NATIONAL PARKS SERVICE.

Newspapers: there are several incomplete sets of the Boston Naval Shipyard News, and one complete bound set. The bound set may be sought by the Naval History Department in Washington. Efforts are being made to place the set on microfilm prior to any final disposition. One partial set includes all issues from 1946 (vol. 11) to date, (this is coded N-2, and is being stored in preparation for NPS takeover.) The historic information obtainable from the newspaper varies tremendously in terms of accuracy and reliability.

Bibliography: The bibliography is not meant to be exhaustive, but rather to organize into one package all references obtained from exposure to the shipyard with sources which previously have been cited in reports and surveys.

general yard history



BUILDING DATA, CHARLESTOWN NAVAL SHIPYARD

Bldg. No.	Dimensions L	W	No. Flrs.	Total Sq. Ft.	Material	Yr. Constr.	Remark
G	50	40	3	6,000	Brick	1805?	Housing
I	Irregular		4	36,800	Brick	pre 1823	Housing
P	65	30	3	5,850	Brick		Housing
263	50	30	3	4,500	Brick	1833	Housing
266	110	50	3	16,500	Brick	1826	Housing
4 5	210 + 60	50 50	3	31,500	Brick	1817 and later	Officers Club
10	70	40	2 plus dormers	5,600	Brick	1852	
22			3	27,600	Granite	1832	
24	200 + 200	68 275	3 00	40,800 45,000	Frame Granite	1847	
28	100	38	2	7,600	Brick	1850	Offices
31	30	30	3 plus cupola	2,700	Brick	1852 and 1867	Offices
32	75	52	1	3,900	Brick	1857	Bank
33	200	60	3	36,000	Granite	1850	Housing Services (excl. ad
34	200	50	3	30,000	Granite	1837	Offices & labs
36	280	70	3	58,800	Granite	1850's	Various services

Bldg. No.	Dimensions L	W	No.Flrs.	Total Sq.Ft.	Material	Yr.Constr.	Remarks
38	200	50	3	30,000	Granite	1854	Various services
39	350	95	3	99,750	Brick	1866	Admin. offices
40*	230	180	1?	41,400	Brick	1863	Shop
42	480 220	320 + 90	1?	173,400	Brick	1856	Shop
58	440 x 45 780 x 45 110 x 70		1(19,800) 2(70,200) 3(23,100)	113,100	Granite	1836	Ropewalk (excl. timber add. a southerly end)
60	200	20	2	8,000	Granite	1838	
62	290	65	2	37,700	Granite	1837	Lab
75	450	65	1?	29,250	Timber and Granite	1831	Storehous
77	150	25	1	3,750			Garage, storage, a to bldg.
79	190	40	2	15,200	Brick & Granite	1852	Storage
96	120	45	1	5,400	Brick	1899	Storage
103	450	55	1?	24,750	Brick	1903	Shop
104*	420 x 100 200 x 110		1	64,000	Brick	1903	Shop
105*	325 x 130 115 x 100		1	53,700	Brick	1903	Shop
106*	450	135	1?	60,700	Brick	1903	Shop
107	340	60	3?	61,200	Brick	1904	Shop
108	250 roughly	140	1	35,000	Brick	1904	Power plant

Bldg. No.	Dimensions L	W	No. Flrs.	Total Sq. Ft.	Material	Yr. Constr.	Remarks
109	70	40	1	2,800?			Sub. sta. office
114*	335	95	1?	38,000	Brick	1904	Shop
120	Irregular		2	18,150	Brick		Offices, etc.
123	Diameter 60'		1	2,826	Brick		Pumphouse
125	130	60	1.5	11,700	Brick	1906	Shop
131	110 x 70 110 x 55		1	13,750			Storehouse
136	120	32	3	11,520	Brick	1909	Offices, club
149*	260 x 185 185 x 185		8(544,800) 10(342,250)	887,000	Brick & Concrete		Offices & storage
150	230 x 50		3	34,500		1920	Sub. sta.
187	450	80	1	36,000			Storehouse
191	70	20	1	1,400			Pumphouse
192	60	45	1	2,700			Sub. sta.
192A	50 x 20 20 x 20		1	1,400			Sub. sta.
193	95	80	1	7,600			Storage?
194	40	25	1	1,000			Filling station
195*	600	300	1	180,000	Brick & concrete		Shops & labs
196	145	70	3?	30,450	Brick		Shop

Bldg. No.	Dimensions L	W	No. Flrs.	Total Sq. ft.	Material	Yr. Constr.	Remarks
197*	250	140	7	245,000	Brick		Shops
198	250	90	3	67,500	Frame		Offices, storage
199*	390	170	8	530,400	Brick & concrete		Storage & sub. sta.
200	200	40	3	24,000	Brick		Offices
203	80	60	1	4,800			
204	190 roughly	220	1	41,800			Garage & ffices
206	120	70	1	8,400			Services
210	55	30	1	1,650			Storage
211B	55	40	1	2,200			Ind. service bldg
215C	200	25	1	5,000			Ind. service bldg
217	Irregular		1	2,400			Storage
218	205	30	1	6,150			Storage
224	55	20	1	1,100			Sub. sta.
226	105	20	1	2,100			Ind. serv
233	130	20	1	2,600			Ind. service bld

3,301,520 sq. ft.	(in buildings with over 10,000 sq. ft.)
163,026 sq. ft.	(in buildings with 1,000 - 10,000 sq. ft.)
6,000 sq. ft.	(in buildings with less than 1,000 sq. ft.)
3,470,546 sq. ft.	

Maps and Site Plans of the Yard

The earliest existing site plans of the Yard were probably made between 1801 and 1803, by Osgood Carlton. (Preble assumes that 3C3 is one of the earliest.) They show the original purchase together with ideas for improvement. To date, only one site plan has been uncovered for the crucial period 1805 - 1823; such maps would help clearify questions concerning location, size, construction dates, and changes made in the Commandant's House, the Marine Barracks, and the Storehouse (Building 5). Apparently the Bostonian Society has possession of one site plan dated 1818, this investigator has not seen the map, but has heard that building 5 does not appear.

In 1823 a plan was made by Mr. Charles F. Waldo, a copy is included with the early shipyard site plans. Preble also includes a more readable copy in his history. The three structures mentioned above are clearly shown.

In 1828 a proposed site plan was made to be sent to Washington, prepared by Loammi Baldwin. (It is interesting to note that the proposal includes the tearing down of the Commandant's House, the Marine Barracks, and Building 5, Clearly none of this was carried out. Quarters LMNO are shown to exist, and Quarters BCDEF are proposed.) The general grid format to the yard was initiated at this time, and by 1840 had become a reality. For this period of 1828 to 1840, the yard still possesses several site plans, or partial site plans, that help explain the specific building development sequence. (For examples, see 916-08, 58-01, 60-03, 390-01, and 461-01.)

In 1840 Alexander Parris updated Baldwin's proposal to indicate what structures had actually been completed at that time. An original copy of this important plan is located in Parris' Portfolio, The Buildings and Machinery Errected..., held with the National Archives.

In 1848, Felton and Parker undertook a Survey of Charlestown; unfortunately it seems that they relied upon earlier plans to represent the Navy Yard. This portion is clearly inaccurate for the year 1848. Other early Charlestown Maps may prove useful, but a similar caution must apply to them.

Again, during the critical building period of 1840-1856 there are no site plans available to date at the B.N.S., although some were prepared and may be located in Washington.

Beginning in 1857, the yard has a fairly complete, year-by-year site development record, bound in several volumes, code number 399.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

MAPS, important photographs.

nn.	Bonner Map of Boston, 1722, on a glass negative, copied from Antique Views of Boston.
nn.	Battle of Bunker Hill, showing movement of troops, labeled No. 1; glass negative and small negative.
nn.	"A Plan of the action at Bunker Hill" by Leut. Page; labeled No. 2; glass negative and small negative.
5228-59	Plan of the Original purchase of the land in Charlestown, taken from Preble's History of the B. N. S., perhaps as found in Winsor's Hist. of Boston, 1880.
nn.	Yard map dated 1823, from Preble's History..., various negatives.
1318 etc.	Felton and Parker, "Plan of the City of Charlestown," dated 1848, print and small negatives.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR, BLDG. 200

MAPS, SITE PLANS, GENERAL SURVEYS, important documents.

(The maps in the yard are filed under several different code numbers, including 390, 455, 398,and 916. The last set, from 916-01 to 916-72 were sent to the Downtown Fargo building in 1958--except for one which I found due to mis-filing. This was the North East Division of Naval engineering, and was phased out in the early 1970's. Apparently all drawings, etc. were sent on to the Design Division, Philadelphia Naval Shipyard, and at best not thrown away! A letter is being sent to them, as well as to the Office of naval History and to the National Archives.)

398-01
1C1 "A Plan of the Navy Yard in Charlestown, Mass., Drawn from a scale of 7½rods per inch (123.75 feet per inch), Charlestown, March 6th, 1801. (Written in pencil: Copy of..., Peter Tuft's plan of this date, made in the 1820's or later. This is dated 1801, the northern boundary was not straightened until 1825." Ink on parchment, and a large negative.

398-02
2C2 No Title, no date. In pencil: 1801, probably by Osgood Carleton; shows three shipways and four drydocks; a section of Salem turnpike shows one 3-story house and one 2-story house (stately). Neg only

398-03
3C3 "A Plan of the Navy Yard in Charlestown, State of Massachusetts, from actual survey by Osgood Carleton." Shows Earon Putnam's estate across the Salem turnpike, no date, but Preble (History of...) says 1803. Original wash with ink on paper, plus large negative.

916-08
765A171 (Drawing filed with the Commandant's House, "G") "Part of the U. S. Navy Yard, Charlestown, Mass, 1825. This map includes a plan, and section of the Salem turnpike, showing the granite wall and cast iron fence in front of the Commandant's House. Signed G.F.W., April 18, 1825 (corner torn and much writing lost), Surveyors were Fuller and Taylor. Ink wash on parchment linen.

58-01
7C5 (Filed with the Ropewalk building, No. 58, this is a partial site plan dating from 1834.) "A Plan to Show the Proposed Alterations to the Ropewalk at the Navy Yard, Charlestown, and its effect upon the

proposed improvements." There is a copy of Andrew Jackson's note of approval dated March 28, 1834, Washington City. Also noted on the plan: "The above proposed changes in the plan of the Ropewalk were approved by the President of the United States on the 28th of March, 1834, Navy Commissioner's Office, 11 April 1834, Jn. Rodgers." Ink on parchment linen.

60-03
6C4 "A Plan to Shew Proposed alterations to be made in location of Tarring House and Hemp House at the Navy Yard, Charlestown, necessary in consequence of changes made in Plan of the Ropewalk. October 31, 1834." ("Copy, June 25, 1836") Hemp and head house of Ropewalk proposed as parallel. "Copy sent the Navy Board, Nov., 1834." Sometime later the hemp house position was changed again. Ink on parchment linen.

390-01
555 A145 "Plan of the Harbor of Boston, March, 1835" (Signed by Commissioners, including L. Baldwin, S. Thayer, and J. Hayward; surveyed by Perham, a copy made by F. J. Williams, May, 1836.) Shows the Dry Dock, three ship houses, and the square hospital in Chelsea, completed in 1836. Ink on parchment linen, and a large negative photo copy.

455-07
38C10 "Plan of the U S Navy Yard, Boston, July, 1870." With water depths, by John P. Bear (?) Rendered wash on parchment, some errasures.

455-01
589 A140 "A Chart of the Anchorage with the wharves and docks of the U. S. Navy Yard, Charlestown, Mass., from Surveys of August, 1850: Leut. John J. Almy, U. S. Navy." Shows store no. 5, but not Pitch House, no. 10. Coal House no. 28 is in place.

nn. "Plan of the City of Charlestown", a copy of Felton and Parker's 1848 plan. (Navy Yard is <u>not</u> totally accurate) The site plan lacks Hemp House, and a mis-location of Bldg, no. 34. On parchment, backed with canvas. Refer also to photo section for negatives.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

MAPS, SITE PLANS, ETC. important documents, con't.

461-01
8C6 An early site plan (ca 1828) with the rectilinear grid applied. The Tarring and Hemp house are not indicated, the plan was reused in 1838 to note drains, etc. A drain under the ropewalk that went as far as Storehouse No. 34, took care of surface water between these two buildings. "The drain is to be kept in good condition for taking off the water from the grounds westerly of the Turnpike as per agreement between E. Breed and the United States. September 1, 1838" (Filed under drains, in engineering section, third floor #200).

459-27
417A92 "Plan showing location of water, gas, steam pipes and drains in the grounds at House "g", July, 1874" signed J.P.B. The plan shows the cellar of "G" and an excellent site plan of that date, with the formal gardens, cast iron fence along the Salem Turnpike, trees and plants are labeled as to placement and type. In sewers files., engineering section.

459-28
32A16 Nice rendered site plan of August, 1867: "Plan of the U.S. Navy Yard, Boston, Mass, showing Drains, Sewers, gas and water pipes, August, 1867." Note written on top of building 36: "Joiners Shop and Painters Loft, finished 1866, and occupied 1867..."

459-26
472B161 "Plans showing Location of Gas, Water, Steam pipes drains, etc., around buildings 52, 58, 79, Navy Yard, Boston, Mass. July 1874."

459-25
509B162 "Plan showing location...in vicinity of Main Entrance and upper Quarters..." September 4, 1874. Houses C and D have additions indicated.

916-02
24B6 (This is one of a few code 916 drawings that remain at the yard. Currently it is filed under Pier 1, code 421, and thus remained here.) "Survey of a portion of the City of Charlestown, Mass., lying southwest of the yard, and contiguous thereto." July, 1864. Shows and labels all dwellings on either side of Water street and back one block, from the Navy Yard to Main Street, excellent historically.

MAPS, ETC. continued.

CODE 399 (Boston Navy Yard Maps), Third Floor, engineering department, building 200.

399-01 onward — A set of prints (mostly bluelines), of the various plans of the yard, the earliest dated 1823, the next (399-02) dated August 1857, and from there, most years are covered except some in the 1880's; in three bound volumes, up to the present time. The plans were undoubtedly made to be submitted to the Navy Board in Washington, as each contains indications of proposed imporvements, with the corresponding estimates.

In 1857 (399-02) Building 24 was a Joiner's Shop, No. 22 was a sawmill and engine and boiler for the Dry Dock. The parade ground consisted of a "gun park" and a "shot park", with Building 32 at the end. The "Pitch house" is indicated. The Commandant's headquarters in the Marine's Yard. The second story of the Ropewalk proposed at $42,000. "Coal House" for the ropewalk is located in building 79. Boiler house next to it is proposed. Three ship houses are evident, mold loft and officers houses are visible in the upper right.

In 1858 (399-03) $68,000. is requested for a Dry Dock extension, ropewalk extension again proposed, Coal house (bldg. 79) is now longer than in 1857. New Commandant's office proposed at $23,000., and cars and tracks for cars also proposed.

In 1859 (399-04) The new yarn mill for Ropewalk was proposed on the site of the Tarring House. An anchor park is visible between Navy Stores (#5) and the Dry Dock.

In 1861 a proposal is made to purchase the Oakman and Eldridge Wharf (future buildings 3 and4) for $200,000.

In 1862, a New Joiner's Shop proposed on site opposite no. 24, across from the Dry Dock, at $94,000. As well, a boiler House and chimney for Ropewalk and Yarn mill (still only itself a proposal) are proposed.

In 1863, (399-08) railroad tracks are proposed, at $50,000, and additional money is required for the new Joiners Shop, $20,000.

In 1864, ropewalk addition is again requested, at $86,500; a sawmill for $169,000, an office building in the gun park for $167,000. First appearance of Building no. 4 on plan of the yard, called a store.

In 1865, the new Joiner's Shop is finally seen in its present location; requests to complete the entire second story of ropewalk for an additional $108,095.

In 1866 (399-11), Wings for building 34 are proposed at $121,000.; paving around the ropewalk complex at $43,900., and a shed is indicated on No. 32.

In 1867 (399-12), An addition (third story?) is requested for the Muster House (#31) at $5,500., One wing is requested for #34, and Officers' houses (BCDEF) show additions. The "Coal House" (#28) has become the "Tinners and Plumbers Shop".

In 1869, the Commandant's office is in the shot park, and a small shed is attached to building no. 32.

Building no. 6, there in 1823, has become a fire engine house (from a "watch house" and most recently a dispensary in 1868)

Alterations to no. 79 in 1871, addition of a "boiler house" at $5,700.

More accurate changes shown on Quarters bcdef, 1873.

In 1882, actual numbers first appear in conjunction with the buildings. This is the same year of the "Descriptive List..." of buildings described elsewhere

Between 1892 and 1893 Commandant tears down building in the shot park and moves into Building 32.

The first bound set of Plans of the Yards, ends with the year 1897.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES

GENERAL INFORMATION, NEWS ITEMS, PUBLISHED DOCUMENTS, important photos.

nn.	The Commandants of the Boston Naval Shipyard, regular and/or glass negatives, and many positives, of all the commandants who served for the BNS, kept in a seperate file.
nn.	A 1936 list of all the commandants who served at the base, years of service, etc., one page, negative.
nn.	Articles which appeared in early issues of Gleason's Pictorial..., from about 1850 to 1856. See bibliography for the articles that did appear, with dates and pages. Navy files contain negatives to some of the material.
nn.	Early documents photographed: negative of "Station Bill: a relic of the day," negative of "General order from the Commandant, 1863, to work till the bell rings".
nn.	Two glass negatives of women in uniform, ca. World War II; and one glass negative of the style of dress for women in the Navy; possible good display material.
nn.	A 1936 list of all the structures that were in the Navy Yard, year of construction, current use, etc., three pages, negatives.
ASF 119 etc.	Five historic plaques in the shipyard, two for commandant's, two for different aspects of the Battle of Bunker hill, and one for Old Ironsides. Two additional negatives of the Bunker Hill plaques.
156-66	Navy seals, negatives and prints.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

GENERAL SCENES (INCLUDING THE PARADE GROUNDS), important photos.

391-59	Navy Yard in 1858, showing shiphouses, negative, from page 38 of Historic Fields and Mansions..., a woodcut.
nn.	Navy Yard in 1873, from East Boston, a woodcut, negative, from a book.
F401-N1 etc. a series.	The construction of Dry dock 2, from first site photos in early 1899 to completed dock scenes in 1904 and 1905. The series shows many adjacent buildings during this period, especially Numbers 10, 22, 24, 28, 31, 32, and 36. Also, many shots of the overall parade ground, visible in the background, were taken. The set may make an excellent display series as to what a dry dock is and how one was built (at the ime, the largest in the U. S.).Contains about eighty photographs, located in a seperate file.
F488-N6	Parade ground with cannons, October 25, 1902.
F71-N1 etc.	Shiphouse photos, in a seperate file, 5 photos, some duplicates, dated about September, 1902.
F457-N4	First avenue looking northeast and southwest, from Fourth Street and Building 36, respectively, 1902. (Laying conduit job.)
nn.	Early view of the parade ground from the Commandant's House, showing some buildings, including 28 and 32.
392-52 etc.	Main parade ground, showing cannons; Anchor display ground near ropewalk, and assembly in main parade ground, all ca. 1905.
5549-63 etc.	Copies of six postal cards of the Navy Yard, ca. 1905.
1768-60 etc.	Waterfront air views of the Boston Naval Shipyard, 1960.
1911-66	Aerial vies negatives of the yard, in 1966, 8"x10"; also some smaller negatives labeled "good aerials."

F488-N5	Conduit project photo, showing a general view of the yard in October, 1902, with views of Buildings 31, 33, and 28 before enlargement.
F457-N16	View east on First Avenue, showing Building 32 in background, July 1, 1903.
F457-N22	Paving Second Ave., showing the Marine Barracks and Parade ground in the background, looking east., ca. 1903.
F457-N26	Paving Second Ave., taken probably the same time as N22, looking west, giving a general view, ca. 1903.
nn.	BNS 1823: a hand drawn picture of how the yard must have looked in 1823, the original (signed V.K.Spicer, dated 1904) is in file drawer of LEWIS, 3rd floor, Public Works Dept., Building 200.
nn.	BNS 1864: another hand drawn picture by V.K.Spicer, no date as to when the drawing was made, in same location as the 1823 original.
nn.	Parade ground, showing flagpole, and in the background the Commandant's House and the Marine Barracks, photo, ca. 1960.
nn.	Parade ground and octagonal band stand, ca. 1930.
nn.	Octagonal band stand, close up shot, ca. 1930.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

MAIN GATE #1 AREA, inc. BUILDING 97, important photos.

	Early etching of main gate area, ca. 1850's, from Gleason's Pictorial..., several negatives of different sizes.
	Early photograph of main entry from the east, as in Preble's History of the Boston Navy Yard, 1874.
F97-N1 F97-N2	Main Gate from the west and from the east, Aug. 10, 1899.
F97-N31 etc.	Construction photos of the Main Gate House and Archway, from 1901 to 1903, many fair views of buildings Nos. 4 and 5. Finished Gate House photo dated May 3, 1903.
5778	Main Gate from the southwest, Feb. 18, 1921.
5779	Ditto, from the northeast, February, 1921.
781-47	Main Gate negatives from 1947, both sides, two negs.
ASF3221-58	Main gate on July 7, 1958, prior to demolition.
ASF82-59	New Entry, Building 97 totally removed, 1959.
nn.	Constitution Parking Lot entry gates of Concrete, two photos, showing both the "in" and the "out" gates., ca. 1960.

NATIONAL ARCHIVES MICROFILM: FM 118, Roll 1.

Preble, George Henry. The History of the Boston Naval Shipyard, 1797 - 1874.

PHOTOGRAPHS

	Subject	Location
1.	Commandant's House, 1874.	Following Page 74.
2.	Mr. Waldo's 1823 Plan of the Yard.	" " 139 (2 frames).
3.	1828 Proposed Plan of the Yard.	" " 173 (2 frames).
4.	Officers' Quarters.	" " 209.
5.	Main Entry Gate, 1874.	" " 233.
6.	Ropewalk Headhouse, 1874.	" " 259.
7.	Ropewalk Exterior (Flirtation Walk), 1874.	" " 263.
8.	Storehouse No. 34, Shellhouse No. 32, 1874.	" " 265.
9.	Lower Quarters, 1874.	" " 282.
10.	Rigging Loft, 1874.	" " 295.
11.	Blacksmith Shop No. 42, 1874.	" " 338 and 343.
12.	Commandant's Office, 1874.	" " 353.
13.	Ordinance Store and Shop, 1874.	" " 366.
14.	Joiner's Shop No. 36, 1874.	" " 377.
15.	1875 Plan showing Purchases in the 1860's.	" " 382 (2 frames).
16.	Stables, 1874.	" " 382.
17.	Engine House of Dry Dock, 1874.	" " 401.
18.	Civil Engineers and Muster's Offices, No. 31.	" " 405.
19.	Timber Bending Mill, 1874.	" " 406.
20.	Sawmill, 1874.	" " 406.
21.	Parade Ground, 1874.	" " 414 (3 frames).
22.	Dry Dock Repair, June, 1874.	" " 419.
23.	Views of Main Avenue, 1874.	" " 423.(2 frames).

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION

National Archives and Records Service
Washington, DC 20408

DATE: May 8, 1974

REPLY TO ATTN OF: NNMD-2346HS

SUBJECT: History of the Boston Naval Shipyard

Mr. David Wright
25 Arlington Street
Cambridge, MA 02140

We have in our custody the unpublished manuscript of Commodore Henry Preble's three-volume history completed in 1875 of the History of the Boston Navy Yard, 1797-1874 which has been microfilmed by the National Archives on one roll as Microcopy M118. From this roll we can furnish you with positive black and white photographic prints, 8" x 10", of all the 23 items on your list (30 frames), for $61.20, or $2.55 for each print per frame. Copy negatives 4" x 5" can be done from the original manuscript for $2.10 for each item on your list. An 8" x 10" copy negative costs $3.25 each. Where two or three frames are indicated for certain items on your list, each of these items can be processed on one copy negative. The total cost of 4" x 5" copy negative of all 23 items (24 frames) on your list is $50.40, and for the 8" x 10" size, the cost is $78. If you order the copy negatives, the photographic prints can be made from them and the cost would be less. The fees we have cited are applicable to public orders. The fees charged to Federal agencies are discounted and if the National Parks Service in Boston is interested in obtaining the prints and copy negatives for their use, an official request should be made by them and the applicable rates will be furnished.

Remittance by check or money order, payable to the National Archives Trust Fund (NNMD), should be mailed to the Cashier, National Archives (GSA), Washington, DC 20408. Please return the enclosed copy of this letter when placing your order.

Harry Schwartz

HARRY SCHWARTZ
Old Military Branch
Military Archives Division

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Gleason's Pictorial Drawing Room Companion

Original etchings of the Charlestown Naval Shipyard:

Vol. 1 (1851)

Charlestown Dry Dock (p. 104; June 14, 1851; vol. 1, issue no. 7).

View of the Charlestown Naval Shipyard (p. 272; August 23, 1851; vol. 1, issue no. 17).

Launch of the Princeton (p. 465; Nov. 22, 1851; vol. 1, issue no. 30).

Charlestown Parade Ground, general view of the Shipyard (p. 489; Nov. 29, 1851; vol. 1, no. 31).

Vol. 3 (1852)

A Series of Illustrated Views of the Charlestown Navy Yard: three significant etchings:
"Parade Ground and Barracks", p. 184.
"View of the Ropewalk...", p. 185, top.
"Commandant's House and Gardin", p. 185 bottom.
(September 18, 1852; vol. 3, issue no. 12.)

Vol. 7 (1854)

Comprehensive View of the Charlestown Naval Shipyard (p. 132; September 2, 1854; vol. 7, no. 9).

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

Buildings Since Removed, Old Views, important photographs.

The following photographs are unnumbered, taken in 1901. They are sepia toned, with an amazingly high degree of resolution. Where identifiable, the old building number has been noted.

"Brass and Iron Foundry, C and R, June 28, 1901." Wood shed building of one story with an attic, exterior shot and two interiors.

Bending Mill (Machine Shop No. 42?) June 28, 1901, interior.

Model Room, Machine Shop. June 28, 1901; interior.

Buffing Room, Machine Shop. June 28, 1901; interior.

Sawmill, C and R, June 28, 1901. Wood shed building, exterior and interior view.

C and R Power House, November 5, 1901. One story, exterior view, with vertical slat (temporary) siding.

"Power Plant, C and R, Temporary Building, North Elevation" June 28, 1901.

Spar Shed (Building No. 85) June 29, 1901. Interior view, trussed roof, metal siding (?).

Enamelling Building, C and R, June 29, 1901. Exterior view, wood shed, temporary.

"Dock Shop" June 28, 1901. Interior view with bicycles, brick walls, transom over door. Perhaps Building 24.

Mold Loft (Building No. 77) Long, shed type building, interior view, brick walls, 12 over 12 windows,

April 19, 1974

GENERAL DISCUSSION WITH BOB SMITH, OF BUILDING 24

Bob Smith has been at the yard for some 35 years, and has conducted much research into cannons and objects of interest that are (or were) in the Navy Yard.

Information on cannons buried in the yard: markings on any cannon will indicate: (1) the date cast, (2) what "pounder" , (3) the initials of the foundry that cast the cannon, eg. WPF implies the West Point Foundry of Coal Springs, N.Y., (4) the weight of the cannon given in quintals (=long tons), quarter-quintals, and lbs., and (5) the inspection mark indicating that the cannon is fit for duty, generally an "A".

There is a cannon (with end sticking out) buried in front of Building No. 24 which is rare and ought to be dug up and displayed. It is probably an 1830, 42 or 64 pounder, muzzle-loading (a style that went out of date about 1875.) The cannon was burried before July of 1913, as photo 2120 in file under Bldg. 24 will show. There are two more, different cannons buried near the head of Dry Dock 1.

A great number of cannons, burried the opposite way from those already mentioned, surround Dry Dock No. 2, and were put in place about 1905. They are visible in Dry Dock 2 photos of that date. They were designed by Charles Augustus Dahlgren, and were in use during the Civil War. They were of a safer design than previous muzzle loaders.

Concerning the cannon on the green: watch out for termites getting to the wooden carrier: the carrier was made in 1969 by the yard after the earlier one was destroyed by the bugs. The cannon was an American copy of an English design, was made in 1830 by the West Point Foundry. (Breech loading cannons replaced muzzle loadings ones after 1875 due to speed, accuracy, and safety.) A gun (cannon) park existed in the parade ground through 1904, when many of the old cannons were burried, or used some other way.

THE WOODEN EAGLE OFF OF THE NIAGARA, was designed by Bellamy in about 1878. It was in the parade ground from about 1900 to 1925. A similar, but smaller, one, designed by Bellamy for the USS Lancaster is currently in the Newport News, Virginia museum. Refer to Brewington's Shipcarvers of North America.

THE MARINERS MUSEUM Newport News, Va. 2360

Area Code 804 - 595-03

April 11, 1974

Mr. Robert W. Smith
330 Marston Street
Tewksbury, Ma. 01876

Dear Mr. Smith:

Thank you for the photo of the NIAGARA figurehead. M. V. Brewington in his book "Shipcarvers of North America," p. 89, confirms your statement that the NIAGARA figurehead was carved by John Bellamy who carved our LANCASTER figurehead. He does not mention what happened to the NIAGARA figurehead.

I have filed your letter about what happened to NIAGARA's figurehead with our material on Bellamy.

We can make a copy of Mr. Brewington's articles on American naval guns for $1.50.

Sincerely yours,

John L Lochhead

John L. Lochhead
Librarian

JLL:bnt

DEPARTMENT OF THE NAVY
NAVAL HISTORY DIVISION
Washington Navy Yard
Washington, D.C. 20374

NHC-CU.
Ser 3310

21 FEB 1973

Dear Mr. Smith:

Thank you very much for your recent letter and enclosures on the old cannon-bollards at the Boston Naval Shipyard. It is always a great pleasure to be informed of the existence of these artifacts as many of them are really very singular relics, since wartime scrap drives and other agencies have greatly reduced the number of old naval guns that are known to exist. This is especially true of pre-Civil War guns. A few years ago, here in the Washington Navy Yard, three 32-pounder guns of circa 1842 were unearthed. They had been set up as bollards sometime in the last century, and then completely buried when the Yard waterfront was extended with landfill some fifty years ago. These guns are now part of our historical collections, with one currently on display in the Navy Memorial Museum in the Yard.

We spent some little time with your drawing and photograph of the older of the guns you mentioned, but can not specifically say what it is. From the size of the cascabel, I would guess that it has a bore of about seven to eight inches, which would correspond to a gun of 42 to 64 pound shot weight. The breeching loop above the cascabel makes it look very much like a Navy gun of the 1827 pattern, but this is open to question. The museum has on display a long 42-pounder, reputedly of late eighteenth century foreign origin, that is of similar dimensions about the breech, although it differs from your gun in several details of design.

It is also possible that this gun is a carronade, which would explain the cascabel loop. However, it must be admitted that a carronade seems rather short to make a good bollard. As we do not have an extensive ordnance plans file, any better identification is beyond our capability to provide. However, we shall keep your letter and its enclosures on hand and in mind. Should anything further turn up, we would gladly pass the details along to you.

NHC-CU
Ser 3310

Many thanks again for calling these guns to our attention.

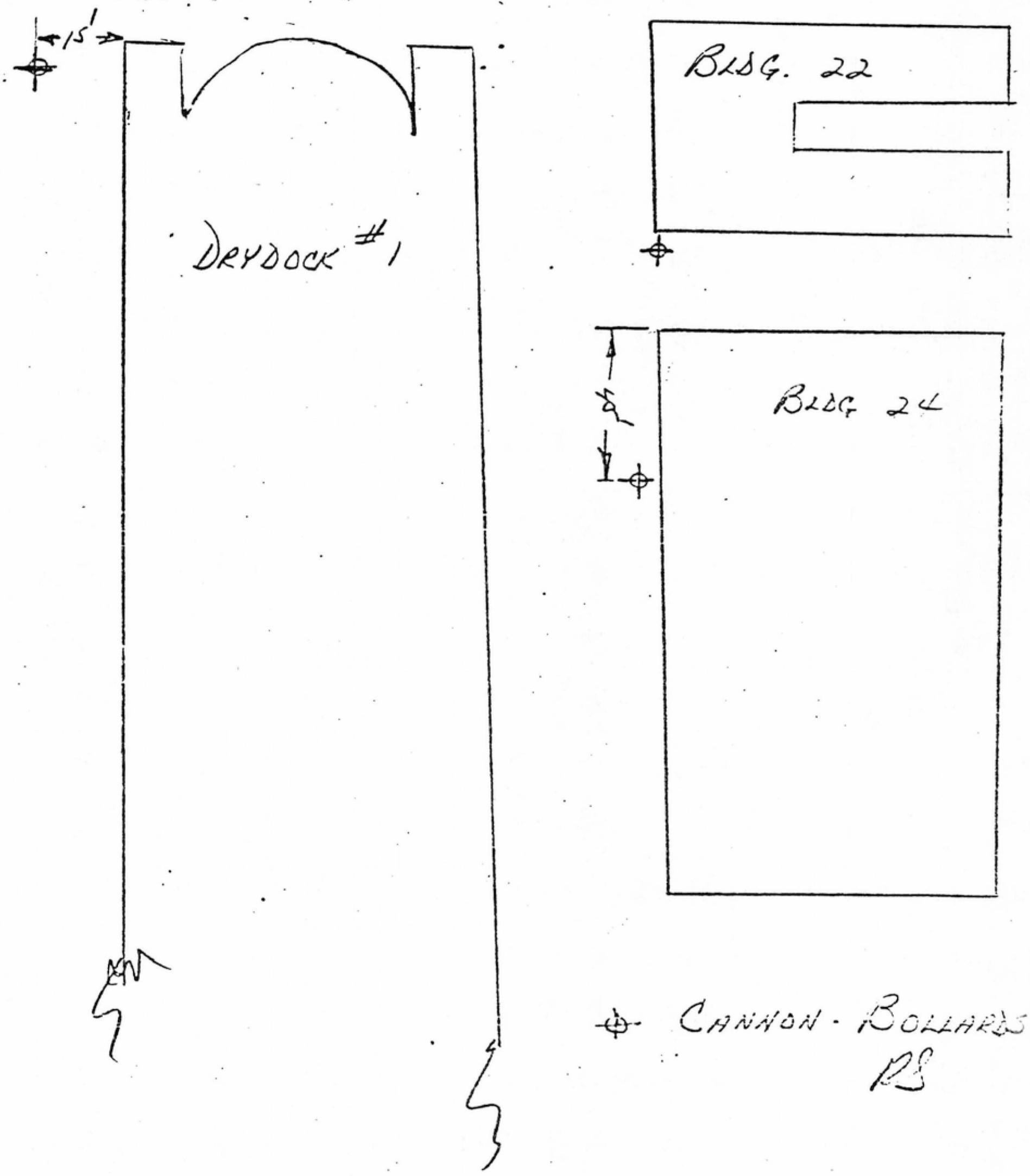
Sincerely yours,

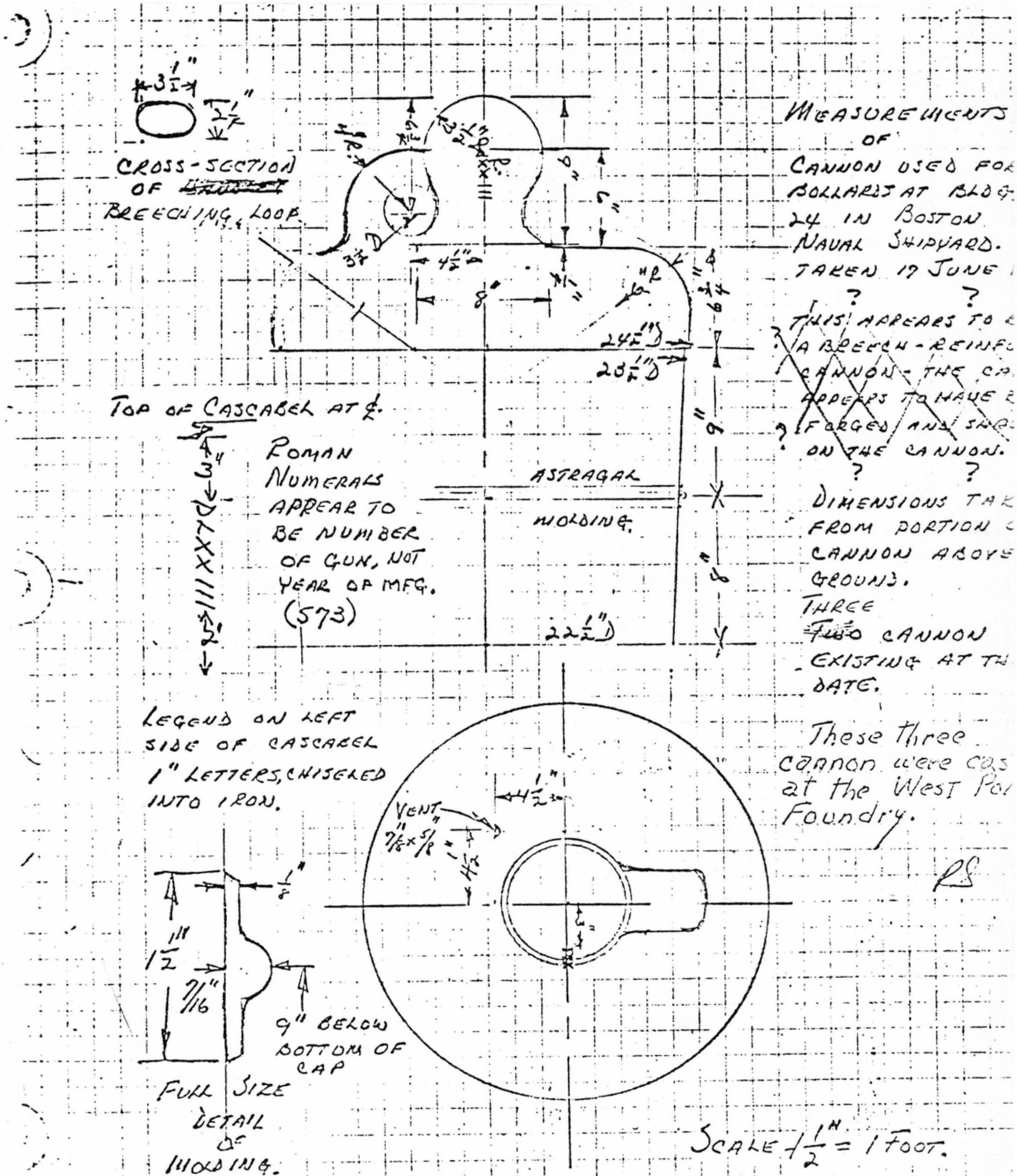
J. H. B. SMITH
Captain, USN
Head, Curator Branch

Mr. Robert W. Smith
330 Marston Street
Tewksbury, MA 01876

23 APRIL 1974

LOCATIONS OF CANNON-BOLLARDS AT DRYDOCK #1 - BOSTON NAVAL SHIPYARD.





MEASUREMENTS OF CANNON USED FOR BOLLARDS AT BLDG 24 IN BOSTON NAVAL SHIPYARD. TAKEN 17 JUNE

? ?

THIS APPEARS TO BE A BREECH-REINFORCED CANNON - THE CANNON APPEARS TO HAVE BEEN FORGED AND SHRUNK ON THE CANNON.

? ?

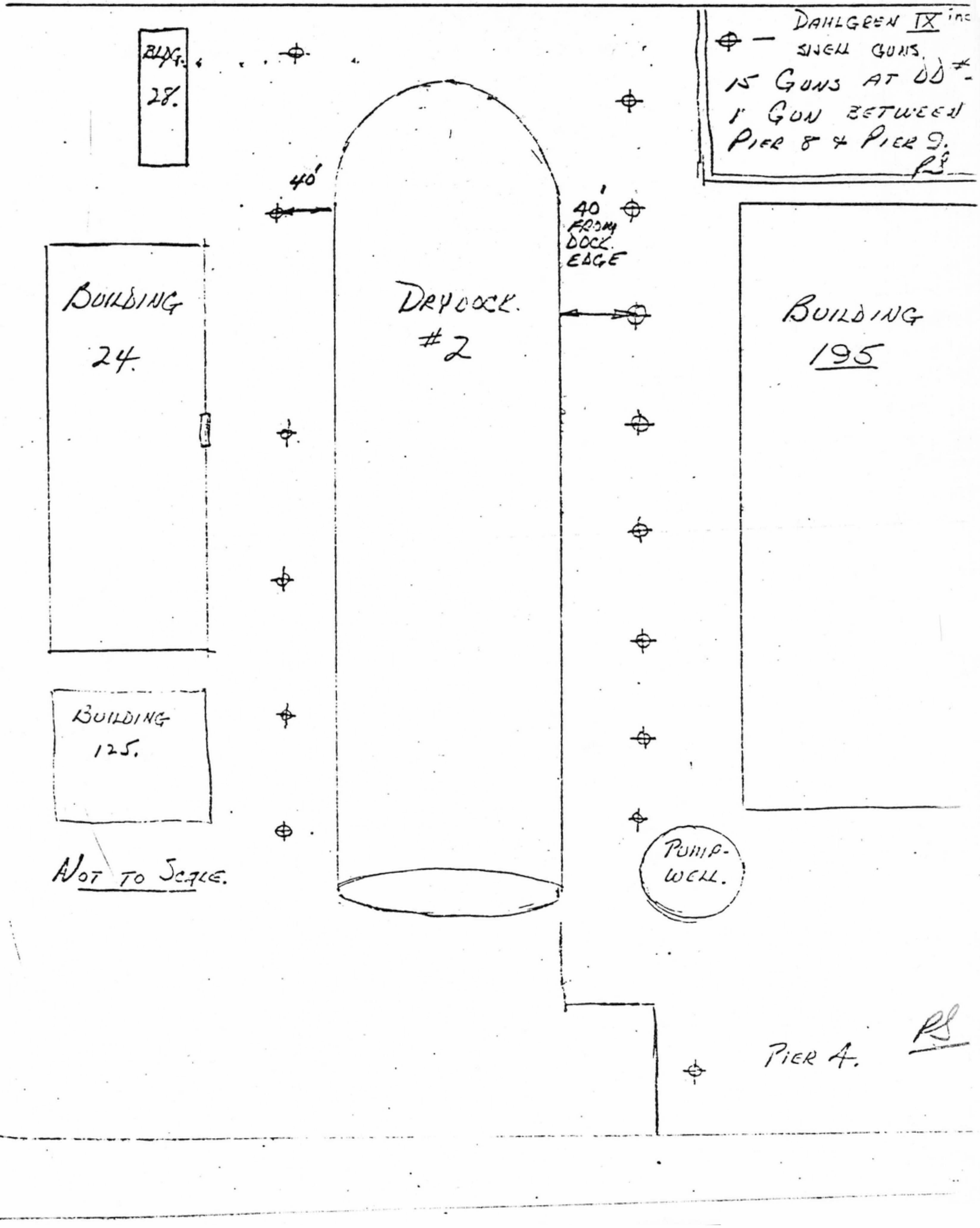
DIMENSIONS TAKEN FROM PORTION OF CANNON ABOVE GROUND.

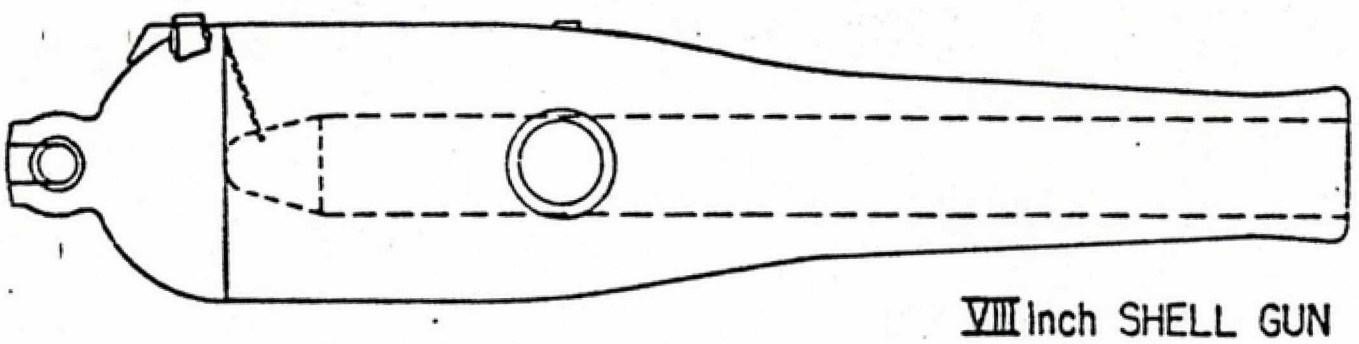
THREE ~~TWO~~ CANNON EXISTING AT THIS DATE.

These three cannon were cast at the West Point Foundry.

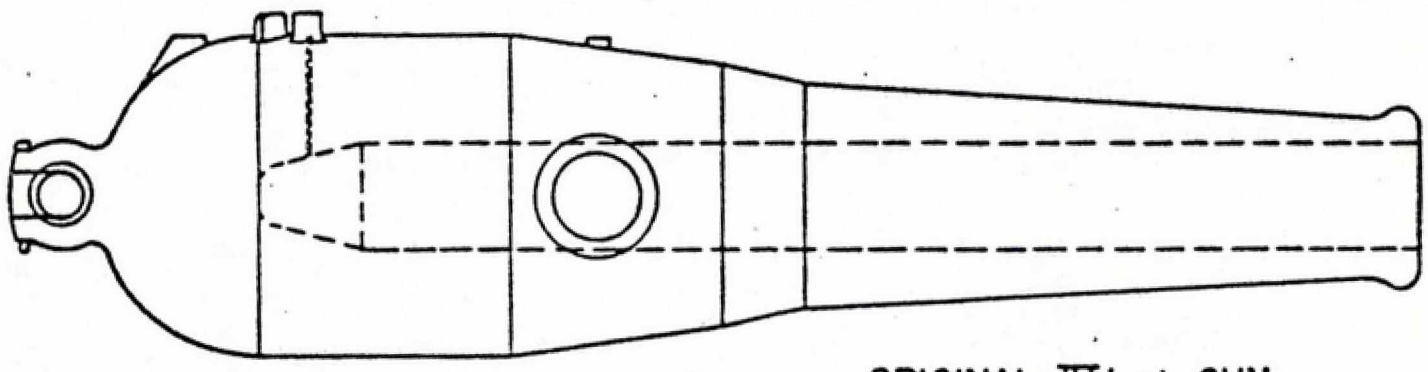
RS

LOCATIONS OF IX inch DAHLGREN SHELL GUNS AT DRYDOCK #2 - BOSTON NAVAL SHIPYARD

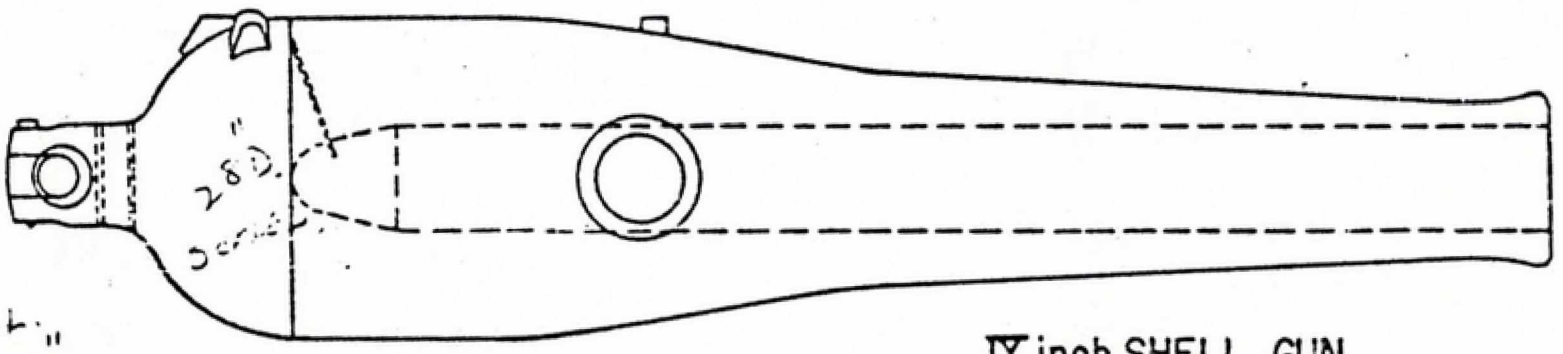




VIII inch SHELL GUN
of 6500 lbs

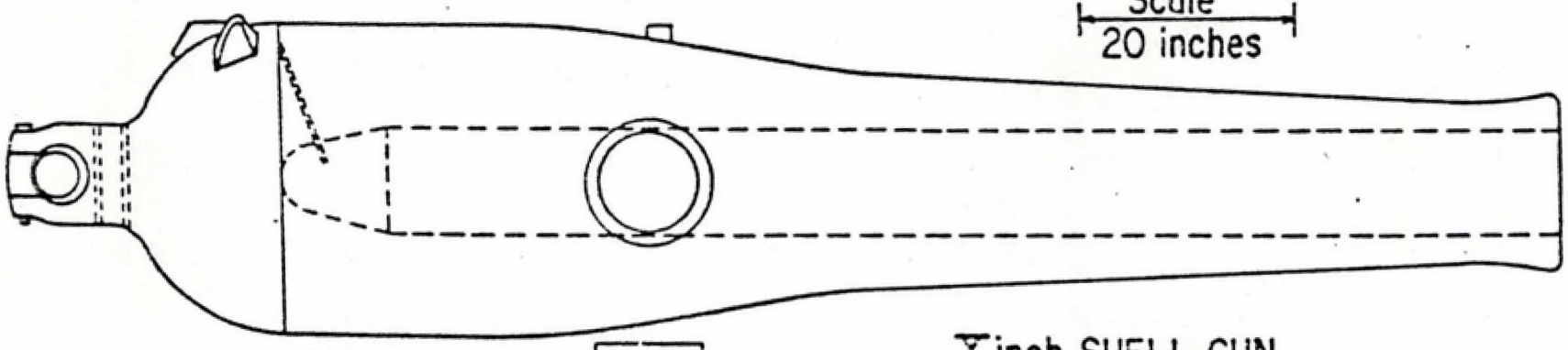


ORIGINAL IX inch GUN
Jan. 8, 1850

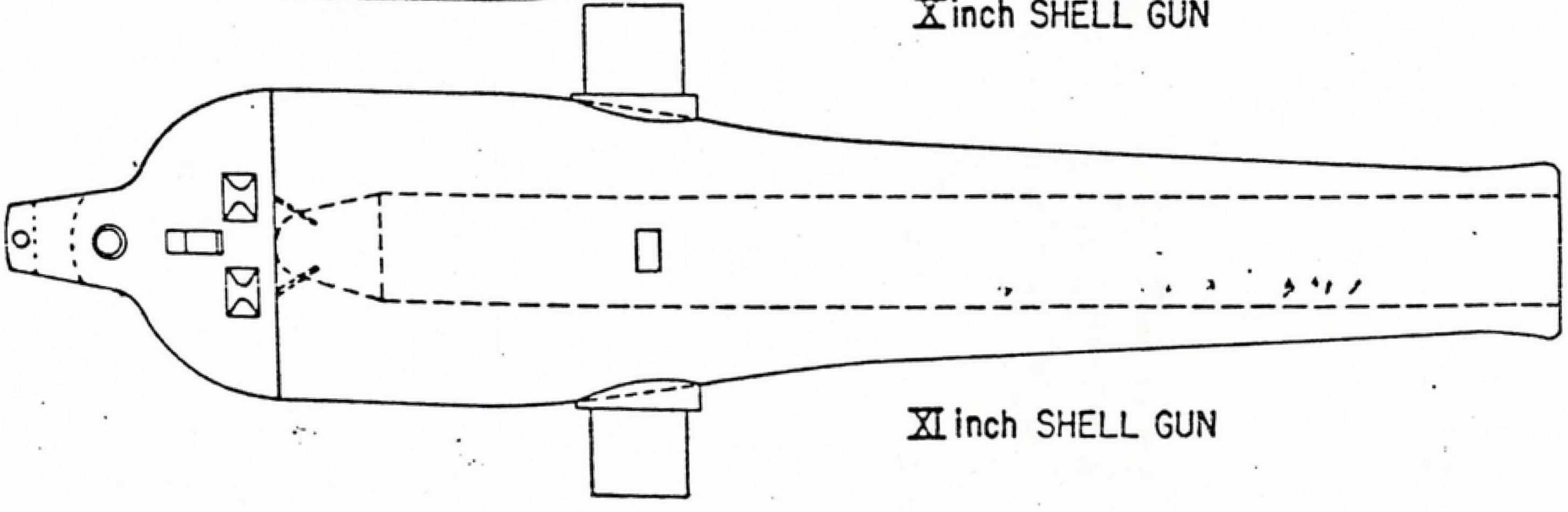


IX inch SHELL GUN

Scale
20 inches

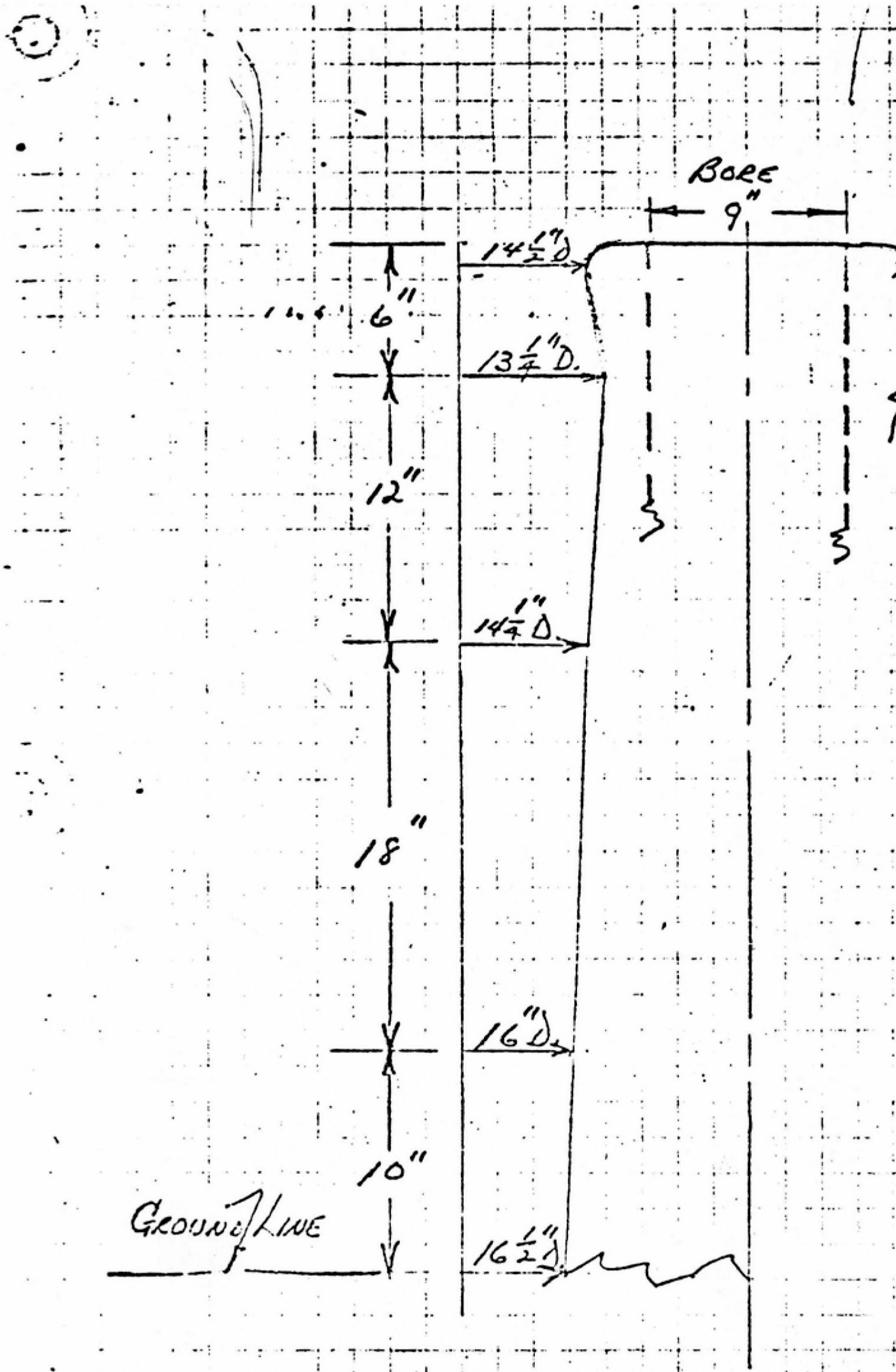


X inch SHELL GUN



XI inch SHELL GUN

Dahlgren shell guns—The lock-lugs for mounting the hammer are shown near the vent. Original drawing by author.



GRACEFULL CU
NOT STRAIGHT.

DETAILS OF THIS CA
WERE TAKEN FROM EX
CANNON USED AS BOLLA
AT #2 DRYDOCK AT BOS
NAVAL SHIPYARD, 13 JUNE
SIXTEEN.
~~NUMBER~~ OF THIS SIZE
BEING USED FOR THIS
PURPOSE AT THIS DATE

RS.

NO MOLDINGS ON
CANNON.

COMPARING THESE DIME
WITH PROFILES OF DAHL
SHELL GUNS IN "CIVIL W
NAVAL ORDNANCE," IND
THAT THIS CANNON I
ONE OF THE IX INCH
SHELL GUNS INVENTED B
J.A. DAHLGREN.
THE IX INCH ARE C
WAR MODELS, NOT ORIG
DESIGN OF 1850.

FOR FULL PROFILE O
THIS CANNON SEE PAG
6 OF "CIVIL WAR NAVAL
ORDNANCE" BY EUGENE D
CANFIELD. GPO WASH.
1969.

commandant's house

QUARTERS C: Commandant's House. Listed on the DPW property record cards as built in 1809. More speculation has been written about who designed this building than any other in the yard. It has been attributed to Charles Bulfinch which may be unlikely because of the heavy-handed style found throughout. The architectural style falls into the late Federal period.

The house is a two-and-a-half story brick building set on a high granite base. It was built on the highest piece of ground in the yard next to the Old Salem Turnpike with a view of Breeds' Hill and Charlestown across the way. Access to a flat on the roof provided one with a clear view of the shipyard and the Boston waterfront beyond. The house has been used as a Commandant's House since its construction.

The earliest known view of the Commandant's House is from a painting dated about 1823. Another sketch made around 1836 shows the changes made to the exterior of the house up to that time, if the depiction is accurate. The earliest set of drawings kept in the files of DPW are dated 1849. From this date on the many changes to the house can be documented quite accurately. The earliest changes are those noted in the south wall swells where window openings are closed off. These may possibly be those seen in the painting of 1823. If so, then eight of 12 openings were closed. The sketch of 1836 show a balcony surrounding the east, south and west sides of the house with a stairway on the south end. Further changes in the house are listed below:

1856 Two bay windows added to existing openings on north wall. Possible date when the original doorway was removed and a vestibule built at the front entrance in the north wall.

1870-71 Framing of balcony, railing and screening of portion.

1872 Roof ventilator added (From Mansfield ?)

1897 Short section of straight brick wall built between the two swells at the south end to provide concealment for drain pipes. Lavatory installed in west chamber.

1911 Stairway to conservatory built.

1918 By this time the exterior brickwork had been painted white.

1927 Exterior fire escape built on east side of house.

1930 Alterations to outside stairway.

1935 Bathrooms added for chambers 1 and 2.

1936 Enclosed sun porch built and balconies replaced. Brick arches introduced under balconies. New stairway built.

1938 Connecting brick kitchen wing added off east side of house.

1951 New brick entrance added to west side of house at grade level.

1958 Site improvement and landscaping.

Quarters G, Commandant's House, additions and corrections.

The first superintendent, Nicholson, of the Boston Naval Shipyard worte to the Secretary of the Navy on March 24, 1805, and stated: "...this Navy Yard to which I am attached as Superintendent and where I expect to reside in a few weeks in the House now building by your orders for the Superintendent's accomodation..." (see attached complete letter). This would imply that perhaps Quarter's G was completed as early as 1805.

Additional early references to the Commandant's House are cited below, with page references to Preble's notes in Hist. of the Bost. Navy Yard:

July 23, 1808 (p. 75) letter from Secretary to Boston Navy Agent: "...not to allow or pay for any repairs to the house occupied by the Commandant, other than those previously authorized by this Department..."

April 10, 1810 (p. 78) letter from Secretary to Boston Navy Agent: "...the repairs upon the house occupied by the Commandant Nicholson appear to me enormous. You will incur no further expense upon this house without my previous permission..."

April 22, 1816 (p. 114) a row of poplar trees are set out in front of the Commandant's house.

1821 (p. 131) new gutters are put in and the house is painted.

April 18, 1825 (p. 152) the commissioners authorize the painting of the lower floors, "...as painted canvas is too expensive." The commandant is instructed to have the walls "...Handsomely colored in bright straw color or yellow paint."

June 11, 1825 (p.152) The Commandant writes: "The marble caps, sills, window frames, and blinds, etc. from the Commandant's house have been removed carefully and preserved and are to be sold and the proceeds applied toward paying the expense of repairing the house." It may have been at this time that the entire fenistration was altered in terms of location and amount.

July 25, 1825 (p. 152) the Commissioners authorize a gallery for the front of the house to be errected, not to exceed the estimated $25.

1826 (p. 169) The house is painted, one coat, double windows are provided, 18 in all, at a cost of $378. or $21. each. Several years later the chimney was rebuilt, repointing took place, and the outside of the house was painted, at a total cost of $275. (p. 176).

According to Preble (p. 205) the earliest known painting of the Commandant's House was made in 1831 by Mrs. Armstrong, wife of the Commandant. An early etching was made as a copy from the painting, and he claims was incorrectly labeled as about 1825. This etching has appeared many places, including Drake's work

on the shipyard. The etching clearly shows the line of poplars, and the early Marine Barracks. Preble may be wrong in his assumptions in that the windows shown are probably those before the changes of 1825 and26. Furthermore, the house is not surrounded by any walls or iron fences, a project completed by 1826. 1824 seems like a more accurate dating for the etching.

The second etching of the Commandant's House appeared in Gleason's Pictorial, September 18, 1852, (vol. 3, pp. 184). Whether it was made specifically for the journal, or was copied from an earlier depiction, is not clear. The windows clearly have undergone a change.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

<u>QUARTERS "G", COMMANDANT'S HOUSE, important photos.</u>

	Earliest woodcut, labeled 1825, but most likely done post 1830, showing yard side of Commandant's House and early marine barracks, several different negatives and prints.
	"Commandant's House and Garden", woodcut ca. 1852, various negatives and positives.
	Early photograph of Commandant's house, 1874, as copied from a photograph in Preble's History of the Boston Navy Yard, several negatives.
	Interior of Commandant's House, early glass negative, ca. 1910.
	Exterior, south side of Commandant's House, showing fence of wood and guard on duty, ca. 1910?
517-36	WPA Project of making an enclosed sunporch, negatives and prints before commencement and after completion, and also during construction, some dated May, or June, 1936.
3472	Package of negatives: 19 interior shots and 12 exterior views of Commandants house, late 1940's or early 1950's.
	Trees fallen over in front of Commandant's House, late 1940's.
1641-58 etc.	33 interior negatives and 4 exterior negatives, years ranging between 1954 and 1958.
485-52 etc.	8 negatives for Commandant's House, 4"x5", good views, 1952.
7215 etc.	Negatives of porch repairs of Commandant's House, Sept., 1965.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

QUARTER'S "G", COMMANDANT'S HOUSE, important drawings.

G-01 "Plan and elevation of balcony railing in front of Commandant's house,"n.d., ca. 1840.

G-01 (there is some misnumbering) "Front elevation and Southwest elevation,"rendered, ink wash on parchment, Dated: Navy Yard, Boston, 1849. A front view of the house before the bay windows were added.

G-06 "Details of Bay window of Commandant's House,"n.d. drawing on parchment linen with a watermark of 1850.

G-14 Full size detail of cornice for Bay Window at Commandant's House (fine line ink on heavy stock).

G-02 Elevation, design for a bay window, executed at
185 D50 Commandant's house, drawing dated 1856.

G-09 In pencil: Elevations of a piazza, House "G", n.d. drawing in pencil, watermark on stock of 1868.

G-08 "Plan of framing for Balcony around Commandant's House, U. S. Navy Yard, March 1870." In pencil; this balcony rebuilt summer of 1871, watermark of 1868.

G-22 "Gateway" Commandant's house and garden, April 22, 1876.

G-16 "Elevation of Screen" May 13, 1871;"for side of house on porch, visible in 1872 elevation (G-05).

G-18 Pencil drawing: "Proposed gateway at the Commandant's
985 E100 House." n.d.

G-05 "Plans, Sections and elevations of House G, occupied
190 A47 by the commandant", January, 1872. "Built of Brick, with wood partitions, balcony of wood, painted and sanded. Main roof covered with slates, flat roof covered with..." (statement ends abruptly.) Porch now shown extending full three sides.

G-20 Sentry's box in fence in front of G House, August 17, 1897; (hexagonal, refer to early photo of commandants).

G-21	Drawing for the new brick wall, between the semi-circular forms facing the yard, to allow space behind for soil pipes and vertical risers for plumbing. August 26, 1897.
G-24	Outside stairway, 1911.
G-25 etc.	Three drawings, schematics, for new west door, 1914.
G-28	Outside stairway in 1930.
G-29	Domestic hot water system improved, October 30, 1933.
G-30	Interior wiring, March, 1935.
G-31 etc.	Three drawings for new bathrooms in chambers one and two, second floor, in semi-circles; June, 1935.
G-34 etc.	Seven drawings for the new sun porch on Quarters "G", a W.P.A. project of April, 1936. Also refer to photos.
G-50 etc.	Nine drawings for general overhaul of Quarter's "G" in 1938, especially services such as HVAC, lighting, and plumbing; some interior changes, some new framing and details.
G-62 etc.	Six drawings for new west entrance and coat room, off of interior driveway to Quarter's "G", a rather formal entrance is desired.
G-69 to G-72	Record drawings, ie. measured, of the Commandant's house, September, 1956. All floor plans, including basement, first, second, and third floors. Photographic negatives of these drawings also exist in this file (<u>not</u> in the photo lab.)
G-80	Electric service equipment, August 6, 1956.
G-81,82	"Site improvements" 1957.
G-84	Exterior ramps to front door from side yard, July, 1963.
G-85,86	Quarter's "G" lighting, as built, September, 1963.
G-89	Termite control repairs, plans and details; March, 1966.

BOSTON NAVAL SHIPYARD NEWS, vol.14, no. 4 (Nov. 7, 1949,) p. 7.

Pasture Rent Unfair . . .
Troubles Of Early Days

By Everett Wallster

Captain Samuel Nicholson, the first Commandant of the Boston Naval Shipyard, had his troubles. Not only did it take five years to build the house he was to live in but the Navy Agent in Boston wanted to charge him rent for the use of the pasture adjoining the property, according to a letter to the Secretary of the Navy from Captain Nicholson, now reposing in the Navy Department archives in Washington. It reads as follows, spelling included:

Navy Yard Charles Town
March 24th, 1805

Sir,

I hope you will excuse my freedom when I request your influence with Mr. Brown the Navy Agent here on the Score of my paying 100 Doll ground rent for this Navy Yard, to which I am attached as Superintendent and where I expect to reside in a few weeks in the House now building by your orders for the Superintendents accomodation—I am induced to ask this favor from a belief that it is customary in all other Navy Yards or Garrisons in the United States, to indulge the Officers attached to said Yards or Garrisons with the use of the ground thereto belonging—At the same time I confess, I told Mr. Brown I would pay 100 Doll for the use of this place for pasture, this I did rather than let a man have it for $80. Offered in my presence, at the same time I declare I never expected he would call on me for it. I took this place for those reasons to wit: Convenience to myself as pasture, and that it would be a great disparagement and very injurious to the Public to suffer Individuals to claim a right of a free Intercourse as well by Night as Day through the Yard where the United States have so much property deposited. — The first year after I took possession of this place it was mowed and the hay sold by the agent for the want of a Barn to put it into—the next year it was let to the proprietors of the Salem Turnpike and bridge, to make their frames (on.) The last year I pastured it,— The injury done this place by the chips left on it by the bridge & Hospital folks, have rendered it useless, otherwise for pasture.—

I have heretofor had use of that part of the Yard around the buildings,—I will be thankfull to you Sir, if you will honor me with a line in answer to this, that will excuse me from the above charge which I am very Illy able to pay, & at the same time direct its future disposal—I have the Honor to be with high Esteem & regard

Your Obedt Hble Servt
S. Nicholson

From the above letter, the date is established that the Commandant's House was completed in the spring of 1805 and that it was first occupied sometime in April or May of that year. The Superintendent, as the Commandant was called at that time, still had a Navy Agent to contend with as all payments for materials as well as purchases by the Navy Department were handled through a Navy Agent. The Salem turnpike (now Chelsea street) was being built. Also being built was the Naval Hospital in the Yard which was located about where the row of officer's quarters are now located back of Bldg. 199. The hospital was torn down when the new hospital was built in Chelsea.

marine barracks

BUILDING I: U. S. Marine Corps Barracks. This building has been used in part as a barracks building since its initial construction. The date of erection assigned to this building by the DPW is 1823. This coincides with the outline of the building found on the Navy Yard plan of 1823. Two views of the Marine Barracks drawn in ca. 1823 and ca. 1825 both verify the accuracy of the building outline as shown on the 1823 plan. The original plan of the building seems to have been a long one story gabled building attached to a single three story structure at each end giving the plan a a U-shaped arrangement. This U-shaped plan survived until 1868 when an ell addition was built to the north off the central one story building. This addition appears on the yard plan in 1868, while drawings dated 1861 kept in the files of DPW indicate the scope of the proposed work to be done.

Like the Commandant's House to the west, the site selected for the barracks stood on the highest point of land in the Navy Yard. A small parade ground has always existed between the barracks and 2nd Avenue which in 1823 was simply the southern boundary of the Marine Corps property. The layout of 2nd Avenue came in 1828 according to the yard plan of that year. These early buildings appear to be of brick construction. The three story building flanking the west side seems to have always been used as the Commanding Officer's House while the east three story structure was used for Officer's Quarters.

According to the DPW card file, the entire structure was raised to its present height of four stories in 1870. A one story piazza or porch may have been added across the front of the building or at least renewed. In 1871, 1936 and 1962, the yard plans show that the rear of the buildings underwent a series of infillings between the ell and the end wings. Four story porches and stair towers were added across the south wall, excluding the side wings, in 1940. It must be pointed out that the two flanking buildings were always built with a slight projection south of the center portion. This would account for the reason that the porches stopped short of running full length of the south facade. Exterior fire escapes were added in 1944. In order to provide additional sleeping quarters for the enlisted men, the four story porches were enclosed in 1951 according to the DPW card file.

The interior of the building has been altered from time to time and little, if any, of the original fabric remains. Concrete floors have been installed, a new galley, mess hall, barber shop, a pistol range in the basement, new storerooms, walk-in refrigeration units and many other alterations, too numerous to mention, are a few of these internal changes. When the new administration building was constructed in 1909, it became primarily living quarters for the officers and enlisted men.

Like most of the other brick buildings in the yard, this building was once painted white. Photographs taken as late as 1936 indicate that the paint was still intact. Its removal may have been part of the WPA project.

MARINE BARRACKS, additions and corrections.

The Marines were ordered to the yard in 1802 "to protect government property." Their first (wooden) dwelling was on the southeast side of the old Marine Hospital, currently the "lower quarters" LMNO. A new quarters was approved and construction began prior to 1810 on the site of the current Barracks.

On January 9th, 1810, permission was granted by the Secretary of the Navy to put provisions "...in the cellar of the new marine barracks." On January 7th, 1811, the Navy Secretary directed the Boston Agent to make requisition for funds to complete the new barracks, but on March 14, 1811, he reverses himself saying,"...incur no further expenses on them...they will be finished by the marines themselves." (Preble, p. 78.)

In the Commandant's inventory of buildings in the yard in 1813, the discussion implies, by the arrangement of the order, that the barracks may have been made of brick, at this early date. Preble implies that the barracks were not the same as the ones which appeared on the same site in the Yard Plan of 1823: the only original structures (mentioned in the Commandant's 1813 report) present in 1823 were the Commandant's House, and a wooden office which he used. (Preble, p. 95.)

The earliest photograph of the barracks, ca. 1865, shows the building with a three-story central part flanked by four-story wings; the shot park is clearly visible in the foreground, as is the fence which seperated it from the marine yard. (see the BNSN, vol. 25, no. 42; April 21, 1961, p. 4)

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

MARINE BARRACKS, QUARTERS I, important photos.

2020 - 50	Two interior woodcuts of the marine barracks, sleeping quarters and mess hall, ca. 1850.
ASF 6960	"Yard of the Marine Barracks," woodcut, various negatives and positives, ca. 1850.
nn.	"Parade Ground of Barracks", woodcut, various negatives and positives, ca. 1855.
6176-63	Marine Barracks, September 20, 1902, various negatives and prints of the same shot.
6177-63	Marines in front of Barracks, ca. 1900, two negatives.
5831	Marine Barracks, March, 1921, glass negative.
nn.	Marine Barracks and parade ground, showing wooden eagle, ca. 1920; print.
7021	Commanding Officer's Quarters beginning alterations, August 1, 1923.
7063	Ditto, during alterations, September 5, 1923.
7098	Commanding Officer's Quarters, Marine Barracks, view looking north, 1923.
7208	Marine Barracks, Nov. 3, 1923.
392-41	"New reinforced concrete porch and fireproof escape towers, Building I, March 6, 1941," four identical photos; shows barracks before storm windows were added.
6208-61	Two negatives of Marine Barracks, 1961.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

BUILDING NUMBER 136; MARINE ADMINISTRATION BUILDING, important photos.

5817	Marine Administration building in March, 1921; taken from the south.
5832	Ditto, from the west, March 18, 1921.
276-37	View of the administration building on April 15, 1937, before the WPA Project of enlarging the structure began. Commandant's house visible in background.
704-37	Work completed on enlargement, September 14, 1937.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

<u>QUARTER'S "I", MARINE'S BARRACKS, important drawings.</u>

I-02
203 D56 — Marine Barracks of the Boston Navy Yard, Feb., 1861. (Plan shows Commandant's office within the boundary of the Marine's Yard, next to "Main Avenue" (today second ave.)

I-01 — (only ½ of the drawing is here) "...of Marine Barracks on Chelsea Street...1861." (Proposal for victorian remodeling!)

I-03
to
I-07 — Five sheets of floor plans of the marine barracks. July to September, 1870. Includes Basement, first, second, third, and fourth floors, the latter on the side quarters only.

I-15
216 D63 — "Proposed alteration of Marine Barracks. February, 1861, semi-Victorian in nature.

I-14
215 D 62 — "Plan of the U. S. Marine Barrack Grounds," n.d.

I-12
213 D60 — "Diagram of Cells in Barracks," the mearsurements and plan were made by Mr. Babbitt, Sept. 27, 1869.

I-11
212 C38 — "Profile of Barrack Grounds: first and second story plans. No date.

G-17
21.... — (incorrectly filed under the "G" code, this drawing has been returned to the proper file drawer--that is the Marine Barracks file.) "West Quarters, Plans" done in pencil, ca. 1870.

I-13
414 D61 — East Quarters, Plans. Marine Barracks. ca. 1870. These two drawings deal with the end segments of the complex, where the higest level marines would live.

I-10
211 D59 — Main entry to Barracks, June, 1875

I-08
209 D57 — Steps at corner of Marine Barracks, May, 1875.

I-18
etc. — Houses "H", "I", and "K", wiring diagrams for electrical lighting, basement, first, second, third, and fourth floors, 1904.

I-28	Electrical lighting, 1928.
nn.	First floor and basement plans with lighting revised to July 15, 1930.
I-39	Heating changes on third floor, 1937.
I-40	Proposed new water closet over Present "Sally Fort", 1939.
I-41 to I-48	Sketches of Proposed porches and Stair Towers; Plans, details, stairs, steel, revisions, etc., for drawings dated June-November, 1940. Refer to photos.
I-50 etc.	"New Fourth Floor Dorm over Present "Sally Port Toilets," February, 1943. Three drawings.
I-53	Sprinklers, October, 1943.
I-58 etc.	Three drawings, "field survey" plans of August, 1949.
I-64	Enclosed Arcades on 2nd, 3rd, and 4th floors, May, 1951.
I-68 etc.	Three drawings, "field survey, plans of 1951.
I-71 etc.	Enclosing arcades, more drawings, arch, heating, etc. from May to September, 1951.
I-90 etc.	Six drawings for June, 1951, continued overhauling including toilets, plumbing, electrical, etc.
I-98	Marine Barracks replacement of windows, Dec. 21, 1955.
I-114 etc.	Several drawings up through I-129; general renovations, and upgrading in February 1963 (drawings approved). Structural and electrical renovations, new porches, stairs, some commercial changes; I-110 is a prelim. drawing done in 1961.
I-132	Fire alarms, April, 1973.

THE MARINE BARRACKS HISTORY, BOSTON, MASSACHUSETTS

A temporary Marine Barracks was maintained on Castle Island, near Boston, in June, 1799. A few months later, the subject of establishing a temporary Marine Barracks at Boston was brought to the attention of Secretary of the Navy Stoddert, who on 21 September 1799 decided against erecting temporary barracks, as plans for a permanent barracks were contemplated for the future. When the USS CONSTITUTION was ordered laid up in the Boston Navy Yard, March 1801, a "small naval personnel and a Marine guard of one sergeant, one corporal and eight enlisted Marines were assigned temporary duty on board." This guard of Marines, taken from the small Marine detachment stationed at Fort Independence, on Castle Island, remained on board the CONSTITUTION until 14 August 1803 when she was again put in commission.

The site of the Navy Yard, purchased by the U. S. Government in 1800 and 1801, formerly known as "Moulton's Point", covered an area of approximately 131 acres.

Early in 1802, plans were initiated for permanent installations on the site of the Boston Navy Yard. On 22 February of that year, the Secretary of the Navy wrote to a Woodbury Langdon, at Boston, requesting information concerning the site of the Navy Yard. On 7 April 1802, Langdon replied:

> "Immediately on receiving yours of the 22nd February last, I employed a person to take a plan of the Navy Yard here.... The plan of the Navy Yard will show the quantity of ground it contains, the improvements thereon & the docks adjoining...If a ship or ships should be built it will I think be furthermore necessary to erect a warehouse of about 100 feet in length, 30 feet wide & two stories high, also a blacksmith's shop of sixty feet long & thirty feet wide, with a small store adjoining it, for depositing iron & coals, also some additional barracks, the probable cost of all which will be about $5000 if built of wood as those are which are already erected, and will be so placed ...it would be wise to appoint three proper persons to examine & report respecting the proper site...with respect to the public property in my care..."

On 21 May 1802, the Secretary of the Navy wrote the Commandant of the Marine Corps:

> "Guard to consist of 1 Sergeant, 1 Corporal & 15 privates each must be stationed at the Navy Yards at Boston, New York, Philadelphia, Washington, & Norfolk. In cases where guards are already established at any of these places, the number must be enlarged of diminished, as the case may require, so as to be neither superior nor less than the quota above prescribed. "We shall soon have vessels arriving at New York & Boston, from which they arrive may be supplied..."

In August, 1806, the strength of the Navy Yard Marine guards was increased to one lieutenant, one sergeant, one corporal, two musics, and 15 privates.

Although small detachments of Marines were stationed at the Boston Navy Yard at various times from March, 1801, a permanent Marine Guard was not established until June, 1805, On June 1805, Marine guards

consisting of one lieutenant, one sergeant, three corporals, and 15 privates were ordered to Boston, New York and Phiadephia "to guard the property of the Navy Department in the Navy Yards" at those places. On the same date the Secretary of the Navy directed a "small house built" for barracks while the lieutenant could be accomodated with a suitable room in one of the warehouses."

On 13 October 1810, Captain James Thompson, commanding Marine Barracks, Boston, wrote the Commandant of the Marine Corps that the walls of the barracks were up and ready for the roof.

The Marines stationed at the Navy Yard at Boston, Mass., helped to build the barracks at that place. In a letter to 4 October 1810, the Commandant gave the Captain some detailed instructions relative to the building of the barracks, covering very thoroughly the construction of the roof, glazing, inside work window frames, basement, plastering, etc., and stated that "at New York I have directed a second story to be put to the building there. I do not wish, as those at Boston were undertaken at the name time, that thy should be inferior, you must therefore have the story added to both wings. "The Commandant in this letter also gave directions as to "draining the Ground" around the barracks.

The Commandant evidently appreciated the willingness with which the Marines worked on their barracks, for on 15 November 1810, in a letter to Captain Thompson, at Boston, he remarked that "your men are deserving of much credit in giving so much aid by labour. The comforts of their new quarters will I trust in some way compensate them for their conduct." And again in a letter dated 19 December 1810 he stated "I am much gratified in your report on the state of the buildings, their progress has been beyond my expectation. I had no idea of their being in such a forward way for the reception of the guard. "In a letter dated 31 December 1810 to First Lieutenant John Brooks, then commanding the Marines at Boston, the Commandant directed that he "must keep the mechanics of the guard - I mean carpenters - employed during the winter in making doors, sashes, etc., for the buildings, or any other things which will be necessary for their completion."

On February 1811, The Commandant again wrote Lieutenant Brooks that inasmuch as the men had "no extraordinary duty to perform, you must have their services fully in every way, therefore, do what you can to complete the barracks and to prepare that work which they cannot undertake, which I presume must be platering and glazing only.

That the Marines accomplished a considerable amount of work at lettle expense to the Government in their "barracks building program" is evidenced by a letter from the Commandant to Lieutenant Brooks, in which he stated that "the extent to which you carry the $500 will be to me very pleasing as I assure the expenditure has been very considerable and far beyond my ideas intended for your station - so much so that I have delayed the recommendation for building barracks either at Philadepphia or Norfolk, that I might certainly know the sums necessary for New York and Boston. "In this letter the Commandant showed a detailed knowledge of the Boston post by the minute instructions he gave for the construction of a prade ground.

Apparently the Marines moved into the new barracks during the winter of 1810-1811 for on 25 February 1811 the Commandant of the Marine Corps wrote First Lieutenant John Brooks, who had succeeded Captain Thompson in command of the Boston Barracks, that he was glad to hear that the Marines were in the "New barracks".

~~The first barracks at Boston Navy Yard was of wooden construction and housed 50 men. In 1829, the building was replaced by a four-story~~

The first barracks at Boston Navy Yard was of wooden construction and housed 50 men. In 1829, the building was replaced by a four-story structure, facing the waterfront.
The Barracks was described as follows:

"In the basement of the barracks proper are storerooms for quartermaster supplies, a boiler and fireroom, and old brig. This brig (used until 1909), makes one shudder to think that human beings were actually incarcerated in it. The narrow cells, dimly lighted, with their low ceilings and small iron doors certainly do not compare with the spacious, clean and brightly lighted cells that are found in the new brig. On the first floor is located the pay office, orderly room, post exchange, barber shop, tailor shop, galley and mess hall. On the second fl or, there is a pool-room, recreation room, squadroom, lavatory and showers, and a police locker. The third and fourth floors are used primarily for sleeping quarters."

Boston, as well as other posts of the Marine Corps, continued to have trouble due to the interpretation of the Act of 11 July 1798, as to the jurisdiction of the Army over the Marines while serving on shore. The words of the original Act 11 July 1798 were strictly construed by the Army as conferring jurisdiction upon them over every Marine serving on shore. On 22 August 1813, the Commandant wrote Second Lieutenant Charles R. Broom in command of the Boston Marine Barracks, who had obeyed an order of the Army to place a guard over Army prisoners, that "we act under the Department of the Navy, and not of war, unless so specifically ordered by the president of the United States. I have received your letters of the 13th & 14th inst. I do not know the authority by which you were ordered, & which you obeyed, in detaching from the Navy Yard, a guard for prisoners of the Army, it will be proper at all times to cooperate with the Military of our Country for the public good, where the particular service in which we are ordered, & which is more or less Naval, will not be injured or frustrated thereby, but I must consider it voluntarily done, & not imperative, as we act under the Department of the Navy and not of war. Unless so specially ordered by the President of the United States; from a concersation had withe the Honourable, the Secretary of the Navy, your hereby made acquainted, to that your detachment will be relieved by the Army, & you are now required, on such relief being made, to again place it where it was taken from, the Navy Yard, at Charlestown... I have already written to you about the supplies for the barracks, as far as Sacks, & do I understand you that you now have carenters & some masons in the guard, if so how many?"

This unsettled jurisdictional problem continued until 1834, when the Act of 30 June of that year provided that the Marine Corps was part of the Navy unless expressly detached for service with the Army.

Letters and reports initiated by the Secretary of the Navy, the Commandant of the Marine Corps, The Commanding Officer of the Marine Barracks, Charlestown (Boston), and others, are the best sources of Marine Corps activities at the Boston Navy Yard. Some of these letters and reports are as follows:

(1) Commandant of the Marine Corps to First Lieutenant Henry Caldwell, commanding Marine Barracks, Boston, 21 March 1804:

> "A sudden demand now made for a considerable number of Marines to be in readiness for the Mediterranean induces me to request your attention to recruiting. You will

therefore immediately commence the service & service & embrace every opportunity to furnish a detachment for headquarters; you are not confined to nations; but will enlist every man qualified...."

(2) Lieutenant Caldwell to the Commandant of the Marine Corps, 19 March 1807:

"....the Detachment is in good order, but have suffered a good deal from the inclement season. I have had the Barracks inspected & it is the opinion of the carpenters that any cost bestowed on their repair, would be a waste of Public money. There is now in the Yard several millions of Brick & Timber going to decay belonging to the Public - if this were made use of, I think a building might be erected at a small expense."

(3) The Commandant of the Marine Corps wrote the Secretary of the Navy, 27 August 1805:

"....The situation of the Marine Barracks at the Navy Yard, near Boston, which has hitherto greatly tended (by the ant of adjoining room for a hospital) to add to the number of Deserters, I concieve may be much improved by a small expence in additional apartment. The Sick belonging to the guard then have always been removed from its establishment to the Navy Hospital, situated at the extreme end of the yard, & beyond the vigilance of their officers, when in a state of convalescence, unwilling to return to duty, desertion invariably follows: to abviate this increasing evil, permit me Sir, to ask for a room to be added to the present barracks, capable of containing the sick, usually to be expected from the number of the guard."

(4) On 13 September 1805, a Samuel Brown at Boston wrote The Secretary of the Navy concerning "the erection of a small building for a Hospital in the Navy Yard in Charlestown," and stated: "With respect to its situation I have consulted with Lieutenant Keen the Commanding Officer of the Marine Corps stationed there who accords in opinion with me that it will be the most convenient to place it near the barracks in the yard and that its dimensions ought not to be less than thirty-two by sixteen feet," and the "expense by an estimate I have made will be about seven hundred dollars."

(5) Lieutenant Caldwell to the Commandant of the Marine Corps, 1 June 1807.

"....I hope soon to hear from the Quarter Master that he has made a shipment of clothing for the Detachment which stands very much in need of it.

(6) Commandant of the Marine Corps, 31 July 1807 to Lieutenant Caldwell stating:

"The Marine Corps will be immediately increased to the establishment which by law, it was fix'd, this will make necessary the exertions of our officers, commanding at posts near our large towns, in recruiting to fill up the number now wanted; I must then request you to furnish your quota of men for the purpose....I will not point out to you the necessary qualifications for recruits, you will know what they ought

to be. I will merely remark, they must be taken under the certificate of a surgeon, they will be from 5' 4" to 6 feet in height, & from 18 to 40 years in age,..."

(7) Lieutenant Caldwell to the Commandant of the Marine Corps, 1 October 1807:

"Had I a sufficiancy of clothing & good barracks, (from present appearances), I could procure at least two hundred men, between this & Christmas. I have been obliged to incur an expense in building a small room for my Sergeant, additional bunks for the men & Sentry Boxes. The cost however will be trifling as the work has been done by the Marines. As it is most probable the fall will be too far advanced, to commence building a barracks here, before appropriations can be made for the purpose. I hope I may be indulged with shingling them, which will at least guard the men from the inclemency of the weather - at present they are no more protected from rain than they would be in the open air.

"I have on hand 46 Muskets of the New Caliber, with accoutrements, & 4 of the old Caliber, which have been repaired - In the event of a Detachments being ordered offwith arms - I shall be under the necessity of asking a fresh supply of arms."

(8) The duties of Marine Guards at the Navy yards were outlined in the following letter from the Commandant of the Marine Corps dated 24 April 1809:

"You must receive the following as instructions to enable you to execute the duties expected from the guard. Your protection of the public property, when shown to you, by the officer of the Navy, commanding at the yard, of of the squadron on the station, will be fully expected, as far as it is in your power to do; recollecting at the same time, that no order or regulation of yours in this case, or in any other can possibly interfere with those of the yard; but that you with your command, must conform to all orders issued or which may be issued for the better government fo the same, Applications from either of the, or in their absence, the officer acting, for military aid, as extra sentinels, etc., etc., etc., must be promptly attended to and to avoid difficulties I should recommend, where it is practicable, that written communications, on duty, should be made in preference to verbal. When the requisitions for detachment of Marines, extend to the squadron on the station, they must be complied with as far as it is possible, keeping complete at the same time, all guards serving on board of it, either by enlistments, or from your own guard which you will view, when full, as consisting of 2 sergeants, 2 corporals, 2 musics and 30 privates. In case this cannot be done, from either, your report on the subject will enable me to supply you from other posts. Further orders to you repecting the command I deem unnecessary - An observation will be sufficient, it is - that an event may take place, which will require the united exertions of all, Naval and Military; such as an attack sudden, and unexpected on the station where you are - in that case, a Navy Yard Guard, could not, with indifference look on, or remain inactive spectators. The idea would do injustice to the officer commanding it, he would assuredly volunteer the services of his command, to the officer in command at the yard, or, of the squadron. I shall expect to hear from you, occasionally, and must claim your attention to the regulations of the staff which will require much from you; as various

duties, you be called on to perform in recruiting, detaching, & to the former, you must immediately resort, to fill vacancies with you, and for other purposed - the advance, now extended to ten dollars will, I think, ensure many and valuable recruits - a description of their qualifications will not be given, you have been to long in service to require it...."

(9) On 5 June 1810 the Secretary of the Navy wrote the Commandant of the Marine Corps:

"It has been determined to erect at the Navy Yard at New York, barracks for the accommodation of 150 to 200 men, and at Boston Barracks for the accommodation of 100 to 150 men, For the purpose of effecting these important objects ina manner best suited to the purpose, for which they are intended, and upon the most economical terms, I have to direct, that you proceed to these places for the purpose of making every requisite arrangement as to the contracts for completing them, the sites on which to erect them and the design of the buildings. With respect to the sites you will consult with the Commanding Naval Officers. Any bricks or other materials in either of these yards that may not be wanted for naval purposes may be used in the erection of these barracks. You will not expend for both these barracks a sum exceeding $8000. It is indeed hoped that with your good management & well known economy, you will be able to complete them for a less sum. I give you these orders now, that you may have time to consult with practical men as to the design of these buildings -about the 1st of the ensuing month, you wil proceed hence to execute these instructions."

(10) Commandant of the Marine Corps to Lieutenant John Brooks, dated 13 February 1811:

"Since you have commanded at Boston I have discovered all reports as involving points of controversy with the Agent & the Mechanics employed by him, or myself in the late contract for barracks in which I do not find a necessity. As to the remarks made by Edmonds, or any other person concerning the contract having been broken by me, of that I had not fulfilled any articles in it, I must view them as too comtemptible to notice, & I must beg you to let Edmonds, & all others to whom you have reference by a concern with him, so to understand the bills compared by me with prices by agreement made, I shall request money to be placed, now the appropriation is known, in the hands of the agent to discharge them, but you will not allow Mr. Edmonds, or may other mechanic to work at the barracks in the future, as they will be finished by our own men.

"....The charges for Wells & Cellar if exorbitant, amounting to Imposition, ought not to be allowed, & you ought to protest against the payment by the agent - this done, I must advise you to have nothing further to do, except where duty directs, with any of those persons whom you have called to my attention.

"Having mechanics in your command, I mean Carpenters - you must buy lumber and keep them employed at the different rooms of the barracks, until they are all finished and so soon as possible I will endeavour to add to your number of them, to expedite the business in time I will instruct you about the plastering, etc.,"

(11) Lieutenant Charles S. Hanna to Commandant of the Marine Corps,

dated 1 July 1812:

"....I have this day delivered to Sergeant James McKim Jr., the command of the Marines attached to the Navy Yard in consequence of an order received from Capt. Charles Ludlow to repair on board the John Adams. I have also transferred to the ship, 16 Marines from the yard to complete my guard. I am destitute of music."

(12) Captain R. D. Wainwright to the Secretary of the Navy, dated 29 August 1815:

"On taking the command of this Post, I found that the men, who had done, much duty as Carpenters, had received no compensation for their extra service, under the impression that something over their pay as allowed. I am induced to ask if you will sanction their receiving it, while employed on that duty. Your several communications respecting the discharge of Marines have been attended to."

(13) Lieutenant Manna to the Commandant of the Marine Corps, dated 3 April 1818:

"After the death of Capt. Caldwell, I took command of the Marine Barracks at Charlestown, Mass., on taking the command I found a number of Marines at work on the barracks, which Marines had been allowed extra grog by Capt. Caldwell, I continued the allowance so long as I commanded that post."

(14) Lieutenant W. H. Freeman to Major S. Miller, USMC, dated 11 May 1818:

"Will you please tell me if an amount of about $30 would not be passed for furnishing chairs & tables for use of the mess room in the left wing, or for use of Court Martial, would it not be equitable that they should be furnished at public expense. I am told that at other posts, this is the case. I think it ought not to be expected that subaltern officers at this post should be at the expense of furnishing those articles for general public services."

(15) Letter dated 25 September 1818 to Captain Robert D. Wainwright, Commanding Marines, Charlestown, Mass., signed by F. B. White, R. T. Auchmuty, H. C. Dix, and T. S. English, Lieutenants, USMC:

"Agreeably to your orders of today directed to the undersigned; we have held a "strict and careful survey" on the quarters of the officers & men under your command, and find them sustaining great injury from the low and leaky condition of their roof & walls: that in consequwnce, they are constantly rendered uncomfortable to the officers & men stationed therein, and that they require speedy repairs to make them of permanent service. We think that many parts of the roof require leading, and the walls a thick coat of paint or cement."

(16) Captain Robert D. Wainwright to the Commandant of the Marine Corps dated 14 October 1818:

"Immediately on the receipt of yours of the 1st of October, I commenced the repairs on the barracks, it has been deemed expedient to paint and putty the building; to prevent imposition I have employed the men that work for Capt. Hall, one coat has been already put on, the weather has been favorable. On examining the lower passage floor the loist are found entirely decayed, the under floor mouldered away and but a small part of the upper board sound, by sawing off the decayed part of the posts and underpenning with stone, with some other expense which will not amount to much the passage will last 4 or 5 years when it is necessary to put up a new one, the stone now used will of course answer, it is certainly the most economical plan.

"I hope you will agree with me; Have I your permission to paint the floor of the left wing? it would preserve them and add much to the comfort of the officers they not using carpets, one of the rooms in my quarters I am abliged to plaster, it has been so long wet having been plastered on the instead of being fur'd out from it, nothing that is unnecessary shall be done, your advice as to consulting architects has been observed.

"My guard is very much reduced indeed as you may see by my last muster roll. I have enlisted but three men....as the inclement season approaches I may be more successful but should think were I authorized to open a redexvous at Salem or in some one of the country cowns that men might be had."

(17) Letter from Captain Wainwright to Lieutenant Colonel Gale, dated 25 May 1819:

"In consequence of there being no arcade to the barracks, the storms & long use have so much injured the floors of the mens rooms as to make it necessary to have new ones laid, the fences are also very much in want of repairs. All can be done without expense to government except for materials, having men of the Corps capable of doing the work."

(18) On 12 March 1824 the Marines at Boston were called upon to quell a riot. The following account appears in History of the United States Marine Corps, by Major Richard S. Collum, USMC:

"The account of the mutiny in the Massachusetts State Prison, 1824, has been familiar to the school boys of the last fifty years. It was given in authentic form in the New England GALAXY in 1828, and since formed one of standard selections for school readers. The following account is taken from the original story, omitting such portions as do not have bearing on the action of the Marines who were called in to suppress the outbreak:
'Three convicts had been sentenced, under the rules of the prison to be publicly whipped in the yard, and were confined in the solitary cells, waiting punishment. An officer, whose duty it was to attend to such cases entered one of the cells to see that everything was right, when the inmate sprang past him, closed the door, and locked him in. He then opened the doors of the cells in which were the other two, and the three, after deliberation, released the officer, and ordered him to approach the

door leading into the guard-room, and give the necessary signal that all was right, while they stood ready, on its being opened, to rush through and secure the guard and the arms in the room. The officer resolutely refused. They threatened to kill him; and one of them raised a knife, or rather a file, sharpeded to appoint, with the intent of carrying the threat into execution; but the officer remained firm, telling them that they might take his life, but he would not betray his trust. The other two finally interferred and saved his life, forcing him back into the cell, and locking him in. They then passed into the large dining hall, a long, dark, and damp room. The alarm had already been given, and the prisoners rushed from the workshops, arming themselves with clubs, knives, hammers, chisels, and every variety of weapon within their reach, forming a band whose strength, vileness, and reckless daring could hardly be equalled. Men of all ages and characters, guilty of every variety of infamous crimes, dressed in the motley and peculiar garb of the institution at that period, and displaying the wild and demoniac appearance that always pertains to imprisoned wretches, were gathered together for the single purpose of preventing the punishment which was to be inflicted on the morrow upon their comrades.

"The acting warden and soem other officers of the prison were there at the time, and were, naturally, greatly alarmed at the conse-uence likely to ensue from the conflict necessary to re-store order. They huddled together, but could scarcely be said to consult, as the stoutest of them lost all presence of mind in overwhelming fear. The news spread rapidly through the town and a subordinate officer, of mild and kind dispostion, hurried to the scene, and calm, and collected, went into the midst of the officers. The most equally-tempered and the mildest man in the government, as is usually the case, was, in this hour of peril, the firmest. He instantly, upon his oun responsiblilty dispatched a request to Major Wainwright, Commander of the Marines, stationed at the Navy Yard, for assistance, and declared his purpose to enter the hall, and try to force the Arm demeanor and persuasion upon the enraged multitude. The other officers exclaimed against an attempt so full of haxard, but in vain. They offered him arms, -- a sword and pistol; but he refused them, and said that he had no fear, and in case of danger, arms would be of no service; and alone, with only a little rattan, which was his usual walking-stick, he advanced into the hall to hold parley with the enraged and desperate villains.

"He demanded their purpose in thus coming together with arms, in violation of the prison laws. They replied that they were determined to abtain the remission of the punishment of their three comrades. He said that was impossible; the rules of the prison must be enforced, and they must submit. At the hint of submission, they drew a little nearer together, prepared their weapons for service, and as they were dimly seen in the farther end of the hall by those who observed them from the grating that opened to the day, it was difficult to conceive of a more appalling sight, or one of more moral grandeur, than that of a

single man standing withen their grasp, and exposed to instant death, if a word or look should add to the already intense excitement.

"The excitement, too, was of the most dangerous kind; it did not break forth in noise and imprecations, but was seen only in the dark looks and the strained nerves, that showed a deep determination. They stated that they expected some would be killed, but that death would better than such imprisonment; and with look and tone which evinced an indomitable purpose, they declared that not a man should leave the hall alive till the sentence of flogging was remitted. At this period of the discussion their evil passions seemed to be more inflamed, and one or two proposed to kill the officer, who still stood form, and with more temperate pulse than did his friends, who saw from above but could not avert the danger that threatened him. Just at this moment the officer saw the feet of the Marines filing by the small lights. He knew that it was his only time of escape be[illegible] a conflict for life should begin. He stepped backward, still urging the prisoners to depart before the officers were driven to the use of fire-arms as a last resort. When withing three of four feet of the door it was opened, and closed instantly again as he sprang through, and so was unexpectedly restored to his friends.

"Major Wainwright was requested to order his men to fire down upon the convicts through the little windows, first with powder and then with with ball, till they were willing to retreat; but he took a wiser as well as bolder course. Replying upon the effect which firm determination could have upon men so critically situated, he ordered the door to be again thrown open, and marched in at the head of thirty men, who filed through the passage and formed at the end of the hall, opposite the crowd of criminals grouped together at the other end. He stated that he was empowered to quell the rebellion; that he should not quit that hall alive till every convict had returned to his duty. The latter seemed balancing the strength of the two parties, and replied that some of them were ready to die, and only waited for the attack to see which was the more powerful, swearing that they would fight to the last unless the sentence of flogging was remitted, for they would not submit to any such punishment in the prisonment.

"Major Wainwright now ordered his Marines to load their pieces, and that they might not be suspected of trifling, each man was told to hold up to view the bullet which he afterwards put into his gun. This only caused a growl of determination, and no one blanched, or seemed disposed to shrink from the foremost exposure; They knew that their numbers would enable them to bear down and destroy the handful of Marines, after the first discharge.

"The Marines were ordered to take aim; their guns were presented; but not a prisoner stirred, except to grasp more firmly his weapon. Still desirous, if possible, to avoid such a slaughter as must follow the discharge of the guns, the Major advanced a step or two, and spoke even more firmly than before, urging them to depart. Again, and while looking directly into the muzzles of the guns, which they had seen loaded with ball, they declared their intention of fighting it out. The intrepid officer then took out his watch and told his men to hold

their pieces aimed at the prisoners, but not to fire till they had orders. Then turning to the convicts, he said, "You must leave this hall. I give you three minutes to decide. If at the end of that time a man remains, he shall be shot dead. I speak no more." No more tragic situation than this can be conceived; at one end of the hall a fearless multitude of desperate and powerful men waiting for the assault; at the other, a little band of well-disciplined Marines, waiting with leveled muskets, and ready on the least motion or sign to begin the carnage, and their tall commander holding up his watch to count the lapse of the three allotted minutes. For two minutes not a person nor a muscle was moved; not a sound was heard in the unwonted stillness of the prison, except the labored breathings of the infuriated wretches as they began to pant between fear and revenge. At the expiration of two minutes, during which they had faced the ministers of death with unfaltering eyes, two or three of those in the rear, and nearest to the further entrance, went slowly out; a few more followed the example, dropping out quietly and deliberately; and before the last minute was gone, every man was struck by the panic, and crowded for exit, and the hall was cleared as if by magic. Thus the steady firmness of moral force, and the strong, effect of deliberate determination, coped the most daring men, and prevented a scene of carnage which would have instantly followed the least precipotancy or exertion of physical force by the officers or their subordinates."

(19) History of the Boston Navy Yard, 1797-1874, Part 1, 147:

"1824, July 7 - There was a great fire in Boston, in which 21 buildings were burned. A party of Marines under command of a sergeant were sent over to the fire and were very active and useful."

"1824, August 17 - By direction of the President, the Secretary of the Navy issued a general order, that on General Lafayette's arrival in the country he was to be received at all the United States naval stations, and by all the U. S. ships in commission, with the highest military rank in our service. Accordingly when, accompanied by the Governor of Massachusetts and suite, the Lieutenant Governor and council, the Mayor of Boston and other distinguished guests, visited the yard, he was received by a guard of Marines under command of Major Wainwright, and with a salute of 15 guns."

"1826 - At the beginning of the new year, there were only three sentinels by day, and the same number by night. A patrol at night would add greatly to the security of the yard. The number of Marines is inadequate to perform the required service. A Marine guard is especially necessary on the Receiving Ship to prevent desertion, and the distance from the Marine Barracks to the lower yard is so great, the sentinels cannot make themselves heard by the guard."

(20) David Dodge, Town Clerk, Charlestown, Mass. to Colonel William H. Freeman, USMC, dated 2 December 1833:

"The Selectmen beg leave through you to make their grateful acknowledgements to Lieutenant Zeilin, of the friendly dispositon manifested

by that worthy officer on the occasion of the recent riot in town. By his fothwith repairing to the place, with a detachment of the Marine Corps under his command kindly to aid the municipal authorities in the restoration of order. They would also request the favour of you saying to Captain Thos. S. English, that the reasons assigned for declining to leave his post, should a recurrence of similar difficulties take place, appear to them judicious and Just, not doubting in the least, his perfect readiness to render any aid in his power in cases of emergency, so far as a strict reference to the duties of his station would justify.

"Accept, Sir, for yourself the high consideration of the Board."

(21) Captain T. S. English to the Selectmen of the town of Charlestown, Mass., dated 30 November 1833:

"Understanding that it is probable another riot will take place tonight, I think it proper to notify you that it will not be in my power to render you any assistance for the following reasons - Viz. - that I am bound in the first instance to protect the public property under my charge; that the scene of the riot is in the immediate vicinity of the public property and I have not more than force sufficient to protect that in case of attack. If any injury should be done to the property in the Navy Yard, while I was from my post suppressing the riot, I should be held responsible.

"The Laws of the State provide the means for the suppression of riots by the Police and Militia of the state and I am advised that in case I should fire upon and kill any of the rioters, your orders would not be sufficient to justify me.

"The President of the United States may order out the United States troops to assist the State authority to suppress insurrections, and I know of no other authority that would justify me in taking the lives of any citizens in time of peace."

(22) Brevet Lieutenant Colonel W. H. Freeman to the Commandant of the Marine Corps dated 4 December 1833:

"The publicity given to the use made of the troops under my command in suppressing a dangerous riot, in Charlestown, which took place in my absence on the night of the 29 ultimo, when Lieutenant Zeilin was on duty as Officer of the Day, renders if incumbent that I should present to you the facts as reported to me on my return on the evening of the 2d instant. I would promise that I had left my post (to go to the country) the day previous to the riot, in the temporary charge of Captain English, as the senior officer of the command, and that by my police regulation the officer of the day is the only one required not to leave the barracks or command for any cause whatever, the others being permitted to do so between stated roll calls and parades. On the night of the riot, Captain English had just gone out between retreat and tattoo, leaving Lieutenant Zeilin the officer of the day, only, on duty in barracks, and in that time application was made by the Selectmen of Charlestown, Mass., for the aid of the Marines, which under the immediate exigency of the case Lieutenant Zeilin promptly rendered, and returned to the barracks at tattoo and reported the circumstances to Captain English who had just returned to his quarters.

On the following day there being apprehension of a renewal of the scenes of the preceding night, Captain English (having taken Legal advice) appraised the Selectman that it would not be in his power to render any aid, for the reasons assigned in his communication to them, a copy of which is herewith enclosed; and also a copy of a letter addressed to me by the Selectmen on the subject. The whole will, I trust be a satisfactory explanation to you.

"As a question appears to arise however as to the authority or propriety of rendering any such aid when called upon by State authority, and apprehending myself that extreme cases alone, if any, can justify a United States officer in rendering it, even where it cannot jeopordize the public trusts or duties reposed in him, and as aid has been and may be required by the Warden of the State prison in this vicinity to suppress insurrections of the convicts, I have particularly to request to be instructed on what authority and how far I may be justified in using the force under my command for such purposes."

(23) Levi Woodbury, Navy Department, to Commandant of the Marine Corps, dated 11 December 1833:

"I have received you communication of yesterday, enclosing Lt. Col. Freeman's letter of the 4th Instant to yourself with enclosures - relative to the aid rendered by the Marine Guard of the Navy at Charlestown, Mass. in quelling a riot, on the application of the civil authorities of that town.

"Having consulted the President - it is concluded that no occasion exists for any new general order on the subject by this department.

"In all cases of sudden civil disturbances, when the municipal authorities ask the aid of the United States troops it is best to consider the military as subject to the civil authorities and to assist them if not thereby endangering the public property. This is to be done generally not in their capacity of United States troops - but the assistance had better be given in that of good citizens duly called on by the civil power, to aid in preserving the public peace."

(24) History of the Boston Navy Yard 1797-1894, Part 2, 250-252:

"1834 - August, on the 4th, the United States Deputy Marshall for Massachusetts, came to the yard with a warrant, accompanied by the Commander of the Cutter, and asked the aid of a Corporal and five privates Marines, to take the prisoners to the Boston Jail. An order was accordingly given to LtCol Freeman, commanding the Marines, to furnish the required guard, which he declined saying, "the application should have been made to him," but granted the required force on the Commandant making it a request.

Commodore Elliott writes in consequence, "This will I trust convince the Department, of the extreme necessity of having but one head to an establishment, where even a call from the Marshal of the district, although properly made cannot be complied with, unless it is addressed to an inferior officer, nominally under the command of the Commandant of the Yard.

(Note: The above had to do with furnishing a guard to assist the U. S. Marshall to conduct some prisoners from the Revenue Cutter

Hamilton - who were charged with mutiny - to jail. The outcome was that, on August 13, 1834, Archibald Henderson, Commandant of the Marines, wrote LtCol Freeman a mild letter of reprimand for declining to furnish the guard upon the order of Commodore Elliott.

(25) Commandant of the Marine Corps to Honorable Mahlon Dickerson, Secretary of the Navy, dated 7 October 1834:

"During the present year the duty of inspecting the Stations of the Marine Corps at Gosport, Va., Philadelphia, Brooklyn, Boston, and Portsmough, N.H., has devolved on me as the Commandant of the Marine Corps. The Non-Commissioned Officers, Music and privates were found in as perfect a state of Military effectiveness as the limited number at each post could admit of. The duty imposed on the guards of protecting the property in the Navy Yards, requiring that recruits be put on post before they are throughly drilled, prevents the officers from introducing a complete system of military drill. Not withstanding this it gives me pleasure to report that no neglect of duty has come within my knowledge at any one of the posts. It also affords me gratification to state that the men appear free from habits of intemperance so destructive to personal respectability and to Military effectiveness."

"The positions now occupied by the Barracks in the Navy Yard at Norfolk, Philadelphia, New York, and Boston are required for other purposes in the general plan for them approved by the President. The time cannot therefore be distant when their location will have to be changed. I would respectfully and seriously recommend to the consideration of the Government the necessity of preserving the Military Character of the Corps. Its utility and effectiveness almost wholly depend on it. I would therefore strongly urge the propriety of the Marine Barracks being removed from the Navy Yards and placed in such situations as to afford the daily detail of guards for the protection of the public property within the yards, and those guards to be entirely under the control of the Naval Commandants. The increased rank given to the Corps by the late Law will assign to each important station of the Corps a Field Officer. It is hardly to be supposed that Naval Officers would wish to have any control over a system with which they are entirely unaquainted, and I should think a Guard sent to the main gateway and placed under their orders would be all they reasonably could expect or desire. Adjacent to each important Naval Station there is an Hospital or asylum and I would beg leave to submit for consideration whether the location of the Barracks should not be made with a reference to it as Military protection may be necessary there. In conversation with Commodore Elliott at Boston, erected on a portion of the Hospital ground."

(26) History of the Boston Navy Yard, 1797-1874, Part 2. 259-260:

"1836, May 29th - By order of the President, the Marine force which had been attached to the station, under command of Lieutenent Colonel Freeman, marched from the barracks, and left to serve with the Army in an expedition against the Creek Indians in Florida, and a guard of ten yard men was appointed by the Commandant, and he adjoined in a general order increased vigilance on the part of the officers of the

Yard, and Receiving Ship to prevent the desertion of the recruits."

"1837. Towards the close of the year, Commodore Downes and Lieutenent Colonel Freeman were appointed a board to make inquiries as to a suitable site for a (Marine) Barracks in the vicinity of the Navy Yard and the price at which a site could be purchased. On the 8th of December they reported that the only suitable lot in the vicinity was one situated directly opposite the Eastern end of the Navy Yard, and separate from it by the Salem Turnpike on which it fronted 1082 feet, and was bounded by the Mystic River on the N.E. forming a parallelofram of 1028X387 feet They further reported the lot as owned by four proprietors, Commodore Hull owning a small strip, the Salem TurnPike Corporation owning another, and the remainder and greater part being owned by Ebenezer Breed, and Mrs. Shaw. On a part of the lot was the remains of a hill which could be advantageously used in levelling the Navy Yard, and the whole could probably be purchased for $25,000. The site of the officers houses at the N.E. end of the Yard could be used in connection with this site for the barracks, and the officers quarters placed where the Marine Barracks were. It is needless to say these recommendations have been carried out."

"1851, October 22nd - The Commandant writes that he considers the public property in the yard much safer with six Marine Sentinels and officers to patrol, or as the rounds, through the yard three times at night, than with any number of watchman "under the Present systen"

"1872, November 9th - a fire broke out at 7:30 pm on Summer St., Boston which by 8 pm got beyond the control of the Fire DePartment. At 2:20 am. 10 November., a detachment of Marines was sent from the Barracks to assist in protecting property at the fire. The Marines returned 12:30 pm, on the 11th at 2 pm, the Marine Guard was taken off the yard, and sent to Boston to protect property and returned at 5:55 pm."

"1873, May 30th - on the 30th of May, when the Globe Theatre and other valuable buildings were destroued by fire and the safety of Boylston Market House was threatened, th two steam fire engines belonging to the yard were sent to assist and at the request of the city authorities the Commandant ordered a detachment of Marines to be sent over and placed under the orders of the Mayor of Boston. This detachment was under the orders of Captain Collum., and his force consisted of 1stLt W. Wallace, 2dLts. J.C. Shailer, and J. T. Broadhead, four sergeants, three corporals and fifty-nine privates and proceeded to the City Hall where orders were received from the Honorable H.L. Pierce, Mayor. At two o'clock p.m. the detachment was reinforced by the fifteen men from the Guard of the U.S. Ship "Ohio" under the command of 1stLt J.H. Sherburne; also twenty-one men from the guard of the U.S. Ship "Powhatan" in charge of a sergeant. At three o'clock they were relieved by a detachment of the fifth Artillery until six o'clock p.m., when they again went on duty, and remained until the next morning. The streets were thoroughly patrolled during the night and the utmost vigilance was observed. Subsequently the City Government officially recognized the services of the Marines on this occasion, and at the time of the great fire in November 1872, and the Mayor

invited the officers to a banquet at the Parker House."

In his annual report for 1876, the Secretary of the Navy recommended an appropriation to erect a boundary wall on the southwesterly side of the Boston Navy Yard, "for the protection and safety of the Large amount of public property stored in the vicinity."

In 1892, the Marine guards at the various Navy Yards, including the one at Boston, were reduced to skeleton status because of the unusual demands for their services elsewhere. A Marine guard was assigned to participate in the opening ceremonies of the World's Columbian Exposition at Chicago, Illinois., and to maintain a permanent guard at the Exposition during the summer months; a special force of Marines were assigned duty at the quarantine station at Sandy Hook New York; and additional Marines were required for the newly commissioned ships of the Navy.

In 1896, Congress authorized an increase of 500 enlisted Marines in the Corps which permitted an increase in the personnel of the Marine Guards at the various Navy Yards. As a result, the Commandant of the Marine Corps requested the building of another story to the barracks at the Boston Navy Yard. He also requested that the lights in the barracks be changed to electricity due to the "poor quality of gas lighting."

The Marines at the Boston Navy Yard, and other navy yards were again reduced in 1898 when a battalion of Marines known as the "Guantanamo Battalion", was organized under Lieutenant Colonel R.W. Huntington, for service in Cuba.

This battalion left Brooklyn, N.Y., on 22 May 1898, in the USS Panther, and landed at Guantanamo Bay, Cuba, on 10 June 1898, under cover of the guns of the USS Marblehead and other gunboats. The battalion arrived back at New York, 22 September 1898.

In 1907, the Commandant of the Marine Corps, Brigadier General George F. Elliott, requested that an addition be built to the Marine Barracks at Boston, as a "recent report had shown that the officers' quarters and barracks were seriously over-crowded," and "that additional space is necessary for their health and comfort." In the naval appropriation act approved on 4 March 1913 provision was made for a new Marine Barracks at Boston and for new officers' quarters," for which $10,000 and $48,000, respectively, were appropriated."

Due to greatly expanded responsibilities and duties during the two World Wars, the personnel at the Boston Barracks was increased. For example, the personnel was increased from six officers and 200 enlisted on 14 February 1941 to a peak of 14 Officers and 624 enlisted on 1 June 1943. The strength was 19 officers and 316 enlisted on 1 August 1946. During World War II, the Marine Barracks maintained outpost detachments at South Boston, Squantum, Chelsea, Lockwoods Basin, Woodshole, and Chatham.

During World War II, a number of minor alterations and construction projects were carried out at the Boston Barracks; additional sleeping space was provided in the Barracks by placing two rows of double bunks, ten to a row, at the top of the stairway well; toilet facilities were installed for the Marine Corps Women's Reserve on the second floor

of Building #136; screens completely enclosing the arcades of the Marine Barracks were installed; exhaust fans were installed in the galley and messhall; and a small building was constructed to house inflamable liquids.

In April 1966 the Marine Exchange was closed at Marine Barracks. This was the first official Exchange authorized for the Naval Service. Acting Secretary of the Navy, Theredore Roosevelt authorized it in 1897.

In Jan and Feb 1971 the Enlisted Club (Globe and Anchor) was remodeled. New Carpet and new furniture was installed for a cost of around $6000.

In 1972, a steamroom and shower was added to the weightroom. A new underground sprinkler system was installed in the parade deck. The Staff NCO's Quarters were renovated for a cost of $18,000. The 3 decks of the Enlisted Quarters was repainted. The front of Marine Barracks was repainted. The Commanding Officer submitted to HQMC a proposed plan to modernize the Enlisted Barracks, by building 1 man cubicles, Buying new furniture; Consisting of Hollywood beds, carpet, smoking stands, desks, and drapes.

During the early days of the Boston Barracks, the commanding officers of Marine Detachments in the various ships laid up or outfitted at the Boston Navy Yard were assigned temporarily as commanding officers of the Marine Barracks at the Yard. As a result, the following list of "Commanding Officers, Marine Barracks, Navy Yard, Boston, Mass.," is not complete, that is, for the early days, as it would mean checking the muster rolls and logs of every ship laid up or outfitted at the Boston Navy Yard. The list is as follows:

1stLt. Henry Caldwell.....May 1802 - June 1803
1stLt. Robert Greenleaf.....June 1803 - November 1803
1stLt. Newton Keene.....December 1803 - Nov 1805
1stLt. Robert Greenleaf.....December 1805 - Feb 1807
1stLt. Henry Caldwell.....March 1807 - Nov 1807
(Not Shown).....December 1807 - Aug 1810
Capt. James Thompson.....September 1810 - Dec 1810
1stLt. John Brooks Jr.....December 1810 - May 1811
Capt. Henry Caldwell.....June 1811 - Feb 1812
Lt. Charles L. Manna.....March 1812 - 2 Sep 1813
Capt. William Anderson.....9 Sep 1813 - 27 Aug 1815
LtCol R. D. Wainright.....28 Aug 1815 - Oct 1822
Lt. George Cooper.....Nov 1822 - Dec 1822
LtCol R. D. Wainright.....Jan 1823 - November 1829
Lt. Thomas L. English.....December 1829
Lt. Thomas T. C. Watkins.....Jan 1830 - Feb 1830
LtCol R. D. Wainright.....March 1830 - 12 Jul 1830
LtCol W. H. Freeman.....13 Jul 1830 - Jan 1836
Capt. Thomas L. English.....February 1836
LtCol W. H. Freeman.....March 1836
Capt. Thomas L. English.....April 1836 - May 1836
Lt. F. B. McNeil.....June 1836
Sgt. E. C. Young.....July 1836
Lt. Richard Douglas.....Oct 1836 - Dec 1836
Capt. Thomas L. English.....Jan 1837 - Mar 1837
Capt. Ward Marston.....Apr 1837 - Aug 1838
LtCol W. H. Freeman.....Sep 1838 - Oct 1842

LtCol Samuel E. Watson.....Nov 1842 - 26 May 1847
1stLt. B. E. Brooke.....27 May 1847 - 10 Dec 1847
Capt. N. S. Waldron.....11 Dec 1847 - 14 Apr 1848
Capt. A. N. Breevort.....15 Apr 1848 - 8 May 1848
Capt. Thomas L. English.....9 May 1848 - 1 Nov 1853
LtCol. F. Dulany.....2 Nov 1853 - Aug 1862
LtCol. John G. Reynolds.....Sep 1862 - Aug 1863
Capt. George Butler.....Sep 1863 - Feb 1864
LtCol. Ward Marston.....Mar 1864 - 14 Dec 1864
Capt. J. Scheremorn.....15 Dec 1864 - July 1871
LtCol. James Jones.....Aug 1871 - Mar 1880
Capt. William Wallace.....Apr 1880 - Jun 1880
LtCol. Clement D. Hebb.....1 Jul 1880 - 1 Feb 1885
LtCol. J. S. Brooks.....2 Feb 1885 - 8 Mar 1888
Maj George P. Houston.....9 Mar 1888 - Feb 1890
Col Clemett D. Hebb.....1 Mar 1890 - 9 Jul 1892
Maj Percival C. Pope.....10 Jul 1892 - 15 Dec 1893
Capt. Francis Harrington.....16 Dec 1893 - 14 Jan 1894
Maj Robert C. Meade.....15 Jan 1894 - 20 Dec 1897
Capt. Allen C. Kelton.....21 Dec 1897 - 25 Mar 1898
Maj Percival C. Pope.....26 Mar 1898 - 22 Apr 1898
Capt. Richard Wallace.....25 Apr 1898 - 9 Sep 1898
LtCol. Percival C. Pope.....10 Sep 1898 - 5 Apr 1899
1stLt. L. W. Moses.....6 Apr 1899 - 23 Apr 1899
LtCol H. Clay Cochrane.....24 Apr 1899 - 3 Aug 1900
Col Percival C. Pope.....4 Aug 1900 - 7 Nov 1903
LtCol Allen C. Kelton.....8 Nov 1903 - 31 Oct 1904
(No CO Shown for Nov 1904)
Capt. Charles S. Hatch.....1 Dec 1904 - 7 Jan 1905
Col Allen C. Kelton.....18 Jan 1905 - 11 Mar 1906
Col Thomas N. Wood.....12 Mar 1906 - 25 May 1911
(No CO Shown for June 1911)
Maj Lawrence M. Moses.....1 Jul 1911 - 19 Mar 1912
LtCol Theodore P. Kane.....20 Mar 1912 - 25 Sep 1912
1stLt Edward B. Cole.....26 Sep 1912 - 29 Oct 1912
1stLt William E. Parker.....30 Oct 1912 - 7 Dec 1912
LtCol Theodore P. Kane.....8 Dec 1912 - 1 Jan 1914
1stLt William B. Harrison.....2 Jan 1914 - 27 Feb 1914
Col Ralph Dickens.....28 Feb 1914 - 4 Oct 1914
Capt. Edward B. Cole.....5 Oct 1914 - 27 Oct 1914
2dLt Harold C. Daniels.....28 Oct 1914 - 4 Jan 1915
Capt Harry O. Smith.....16 Aug 1915 - 15 Dec 1916
Maj Newton H. Hall.....5 Jan 1915 - 6 Aug 1915
Maj Newton H. Hall.....16 Dec 1916 - 14 Sep 1918
Capt Angus Wilson.....15 Sep 1918 - 2 Dec 1918
Capt Melville J. Shaw.....3 Dec 1918 - 1 Jul 1920
Col George Van Orden.....2 Jul 1920 - 20 Sep 1921
Col Arthur T. Marix.....21 Sep 1921 - 25 Jun 1922
Capt George F. Adams.....26 Jun 1922 - 5 Jul 1922
Col Arthur T. Marix.....6 Jul 1922 - 14 Jun 1923
Col L. M. Gulick.....15 June 1923 - 4 July 1924
Col Lawrence Mosed.....5 Jul 1924 - 21 Oct 1925
1stLt John C. McQueen.....1 Nov 1925 - 31 Dec 1925
Col Lawrence Moses.....1 Jan 1926 - 31 Mar 1926

1stLt. John C. McQueen.....1 Apr 1926 - 30 Nov 1926
LtCol Harry O. Smith.....1 Dec 1926 - 15 Dec 1929
LtCol William T. Hoadley.....15 Dec 1929 - 17 Apr 1933
LtCol Frederick A. Barker.....18 Apr 1933 - 17 Jun 1934
Maj. James M. Bain.....30 Jun 1934 - 4 Nov 1935
Col. Frederick A. Barker.....5 Nov 1934 - 4 Jul 1935
LtCol Calhoun Ancrum.....5 Jul 1935 - 16 Feb 1936
Maj Frederick R. Hoyt.....17 Feb 1936 - 7 Jun 1936
Col Samuel M. Harrington.....14 Jun 1936 - 16 Jan 1937
Maj Percy D. Cornell.....17 Jan 1937 - 6 Feb 1937
Col Samuel M. Harrington.....7 Feb 1937 - 19 May 1937
Maj Percy D. Cornell.....20 May 1937 - 14 Jun 1937
LtCol Robert Montague.....15 Jun 1937 - 16 Jan 1939
LtCol Harold C. Pierce.....20 Jan 1939 - 29 Mar 1939
Maj Hamilton M. Fleming.....30 Mar 1939 - 10 Apr 1939
LtCol Harold C. Pierce.....11 Apr 1939 - 29 Apr 1945
Col James E. Betts.....30 Apr 1945 - 12 Dec 1945
Col James H. N. Hudnell.....13 Dec 1945 - 17 Jun 1946
Col William W. Orr.....18 Jun 1946 - 10 Jun 1949
LtCol William F. Harris.....11 Jun 1949 - 10 Jul 1949
Col Presley M. Rixey.....11 Jul 1949 - 25 May 1951
LtCol Ralph E. Boulton.....26 May 1951 - 26 June 1951
Col Paul D. Sherman.....27 June 1951 - 21 June 1952
Col Ralph M. King.....22 June 1953 - 31 May 1956
LtCol Francis X. Beamer.....1 June 1956 - 15 June 1956
LtCol Richard G. Warga.....16 June 1956 - 30 June 1956
Col John A. McAlister.....1 Jul 1956 - 7 Aug 1958
LtCol R. G. Warga.....8 Aug 1958 - 3 Sep 1958
Col Edward L. Hutchinson.....4 Sep 1958 - 31 Oct 1959
LtCol C. H. Cowles.....1 Nov 1959 - 12 Nov 1959
Col James B. Glennon Jr.....13 Nov 1959 - 27 Jun 1962
Maj Frederick S. Knight.....28 June 1962 - 22 Aug 1962
Col Thaddeus P. Wojcik.....23 Aug 1962 - 26 May 1965
LtCol William S. Anthony.....27 May 1965 - 22 Jul 1965
Col John T. O'Neill.....23 Jul 1965 - 31 May 1967
Col William G. Dair Jr.....1 June 1967 - 12 July 1969
Col Edward H. Mackel.....13 Jul 1969 - 14 Oct 1971
Lt Col John R. Yatos Jr.....15 Oct 1971 -

upper quarters

QUARTERS B. C. D. C. & F. BUILDING NO. 265: The construction date for these five row houses is listed by the DPW as 1833. However, this building is shown on the Yard Plan of 1828 and a partial deciphering of the occupants listed on this plan matches that found on a drawing of these houses dated February, 1848. Apparently these houses were not originally intended for Naval Officer's quarters but rather as the drawings state "No. 1 is occupied by the Boatswain, No. 2 by the Gunner, No. 3 by the Carpenter, No. 4 by the Master, No. 5 by the Chaplain." From 1857 on until the present day, the Yard Plans identify these houses as Officer's Quarters.

In 1828, these five houses are shown as a rectangular building. The plans of 1848 show these houses to be two rooms deep with a stairhall to the north or right side. The houses were constructed two-and-a-half stories high above a half-basement level. Cooking could have taken place in the cellar room until 1867 when kitchen ells were added. There were two attic rooms, front and back, each lighted by a single dormer.

The design of these buildings probably represents a transitional period between the Bulfinch era of finely detailed lines based on the Adams style in England and the Greek Revival period which was beginning to bloom. The exterior facades were symmetrical and properly organized. The window sash in the three floor levels were six lights over six and in the dormer eight lights over eight of a smaller size. An entrance doorway was set flush in the brick wall and consisted of a four paneled door surrounded by a transom and sidelights.

Changes were to come rather rapidly and consistently after 1865. Rear ells were added in 1867, filled in during 1877, extended again in 1925, 1932 and 1937. Second floors were also added from time to time. The front facade underwent an extensive remodeling in 1872 when the first floor window openings were enlarged to 12 lights, 10" x 21" glass. A vestibule for the front door was constructed out from the main wall about 12 inches and trimmed in wood moldings according to the "Victorian" style of its day. It was about this time the exterior brickwork was painted white. This has subsequently been removed. Extensive "repairs and improvements" to the exterior were completed in 1937 by the WPA. The chimneys above the roof were rebuilt, several dormers added and new additions to the rear built. Some walks and ground improvements were done at this time and in 1957 a landscaping planting plan was completed.

QUARTERS B, C, D, E, F, additions and corrections.
The quarters were constructed over a two year period from 1831 to 1833. They originally appear, as proposed, on the Baldwin Site Plan of 1828 (as do many structures that were not actually built for many years.) The plan of the buildings was very similar to that used in the "Lower Quarters: L,M,N,O" at the east end of the yard. Alexander Parris may have had a hand in the execution, but there is no proof of this other than the

fact that he was working in the yard at this period, and designing most of the other buildings for the Shipyard.

In 1832 a request for money was made by the Commandant for "...completing Warrent Officer's House in Block #7, authorized in 1832, and towards the two other houses: $9,000." (Preble, p. 209.)

Instructions are sent that "...the two additional houses on Site #7 are to correspond with those already built." (p. 210).

The changes to the backs of the quarters occurred gradually, over an eleven year period from 1867 to 1878. Houses C and D were first to receive additions in ca. 1867. House B addition commenced September 30, 1878 (refer to field notebook, p. 29). House F addition was completed in January of 1879 at a cost of $1,613.

An early photograph taken just following the 1872 facade change is included in Preble's notes.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES

QUARTERS B, C, D, E, and F, important photos.

F457-N15	Fronts of quarters, May, 1903, 8"x10" negative.
nn.	Views of quarters in bound booklet, photos 3"x5", ca. 1915.
5830	Exteriors, March 19, 192] from the north and from the south.
367-36	View of Charlestown from quarters E, looking toward Henly Street, 1936.
368-36 to 372-36	Yard shots around the quarters, 1936.
738-36	Addition during WPA Program to quarters B and D, 1936 and 1937.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

<u>QUARTERS B, C, D, E, AND F, important drawings</u>.

B-01
77 B12 "Plan of Basement, Parlor, Chamber, and Attic floors of House B," April, 1870.

C-01
90 B16 "Plan of Basement, Parlor, Chamber, and Attic floors of House C," May, 1870.

D-01
97 C23 "Plan of Basement, Parlor, Chamber, and Attic floors of House D.," October, 1870. Extension plans visible.

E-01
98 B 19 "Plan of Basement, Parlor, Chamber, and Attic floors of House E," November, 1870. No extensions.

F-01
180 B39 "Plan of Basement, Parlor, Chamber, and Attic floors of House F," November, 1870.

BF-05
76 D6 "Plans (crossed out in pencil), Elevations and Section of Five Dwelling houses, Site 7, Navy Yard, Boston, Constructed of Brick with slated roof, occupied by Boatswain, Gunner, Carpenter, Master, and Chaplain. February, 1848." Indications of the sloping site are clear: basement windows of B have full "6 over 6", with nine steps to door; one dormer in each attic, centered, six chimneys.

BF-01
78 C19 "Diagram of Officer's Quarters, August, 1865, Estimated Cost, 12,000 dollars." Back additions proposed.

BF-06
79 A42 "Sections, elevations and Plans of Officer's Houses B, C, D, E, and F, occupied by Boatswain, Gunner, Carpenter, Navagation Officer, and Paymaster, December, 1871". "Main building built of brick with brick division walls and wood partitions, the roof covered with slates. The Ells of wood with shingle roofs," the entries are a different style than in BF-05, before one door surrounded by glass side windows, now two doors, no side glass, more Victorian in style.

C-08
1059C206 "Plan of addition to Houses C and D, August, 1872."

C-07
1051D272 "Section of arch under vestibule, Officer's Houses C and D, Civil Engineer's Office, October 19, 1872.

C-02
91 D12 Section through Vestibule, Houses C and D; Oct., 1872.

C-05
95 D 14 Threshold for Officer's Houses C and D; Oct., 1872.

BF-02
80 C20 "Proposed extensions to Houses B,C,D,E, and F, Navy Yard, Boston; Bureau of Yards and Docks, Navy Dept. Washington, July 5, 1872." The proposal as sent.

C-04
93 C22 "Plans and Sections of roof for extensions of Officer's Houses C and D., October8, 1872.

BF-04
83 B13 "Plan of first story of Extensions, Officer's Houses B, C, D, E, and F, September, 1872."

BF-07
83 B14 Plan of Second story of extension..., September, 1872.

BF-08
84 B15 Plan of Basement story of extension..., Sept., 1872.

BF-11
682B148 (The Victorianization of a row house!) A proposal for an additional story on the Officer's Houses, with mansard type roof, other victorian decorations, March, 1872., estimated cost $17,000.

C-03
92 B17 New doors and vestibule entry: "Plan, elevation, and section of vestibule of Officer's Houses C and D." ("upper block" is written in pencil, implying the scheme was used throughout the entire five entries. Shows victorian-type door as first appeared in BF-06, October 14, 1872.

C-06
96 B18 "Plan of Attic Story of Officer's Houses C and D; March, 1873.

F-03
85 D7 "Sketch of part of upper block of homes, made for the use of Comm. Rodgers, USN, Chief of Bureau of Yards and Docks"; "Lengthening the windows (main level) and keeping the same width will cost about $50./window..." August 9, 1873.

B-02
86 D8 "Extension of House B, U.S. Navy Yard, Boston, September, 1878."

B-03 87 D9 — Extension to House B, "Cornice (of addition to B) to compare with house C." September, 1878.

E-02 105 D15 — "Proposed door at bathroom, House E." July 18, 1878.

E-05 102 C27 — "Proposed addition to House E," August, 1877; showing basement and first floor plans.

E-107 103 C28 — Ditto, showing second floor plan and sections.

E-09 104 C29 — Ditto, showing framing, all on vellum., same date.

E-04 99 C24 — Copy of E-05, on linen, same date; likewise E-06 is a copy of E-05, and E-08 is a copy of E-09, all on parchment linen.

MORE RECENT DRAWINGS OF CHANGES, ETC.

BF-12 — New Bathrooms and services, second floors, Sept, 1911.

BF-13 — Plan showing existing and proposed bathrooms, Oct., '11.

BF-13 etc. — (misnumbered) Proposal for new outdoor railings, 1915 and 1916; Brass railing carried out.

BF-15 — Landscaping and planting plan, 1957.

B-7 B-8 — Wood and granite work on Kitchen and Pantrywindows, ca. 1901. Two drawings.

B-10 — Wiring for lights, 1902; B-15 lighting changes 1937.

B-13 — Proposed kitchen work, 1924.

B-16 — Small alterations, May 12, 1937; plumbing on B-17.

B-18 etc. — Four drawings for sun porch addition in rear of B, W. P. A. project, also thrid floor changes, 1937-38.

B-25 — Basement hot water supply, November, 1962.

C-11 — Measured drawing for floor plans; 1923 revised 1932.

C-13 Addition to kitchen wing, September, 1932.

C-14
C-15 New additions for storage units for kitchen in quarters C, two drawings, 1932.

D-09 Measured drawing of floor plan, October, 1923.

D-10 Addition of kitchen wing, 1932; and new shower on second floor has same number.

D-11 Third floor changes, July, 1945.

D-12 New toilet, first floor, August, 1952.

E-10 Measured floor plans, sections and elevations, August, 1900.

E-11
etc. Two drawings of new stairs for basement connection, August, 1922.

E-13 Plan of new kitchen, 1925.

nn. Third floor plan, 1938.

F-06 Plan of new kitchen, 1925.

F-09 "Layout of window sizes," January, 1938.

F-13 Floor plans, not measured, n.d.

F-10 New Toilet for first floor, May, 1938.

lower quarters

QUARTERS L, M, N, O: "Lower Officer's Quarters."

The site of Officer's Quarters L, M, N, and O was originally occupied by the Naval and Marine Hospital, one of the oldest in the country, constructed sometime after 1805. In 1825, the Commandant was authorized to pull it down (a new marine hospital was to be built in Chelsea in 1827, and a naval hospital on the adjoining site between 1833 and 1836.) This left the shipyard land available for development. On July 25, 1825, the Commandant was authorized to build four brick dwelling houses according to "the plan sent" (from Washington) on the site of the old hospital. Venetian windows, doors with transoms and sidelights, and dormers on top were instructed.

By 1826, the rooms were ready for painting (Preble, p. 161), making these the oldest quarters in the Yard, besides those of the Commandant or Marines.

The houses formed a rectangular block two rooms deep, originally fronting toward the south. In 1833 funds were appropriated to flip the orientation, so that the main entry could face Salem Turnpike. (Preble, p. 235.) Entries were coupled, resulting in a flip-flop floor plan scheme between dwellings, where in L and N rooms open off the right of the entry hall, while in M and O, off the left. The structure was 2½ stories high above a ½-level basement. Many of the original features here were later copied for Quarters B, C, D, E, F.

In 1867 a one-story wooden extension was added to each of the houses, providing a "lower hall, dining room, additional storage, coal room, and privy." In 1872 the quarters were occupied by Executive Officer, Ordinance Officer, Surgeon, and Equipment Officer, respectively. A photograph in Preble's notes, dated 1874, shows the Chelsea Street fronts much the same way they must have been when completed in 1833.

In 1890 a reconstruction took place, whereby the windows were altered radically (change in size, number, and placement). A third level was incorporated, eliminating the dormers and pitched roof, providing a less steep alternative. Entry locations remained the same; but a single door, sided by lites of glass was replaced with double doors; the glazed transom remained. Gas lighting was installed. Back additions became two stories, plus a basement, of brick. The changes in form are visible on the end walls where the color of the new brick-work is slightly different from the old.

An encircling front porch appeared and was not removed until 1924, when two smaller porches, each covering a pair of entries were built. Interiors have changed repeatedly, especially in 1936 during the WPA overhaul. Additional landscaping occurred in 1957.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

<u>Quarters L, M, N, O; important photos</u>.

11805	November 20, 1920, wood addition for new kitchen, in L and M; exterior.
5850	Back addition, with shutters, from the west, March 25, 1921.
5906	Back addition, with shutters, from the south, April 15, 1921.
7513	From the northeast, exterior showing the old porch, no shutters on the house, May 7, 1924.
7514	Ditto from the southwest.
7755	New porches, looking south, September 30, 1924.
7756	Ditto, looking northeast.
11610	Photo showing porposed placement of wood addition, August 16, 1929.
nn.	Back brick attachment, ca. 1929, shows sign for Capt. C. M. Simmers, manager, as a resident.
579-36	Sun porch in L, July 1, 1936, WPA project.
682-36	Replacement of sun porch in L, August 28, 1936.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

Quarters L, M, N, O; important drawings.

L-01 106B20	"Plan showing the basement, parlor, chamber, and attic floors of House L, January, 1870," from measurements by Mr. Babbitt.
M-01 109B21	Ditto, for House M, January, 1870.
N-01 110B22	Ditto, for House N, December, 1869.
O-01 113B23	Ditto, for House O, October, 1869.
L-O - 01 115 A43	"Sections, elevations, and plans of Officers Houses L, M, N, O, occupied by Executive Officer, Ordinance Officer, Surgeon, and Equipment Officer, respectively." December, 1871. "Main building built of brick, with brick division walls and wood partitions. Roof covered with slates. The ells of wood with shingle roofs." Front windows are Venetian windows.
L-O 17 etc.	"Basement, first, second, and third floor plans, framing plans, and front elevations for the reconstruction of Officer Quarter's L,M,N,O; 1890." Additional windows are added, in a victorian style, four drawings, ink on parchment.

dry dock no. 1

DRY DOCK NO. 1: Ship repair facility. Incised into the upper granite stones at the north end of Dry Dock No. 1 are the following notes: Commenced 10 July 1827 John Q. Adams Pres. Opened 24 June 1833 Andrew Jackson Pres. Loammi Baldwin Engineer. In Timothy Sawyer's book entitled Old Charlestown, Loammi Baldwin opened up an office as a civil engineer in Charlestown in 1808. Baldwin died on June 30, 1838. Sawyer refers to Baldwin as the "Father of Civil Engineering in America." With this background, Baldwin was a likely candidate to supervise the construction of the first two Navy dry docks here and in Norfolk, Virginia. Alexander Parris is also credited with being an assistant to Baldwin during its construction. Much of the granite used in the initial construction came from the Quincy, Massachusetts quarries.

It soon became apparent that the dry dock was inadequate to handle the ever increasing size of the ships entering the Navy Yard for repairs. The first extension to the south end, according to the DPW card files, was completed between 1856 and 1858. The Yard Plan of 1864 indicates that in this year a second alteration was made to the head end, possibly the installation of turning gates. Drawings prepared in 1904, 1907, 1908 and 1940 show proposed alterations to the "Head End" or "Forward End" of the dry dock.

The second major alteration to the dry dock occurred in 1948. The granite extension built in ca. 1857, later revised in 1864 and the early 1900's, was removed and rebuilt with concrete much like it exists today. Many minor alterations have occurred over the years which are listed in the card file. Eighteen sheets of drawings were prepared in 1952 to record the general dimensions and to show all pits including a 22' x 30' Sonar pit.

The original machinery to operate the dry dock was located in Building No. 22, built in 1832. This set-up may have been operative until 1905 when a new pumping station was constructed near Pier No. 4 to serve Dry Dock Nos. 1 and 2. A brick tunnel approximately 10 feet in diameter extends from Dry Dock No. 1 to Building No. 123 for pumping purposes. According to the DPW card file, annual inspections are completed to tabulate all cracks and leaks and to record alignment and elevations.

In the last Navy Yard proposal to up-date the facilities of the yard by 1984, Dry Dock No. 1 was to be completely removed and replaced with a super dry dock capable of holding all but the largest of the naval vessels.

The existing caisson or drop gate used to seal off Dry Dock No. 1 is, according to the Navy personnel, in poor condition. It would be possible to recondition the present caisson and extend its life for five to 10 years but after this a new caisson would be required and, if made operable, would cost an estimated 1.5 million dollars.

DRY DOCK NO. 1, additions and corrections.

The original dry dock was 305 feet long, had both turning gates and a "floating gate" (caisson). The yard still possesses six ink drawings on parchment, dated 1833 or earlier, describing various aspects of the dock and its mechanisms. One undated drawing is entitled "Charlestown and Norfolk Dock" and offers a cross-sectional, dimensioned working drawing of each. The original engine used on the dock was one of Mr. Lester's Pendulum Steam Engines, beginning in May of 1828. There were originally eight lift pumps and eight chain pumps, made by Messrs Lazell and Perkins, of Bridgewater, under the direction of Mr. Lester. (This information comes from the American Mag. of Useful Ideas, Charles Stuart says that there were four of each kind of pump, and that the chain type was soon discontinued due to poor performance.)

The turning gate was replaced with new wood in 1872; and in 1899 a built-up plate box-beam variety was used. The first record of changing machinery comes in an appropriation for repairs in 1840, amounting to $4,500. A field notebook on the Dry Dock, ca. 1890, mentions centrifugal pumps and a Westinghouse engine "on the deck of the Caisson". The notebook also gives dimensioned sketches of the engine on page 10 and 11. In 1892 there are drawings indicating the adoption of Henry R. Worthington's "Vertical steam pump", built by the Southwork Foundry and Machine Co, Philadelphia.

Much of Preble's history on the dock (pp. 212-225) is taken directly (verbatim) from Charles Stuart's analysis in The Navy Drydocks of the United States, published in 1858. Alexander Parris had front and side elevations drawn of the dock engine in 1840, and included them in his portfolio, now in the National Archives. John Wade oversaw the building of the original gates to the dock, and a Mr. Noah Butts had charge of the engine from 1828 until his death in 1859. (Preble mentions that Mr. Butts had a diary, which if located could prove a useful primary source of information concerning the dock.)

Alterations to the south end caused the length of the dock to increase to 370 feet in 1857, and finally to 398 feet in 1948. In 1941, the north end was notched slightly to accomodate larger ships.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

DRY DOCK NUMBER 1, important photos.

nn.	Railway beside Dry Dock No. 1, June 9, 1913, 3"x5" negative.
nn.	Tug in Dry Dock No. 1, ca. 1920's, looking toward the parade ground.
nn.	Three mounted views of the interior of the Dock, ca. 1930.
nn.	View of the head of the Dry Dock, showing the inscription including Jackson's name and Baldwin's name, negatives ca. 1930.
453-30	View looking northwest, long shot of the whole dock, June 30, 1930.
2526-46	Print of the head of the dry dock, showing inscription, dated Aug. 28, 1946. It shows a vertical slot cut into the center of the head of the dock in 1941 to accomodate larger ships.

ENLARGEMENT OF DRY DOCK NUMBER 1, 1948:

80-48	Starting the enlargement of the southeast portions of the dock, Jan. 16, 1948.
270-48	Looking northeast from construction area, showing entire dock, March 24, 1948.
438-48	Lengthening in progress, center line photo, looking north April 29, 1948.
549-48	View looking south on the center line, May 24, 1948.
722-48	Center line looking south, July 23, 1948, showing the lengthening completed.
1858-53	Dry Dock No. 1, east wall with new cable installation, May 20, 1953.
ASF 3300-60	Improvement to the Dewatering system of Dry Dock No. 1, a shot looking at the south floor, July 25, 1960.

PUBLIC WORKS DEPARTMENT, VAULT FILES.

DRY DOCK NUMBER 1, important drawings.

(The Dry Dock Number 1 is filed under several code numbers: 412 and 416 are located in the vault area; 400 and 406 are located on the third floor, section architectural.)

412-08 "Plan of Brace for turning Gate, Copy, July 31, 1832." Signed d.d.Brace and b. Bolt. (Two of the men in charge under Baldwin and Parris, see articles attached).

412-19 "Plan of Pivot, saucer, etc. for turning Gates", Copy, August 2, 1832. Ink wash on linen.

412-12 "Diagram of the Filling Gate of Dry Dock at the BNY," n.d., fine line ink on linen. Elevation and top view.

412-13 "Plan showing position of chain fastened to swinging gate," (in pencil) No date, on linen.

416-17 "Plan of Boilers for Steam Engine of 60 horse power, for pumping out Dry Dock." Boilers 30' long, diameter of 30 inches, obscured note: "Copy...20, 1836. Plan Sections and Elevations ink wash on linen.

416-02 n. d., Fine line ink on linen; obscured title in pencil: "Well and Pump at Dry Dock" ca. 1836?

LATER GATE ATTEMPTS (CODE NUMBER 412)

412-10 "Proposed Plan for Turning Gates for Dry Dock," n.d.

412-07 "Plan of Turning Gates as fitted to the Dry Dock," February, 1849.

412-09 "Front Elevation of Dry Dock Gate," Section on center of Gate, section on end. Sheet no. 1., May, 1872.

412-02 "Plan of top of Dry Dock Gate", Boston, June 1, 1872. Sheet no. 2., companion of 412-09, wash on linen.

412-06 "Elevations of Trucks (bottom rollers) of Dry Dock Gates, August, 1872".

412-05 "Proposed Plan for Turning Gate" Alternate design, n.d. ink and pencil on linen, estimate cost figures.

412-14 One Half of Gate Chamber ("Present Wooden Turning Gate,") June 28, 1897.

412-15 to 412-18 Four sheets on the New Swing Gate, March, 1899. The gate is comprised of box beams, internally cross braced; box beams are built-up plates, the whole gate on bronze wheels.

LATER MACHINERY IMPORVEMENTS (CODE NUMBER 416)

416-18 "Boiler for Dry Dock Engine, Bureau of Steam Engineering, January, 1882."

416-19 "Boiler..." Approved by E. D. Robie, Chief Engineer, United States Navy, Dec. 6, 1881.

416-04 to 416-06 "Plans, Sections showing Proposed arrangement of boilers and pumps of Dry Dock Number 1 (in Bldg. 22), July, 1890."

416-16 "Bulk heads for Pump wells at Boston Dry Dock, Southwork Foundry and Machine Co, Phila., Feb. 6, 1890.

416-07 Steam Suction and Discharge, pipes for 27" Centrifugal pumping plant at the Dry Dock, Southwork, March, 1891.

416-08 Arrangement of Discharge pipes, April, 1891.

416-09 "Foundation plan of two 27" Centrifugal Pumps with two 18" by 18" Vertical Engines for Dry Dock," May, 1891.

416-10 "Worthington Vertical Steam Pump," Size: 14x17x15, January, 1891, (Henry R. Worthington, New York.)

416-11 General Elevation by H.R.Worthington, March 10, 1891.

416-14 In pencil: "Pumping equipment for Dry Dock 1, installed in building 22 about 1892 and used until 1904, built by Southwork Foundary and Machine, Phila.

416-15 etc. Drawings of new boiler plant for pumping engines, 1890.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

<u>DRY DOCK NUMBER 1, important drawings</u>.

(Files 400 -stonework-, and 406 -caisson- are located on the third floor, in the east section of building 200).

400-06 252E23 Drainage culvert, dry dock 1, n.d., ink on parchment.

400-26 896D220 Plan, section, and elevation of Gate Recess at the end of the discharge gutter, n.d.

400-29 901D225 Rabbet for Gate at head of the discharge culverts, (pencil changes and remarks added in 1882.)

400-35 909D233 Gate at the Head of the Filling Culvert.

400-04 154E10 Elevation of...Hole in the ...Arch of the Dry Dock. n.d.

400-03 123E4 Arched Port to Filling and Drainage Culverts, Dry Dock.

400-30 902D262 Transverse Section of Chamber of Dock, May 31, 1830, granite pieces are sized in section.

400-11 504E42 "3 cantilevers of this form on each gate..." "Cast Iron Cantilever for Foot Bridge" Copy, Feb., 1833.

400-14 588E55 Plan of Gutters round the Dock..., Copy, July 12, 1832. Shows seven capstans around the dock.

400-37 924E96 Well at gate chamber of Dry Dock, showing connection with...hole.

400-27 897D221 "Offset for the steps, section near filling culvert." July 3, 1830; on the reverse side in pencil: for Mr. Turner.

400-13 500E47 "Plans, section, elevation of Capstan at Dry Dock."

400-21 725G162 "Charlestown and Norfolk Dock,"dimensions for height of both docks, a cross section, undated.

400-33 906D230 Front Elevation of Dry Dock. no date.

400-36 910E94 Culvert leading from Dry Dock to Pump Wells.

400-01 Plan, section, and elevation of dock, granite sized, showing piling below.

400-09 457D130 Isometrical view of Dock Head, left side; on the back of the drawing: "dry dock extension, plans."

400-08 455D129 Stonework for extension of Dry Dock, August 15, 1857. Jos. E. Billings, Eng.

(Many more, more recent drawings exist as well, including the set for the second enlargement of 1948. The following drawings are the early caisson documents.)

406-01 400D124 "Plan of Floating Gate" copy Feb. 25, 1842, ink on brown paper, torn.

406-02 "Plan, Sections, and elevation of Floating Gate,"n.d., ca. 1842, ink on brown paper.

406-03 451B102 "Drawing of Caisson to Dry Dock, n.d., ink on vellum.

406-07 737C166 "Dry Dock Floating Gate" Bureau of Yards and Docks, Navy Department, October 7th, 1879, ink on vellum.

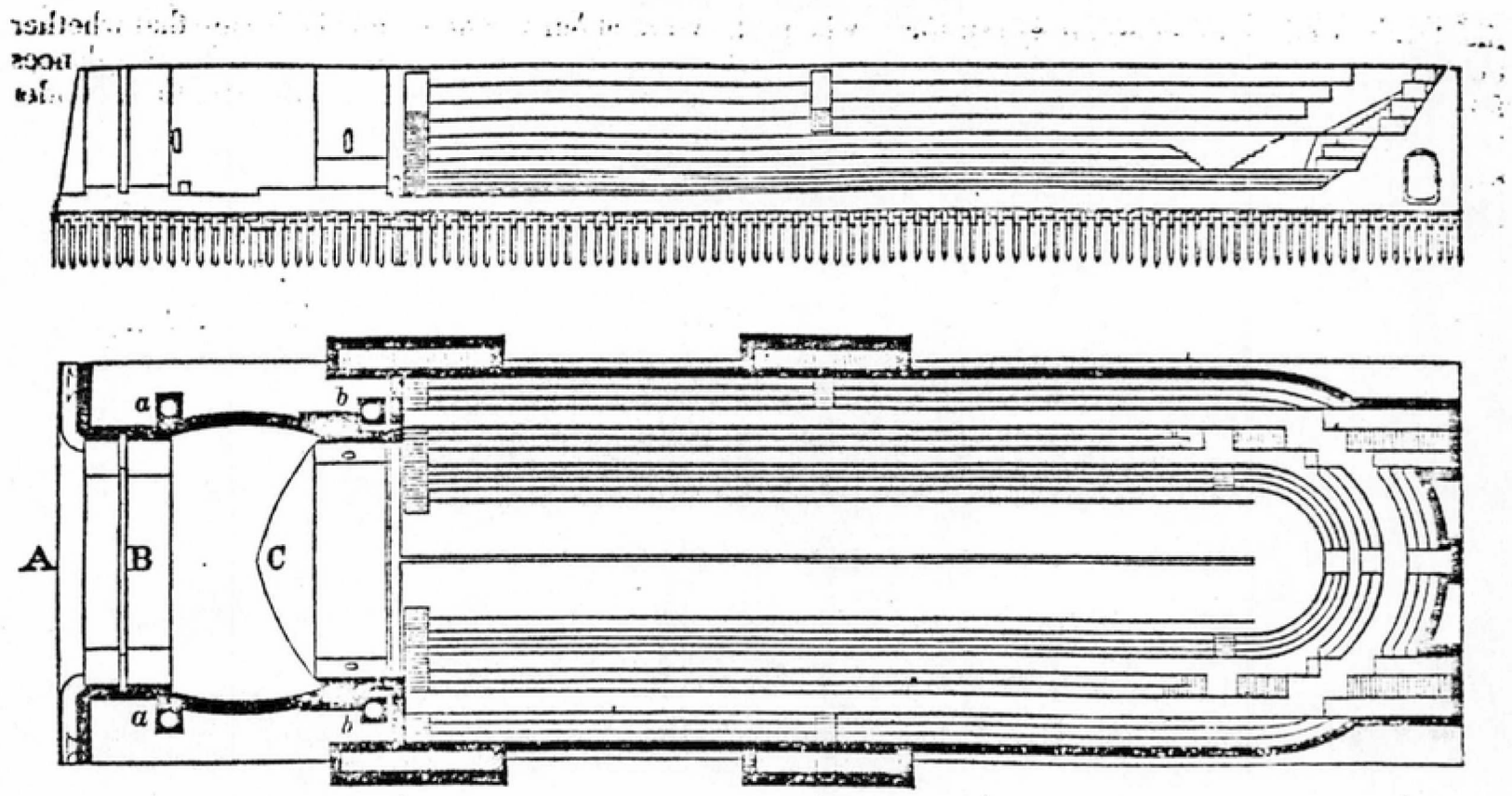
406-06 729A139 "Plan, section, and elevation for Dry Dock Floating Gate" Navy Yard, January, 1872, ink wash.

406-05 728A137 Plan, sections, and elevations of Proposed floating gate at Dry Dock, August, 1883, ink wash.

"Dry Docks," Bunker Hill Aurora, (June 3, 1837), p. 2.

The cost of the dry dock in this town was $677,000.; that at Norfolk $950,000. Labor in Masonry at the Charlestown dock $125,502.60; the same labor at Norfolk (63% more) $201,816.79. The docks in France at Chetbourg, Brest, Loire, Rochefort, Toulon, etc., are more extensive and costly. In England, there are Dry Docks at Deptford, Woolwich, Chatham, Sheerness, Portsmouth, Plymouth, Milford Haven, and some other places. The last named is at the confluence of Bristol and St. Georges' Channel (237 miles from London,) and is said to be a magnificent work. It contain Wet and Dry Docks, Basins, Warehouses, Ropewalks, etc., on an extensive scale. At Deptford, the Docks occupy 31 acres. That at Woolwich is a mile long, --that at Chatham the same. The one at Sheerness, occupying 60 acres, cost $14,400,000.

AMERICAN MAGAZINE OF USEFUL IDEAS, vol. 1; Boston, 1835, pp. 298ff



DRY DOCK AT CHARLESTOWN.*

REFERENCES.—A, is the entrance to the dock; B, is the floating gate, and C the turning gates. *aa*, shows the situation of the capstans for opening the turning gates, and *bb*, the situation of the capstans for shutting them.

An account of the dry dock in Charlestown, belonging to the United States, and recently constructed for the ships of the Navy, it is thought, will be acceptable to many of our readers.

Surveys for a site for a dry dock were ordered by Congress, May, 1826, and were soon after made by Colonel L. Baldwin, of Masssachusetts; and in 1827, it was concluded to construct two, for the use and benefit of the Navy of the United States; one north and the other south of the Potomac. After the necessary preparations were made,† a *coffer dam* was first built, in front of the old battery, in the Navy Yard at Charlestown, extending beyond the low-water mark, consisting of two rows of sheet piles, from eight to thirteen feet apart, the spaces filled with earth to resist the pressure of the tide during the building of the dock. Six hundred feet of quay wall, with an embankment, was also built, the north-east side of the site for the dock.

The excavation was begun in May, 1828, and sheet piles, plank and other timber prepared for the foundation of the dock; and stone cutters employed to get the stone in readiness, for the superstructure. In May, 1829, the first stone was laid, while the other necessary work was going on. The foundation is composed of piles three feet apart, driven about eight feet deep, on which rest timbers one foot square; the space between being filled with broken stone, which are also rammed under the timbers to the depth of about eight inches. An additional row of piles is driven along the axis of the dock and under the keel, the distance of two hundred feet. On the timbers is laid a course of three inch plank, well secured with spikes and treenails; and another course of timbers, sixteen inches deep, directly over the piles; and the space between the timbers filled with brick, laid in water-proof cement. On this is another course of plank like the first, and secured in like manner; making a level floor, on which the stone-work of the dock rests. Round the whole exterior boundary of this floor runs a line of sheet piling, to prevent the passage of water under the floor, and to stop its admission between the two courses of floor plank. Under the gates and crossing the dock are similar lines of sheet piles connected with those on the sides, and well secured to additional cross sills and timbers.

The stone work commences at the depth of thirty-two feet below ordinary high water, rising four feet above it, and covering an area of one hundred feet wide, three hundred and forty-one feet long, as given below; viz:

	ft.	in.
From the outside of the wing-walls to the beginning of water-walls of entrance	5	9
Thence to beginning of recesses for turning gates,	21	3
To point of mitre sill,	21	8
To line of heel posts of turning gates,	14	0
To gutter, (the bottom and side walls being curved,)	18	0
To face of return walls at foot of chamber of dock,	4	0
To centre of semi-circular head of dock,	206	0
To head of dock within the coping, being the radius of the head,	43	0
To extreme end of backing at head,	7	3
Total,	340	11

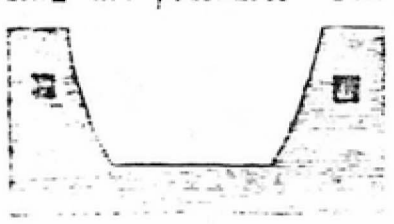
The interior structure of the dock: the stone floor is thirty feet wide between the first *altars*, and at the lower end, at the discharging gutter, the whole masonry is four feet deep on the floor. From this end, the ascent to the centre of the semi-circular head is one foot three inches in a distance of two hundred and six feet, and in the middle of the floor, and under the blocks on which the keel of the vessel is to rest, runs a gutter, one foot wide, for leading the water to the discharging gutter. From the bottom of the dock, on each side, rise *altars*.

* Wet docks have long been used; but dry docks are quite a recent invention, and are designed as a receptacle where a ship may be inspected, and all its defects detected and easily repaired. The dry dock must be perfectly water-tight, and the greatest skill and care are requisite in its construction. The expense is necessarily very great; and therefore, for small vessels the marine railway is more in use for repairs.

† Alexander Paris had the superintendence of the work, and was assisted by Edward Battles, a very ingenious mechanic.

from one to four feet high, and from two to four wide, and ascend to the top of the dock, conforming nearly to the form of the sides of a vessel, but leaving sufficient room for the workmen when repairing in dock; and running throughout the whole extent of the chamber, except where interrupted by stairs and slips, giving a depth of thirty-two feet from the *coping* to the floor of the dock, and eighty-six feet interior width, between the faces of the coping. The semi-circular head is formed with altars having rises and breadths corresponding to those on the sides. There are six flights of steps to descend into the chamber and five sets of slips at the head, for getting down timber or other materials. The discharging gutter at the foot of the chamber of the dock, is continued through the masonry of the return walls, on each side, in *arched culverts* two feet wide and five feet high; extending forty feet from the axis of the dock. Here the water will be discharged into *side* culverts, two feet six inches wide and four feet high, arched at top and bottom, extending about two hundred and fifty feet to a *reservoir*, arched at top and bottom, of seven feet width and eleven feet extreme height, and about eighty-five feet long. From this reservoir the water is conducted by a tunnel to the great wells whence it is pumped out and carried by a drain about four hundred feet long, to the sea.

The side walls and bottom of that part of the entrance between the foot of the chamber of the dock and the turning gate posts form an inverted arch. The turning gates, which are thirty feet ten inches high and about thirty-six feet wide each, are composed of twelve white oak ribs, two feet square, and carved into a radius of about seventy feet, tenanted into heel and mitre posts, planked and coppered. The heel post turns on a composition metal pivot, and two rollers are attached to the lower rib, one near the mitre post and one near the middle, and are made to traverse on cast iron tram plates let into the floor of the dock. The gates are opened and shut by means of chains attached to the mitre posts and connecting with capstans placed on the coping. From the heel posts to the end of the gate recesses, the walls have a horizontal curvature, conformable to that of the gates. The mitre sill, against which the gates shut, and the floor over which they swing, are horizontal: the former being one foot six inches higher than the latter, and thirty feet below the top of the dock. The side walls of that part of the entrance, beginning at five feet nine inches from the sea, and extending to the recesses of the gates, are partly curved. The floor between the feet of the interior faces of these side walls is horizontal, and is thirty feet below the top of the dock. In these side walls and bottom is cut a groove of two feet wide and fifteen inches deep, to receive the *floating gate*, to be used in case the turning gates should require repairs, or to relieve the strain on them by dividing the pressure. The floating gate is formed like a vessel, with the stem and stern similar. The frame work consists of twelve horizontal ribs, the six lower of which are of live oak, and the three middle of white oak and the upper of pine: the specific gravity of which regulates its position in the water: these ribs are planked and coppered. When it is required to use this gate, it is floated into the direction of the groove, so that the keel may enter it, and filled with water, which causes it to sink, and forms a barrier against the sea.



Along the backing masonry of the side walls of the entrance, are two *filling* culverts, one on each side, two feet six inches wide, and of the same height, and twelve feet below the top of the coping. They open from the tide water, in the exterior face of the wing wall, and extend eighty-four feet to square *well rooms*, constructed near the beginning of the discharging culverts.

All the faces of the interior masonry of the floor and altars, the faces of the entrance and wing walls, and bottom of the entrance, are of hammered stone work, laid in water-proof cement. The bottom courses of masonry over the whole floor, about one foot six inches in depth, as well as one foot six inches in thickness around the whole exterior backing of the dock and entrance, are also laid in cement. In all such parts of the masonry of the dock, where it has been deemed desirable, the courses of stone are so arranged as to form arches, to resist the upward pressure.

The whole stone work in the dock amounts to about five hundred thousand cubic feet. The stone was quarried at Quincy, and is furnished by contract. It was brought on the railway to the landing on Neponset river, and thence transported to the Navy Yard in steam tow-boats.

The reservoir and discharging culverts, before described, are designed to facilitate the docking of ships: the admission of water from the tide, either into the dock or reservoir, or from the dock to the latter, being commanded by *draw-gates* or *shutters*.

When a ship is to be docked, the filling culverts are closed, as well as the passage from the dock to the discharging culverts and reservoir, and the water is pumped from the latter. The ship is then admitted, and the ponderous gates closed. In this situation, the discharging gates are drawn, and the water allowed to flow into the discharging culverts and reservoir, and thus, in a few minutes, the water is lowered several inches in the dock to hasten the shoring, and produce an immediate pressure on the gates, so as effectually to prevent the admission of water, and fix them steadily. The reservoir and culverts contain above seventeen thousand cubic feet of water: the water in the dock, &c. supposed level with the top of the upper altar, or four feet below the coping, at one foot in depth, is a little more than twenty-one thousand feet: and of this quantity, a ship of the line admitted at full draught, would displace above nine thousand cubic feet; consequently, to reduce the water one foot when the ship is in dock, only twelve thousand feet need be admitted to the reservoir and culverts; and the dock water may be lowered about one foot five inches to fill them. A complete command of the level, at the moment when a ship, especially a large one, is about to touch the blocks and to require the placing of shores, seems very important: and this mode will give a more perfect control of the opera-

tion, for the first foot, than could be obtained by the best regulated pumps or machinery.

The water is afterwards to be pumped out by the steam engine near the head of the dock. As the water is lowered the ship is propped up by shores, and is then ready to undergo repairs, which can be conducted with great facility and security.

Some doubts having been entertained as to the operation and efficiency of Mr. Lester's pendulum steam engine, and of its power to move all the great pumps, the following statement of their effect may be satisfactory. The cylinder of the steam engine is sixteen inches diameter, with a piston of forty-six inches stroke. The lower end of the piston rod is connected with a double crank, having a main shaft extending in opposite directions, and at the extreme end of each is a pinion of seventeen teeth. These two shafts are moveable, independent of the machinery which moves the pumps. Parallel with each main shaft are two other wrought-iron shafts, lying on a strong cast iron frame over the wells. These four shafts, called the pump shafts, have each a wheel of sixty-eight teeth at the outer end, geared and ungeared at pleasure into the pinion, with a crank pin, and a corresponding crank at the opposite end of the shaft, with a radius of eighteen inches. By the crank-pin and crank, each pump-shaft moves two lift pumps of two feet six inches diameter, making eight pumps in the whole. Besides these, the same shafts have each two chain pumps, the chambers of which are thirteen and a half inches diameter, and the diameter of the sprocket wheels is three feet eight inches. The whole pumps are therefore—eight lift pumps, with chambers thirty inches in diameter and three feet lift; eight chain pumps with chambers thirteen and a half inches in diameter and sprocket wheels forty-four inches in diameter. From the chamber of the dock the water is conducted through culverts built in the masonry to a well outside the masonry, and from the last it is conducted through a tunnel sixty-five feet long to the two great draining wells in which are placed the pumps. The tunnel is elliptical, with the longest diameter four feet perpendicular, and the short diameter two and a half feet, and is made of three courses of brick laid in water cement. The two great wells are fourteen and a half feet diameter, made of brick laid in cement, having the bottom concave like a reversed dome, with a curvature of two feet, the lowest point of which is thirty-seven feet below the coping, or five feet below the lowest part of the dock floor. The centres, or perpendicular axes of the wells are sixteen feet apart, and have a partition between them two feet thick in the thinnest part, except at the bottom, where an opening four feet high and two feet wide is left for an easy communication of the water between them.

At the depth of seven feet seven and a half inches below the coping is the floor of the cistern, built over the wells, into which the water is discharged from all the pumps, and from which it flows to the sea by a drain two feet six inches wide, and three feet high, having two valves or stop gates. When the pumps are in motion during high tide, the pumping is continued till the water rises in the cistern a little above the level of the tide, when it escapes by the drain. The top of the lift pump rises two or three inches above the floor of the cistern, and the top of the chain pumps five feet nine and a half inches above it.

On Friday, the 7th Sept. 1832, the pumping was commenced, and continued under the following circumstances. The water stood in the dock at a level ten feet below the coping, or six feet below ordinary high tide. At 10 o'clock, the whole sixteen pumps were set in motion, and continued an hour, the main shaft making from twenty-eight to thirty revolutions a minute. During this hour the water was lowered three feet, and from the measured surface of the water in the dock and space within the cofferdam, there were discharged about 85,000 cubic feet, equal to 637,500 galls. or 10,100 hhds. By calculating the effect of the pumps from the data before given, the result will be as follows.

A pump two feet six inches diameter, with a lift of three feet, delivers 14-72 cubic feet at a stroke, and when the Engine makes twenty-eight vibrations or revolutions a minute, which is assumed in the present instance, the pump makes seven strokes, and there being eight pumps, the effect for an hour is=7×8×14.72×60=49459 cubic feet, the main shaft making four revolutions to one of the pump shafts.

A chain pump thirteen and a half inches diameter, with a sprocket wheel of 3.67 feet diameter, gives 11.52 cubic feet per revolution; the effect is then=11.52×7×8×60=38707 cubic feet, and 49459+38707=88166 feet an hour for all the pumps, when the engine makes twenty-eight revolutions a minute. The average height to which the water was raised was six and a half feet, and by the eight chain pumps, nine feet eight inches.

The difference 3166 feet between the measured and calculated effect of the pumps as given above, arises principally from the space occupied by the chains and saucers of the chain pumps and the space occupied by the valves of the lift pumps, which were not deducted from the calculation.

During the second hour from eleven to twelve o'clock, four chain pumps were thrown off, and the engine made on an average about thirty-one revolutions a minute. The water was lowered three feet. The average lift of pumps nine and a half feet, and by the chain pumps twelve feet, eight inches. In the third hour all the chain pumps were thrown off and the water lowered two feet two inches, making in the three hours eight feet two inches. The Engine might have been driven forty instead of twenty-eight revolutions in the first hour if it had been wished. On Saturday the whole dock was drained.

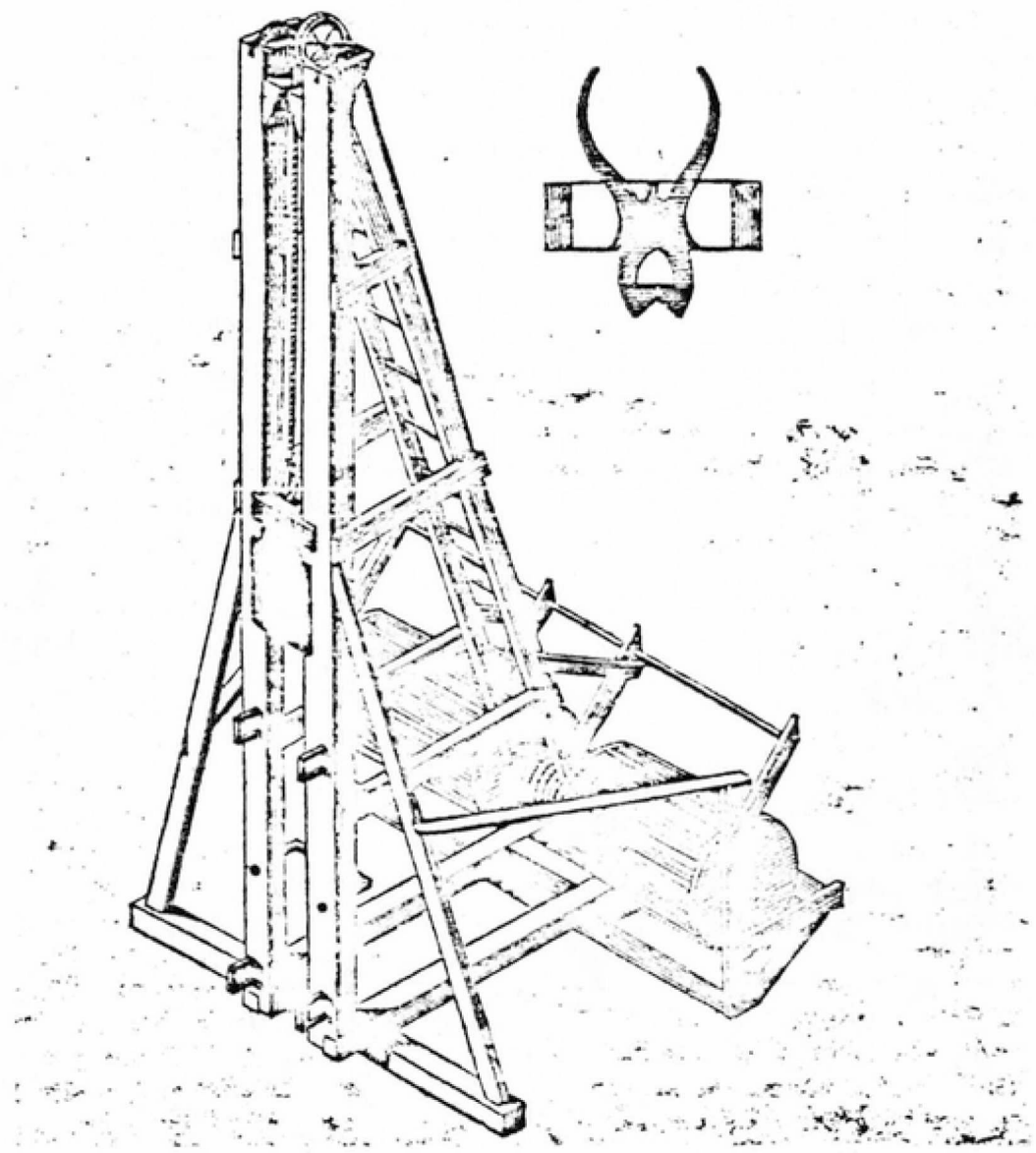
The Engine and pumps completely perform all that was anticipated and nothing farther can be desired.

An Engine and pumps on the same plan have been constructed and put up for the Dry Dock at the Norfolk Navy Yard, but the engine is of nearly double the power. The piston is twenty inches diameter, and the stroke forty-eight inches, with five boilers. The pumps, which are of the same dimensions of these, and the engine, were made by Messrs. Lazell, Perkins & Co., of Bridgewater, pursuant to contracts made by the Engineer of the Dock, and under the immediate direction of their Engineer, Mr. Lester.

MECHANICS' MAGAZINE and JOURNAL OF PUBLIC INTERNAL IMPROVEMENT,
vol. 1, Boston, 1830, pp. 144-145.

[FOR THE MAGAZINE.

PILE DRIVING MACHINE.



Mr. Editor,—The London Mechanicks Magazine of January and February, 1830, contains a description, and a number of engravings, of various kinds of pile driving machines. Being unwilling to see our English brethren triumph over us, in all that relates to the arts and sciences, I have sent you an isometrical projection* of an improved pile engine. This is an application of the tread wheel instead of the crank. Something similar to it, was first used at the building of the Boston and Roxbury Mill Dam, about the year 1819, but has not from that time, till within three or four years since, again been brought into use. There has been four or five of these machines in operation at the Dry Dock, Charlestown Navy Yard, since the commencement of that important work; and I have frequently seen them on the new streets near Charles River bridge. It is found that eight men on the wheel, with one overseer, whose duty it is to keep the pile in a perpendicular direction during a few of the first blows of the ram, will do one third more work than the same number can on one of the best constructed machines with a crank; that is to say, those on the former, have arranged nearly 14 piles of 8 to 12 feet in length in a day, while those on the latter were not able to drive more than 9. The ram of the machine from which this drawing was taken, weighed about 2005 pounds. The nippers, or tongs, were constructed in a better manner than those described in the London Mechanicks Magazine. The arms, or parts which slide between the inclined planes, were nearly three times the distance of the lower ends from the fulcrum or centre of motion, while in the English ones they are very nearly equal. When the ram arrives at the top of the machine a vast deal of friction takes place; so much so, that the men are obliged to exert a great force to disengage it. It is clearly evident that in the first case, there being a greater lever power the pincers may be separated by a much smaller force than in the second. Most people have an aversion to the tread wheel, because it is employed in England and other countries as a mode of punishment, imagining its use to be to tire and weary the criminals; but this is not the case in regard to this application of it, as the men have a chance of resting a few seconds every time the ram drops, and I have heard workmen who have been accustomed to this machine say they decidedly preferred it to any other.

The parts of this engine may be so easily understood from the drawing that they will need no particular description.

Navy Yard Charlestown
Sept. 18, 1833

Sir:

The dock being finished and a suitable plan having been found at its head, I would suggest to the commissioners the propriety of having inscribed upon a Tablet the name of the Engineer under whose direction it was built, the name of the President of the U. S. and Secretary of the Navy, with the date of its commencement and completion.

I am Respectively
Your Obediate Servent

(Signed:)

J. D. Elliott

(Addressed to:)

Com. John Rodgers
President of the Navy Yard
Washington, D. C.

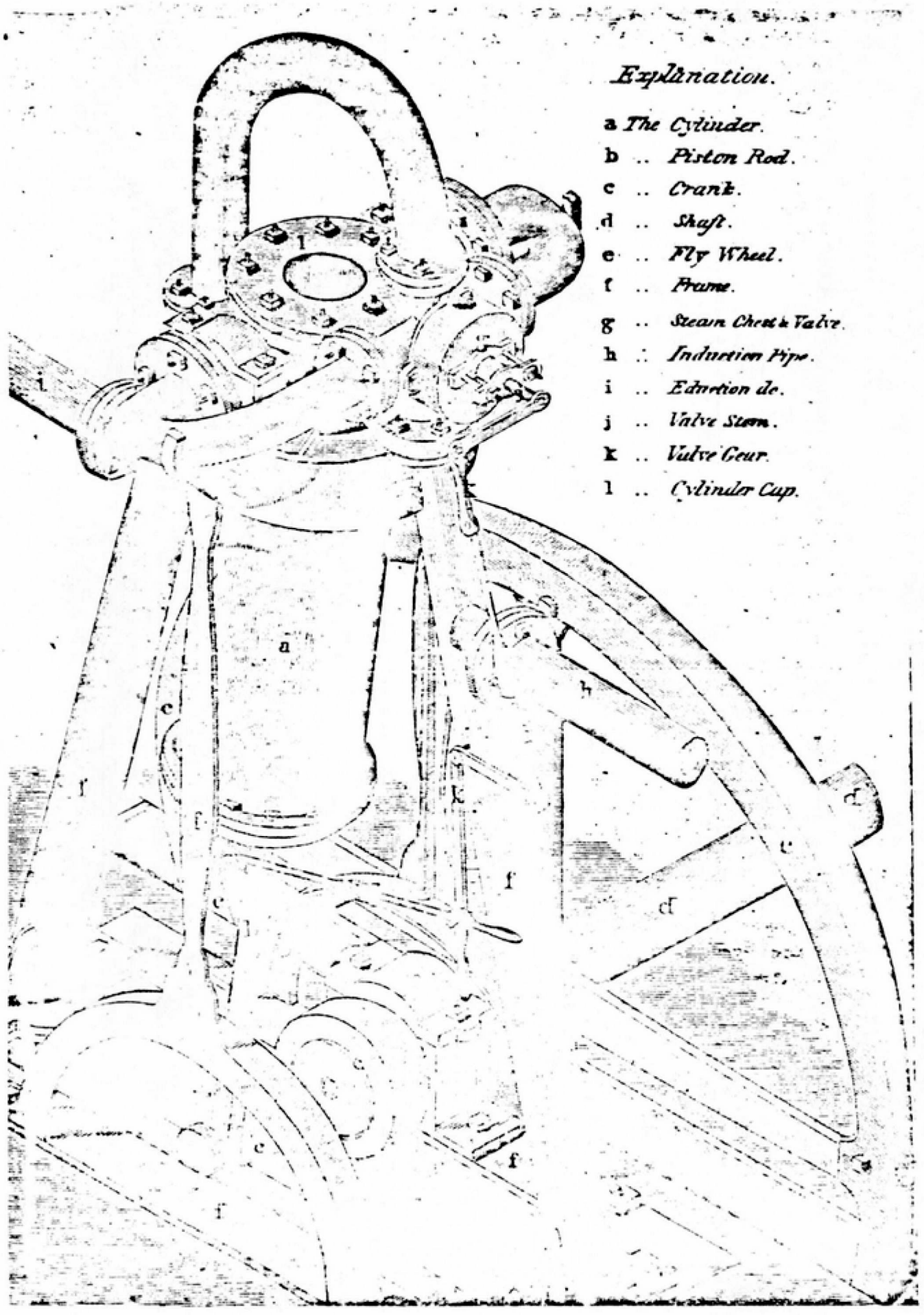
Drake, Samuel Adams. Historic Fields and Mansions of Middlesex. Boston: Osgood and Co., 1874.

We can compare the granite basin, fashioned to receive the great war-ships, to nothing else than a huge bath wherein some antique giant might disport himself. It seems a miracle of intelligence, skill, and perseverance. When Loammi Baldwin was applied to to undertake the building of the Dry Dock, he hesitated, and asked Mr. Southard, then Secretary of the Navy, "What if I should fail?" "If you do," replied the Secretary, "we will hang you." It proved a great success, worthy to be classed among the other works of this distinguished engineer.

The foundation rests upon piles on which is laid a massive oaken floor. We cannot choose but admire the great blocks of hewn granite, and the exact and elegant masonry. Owing to some defect, when nearly completed, a rupture took place in the wall, and a thundering rush of water came in and filled the excavation, but it was soon pumped out and effectually repaired.

After an examination of the records of the tides in Boston harbor for the previous sixty years, Mr. Baldwin fixed the height of the capping of the dock several inches above the highest that had occurred within that period. In the gale of April, 1851, however, the tide rose to such a height as to overflow the dock, falling in beautiful cascades along its whole length. The basin occupied six years in building; Job Turner, of Boston, being the master mason, under Colonel Baldwin. It was decided that Old Ironsides should be the first vessel admitted; and upon the opening of the structure, June 24, 1833, Commodore Hull appeared once more on the deck of his old ship and superintended her entrance within the dock. The gallant old sailor moved about the deck with his head bare, and exhibited as much animation as he would have done in battle. The Vice-President, Mr. Van Buren, the Secretary of War, Mr. Cass, Mr. Southard, and other distinguished guests graced the occasion by their presence, while the officers at the station were required to be present in full uniform.

MECHANICS' MAGAZINE and JOURNAL OF PUBLIC INTERNAL IMPROVEMENT,
vol. 1, Boston, 1830, pp. 272-294.



LESTER'S PENDULUM STEAM ENGINE.

LESTER'S PENDULUM ENGINE.

We have received a small pamphlet, setting forth the merits of Mr. Lester's engine. As no notice has, heretofore, appeared in our work respecting this clever contrivance, we now cheerfully present it to the publick. The many respectable signatures accompanying this document, (which will be given, with the remainder of the article, in our next number,) together with our own knowledge of its successful operation, for two years past, at the Charlestown Navy Yard, would render any thing we could say in its praise entirely superfluous. The pamphlet is as follows:

It being a fixed law of mechanical forces, that action and reaction are equal, it follows, of course, that no art or contrivance in mechanicks, can *increase* a power: all we can do by mechanical means is to *apply* a power in order to produce a proposed effect; and the great object is to make the application in the most simple and direct way, with the least possible expense of machinery, gearing, complication of construction, resistance from friction or gravitation, and liability to derangement in operation. In the application of steam power by machinery, it has been the principal object of all inventors, from the time of Watt to the present, to direct the power of the steam, in the first place, to the production of a rotary motion, and thence to take the motion adapted to produce the effect intended. The material question then, in regard to any plan of a steam engine, is, whether it is well calculated to produce a rotary motion, and that is the best, which gives such a motion in the most direct and simple manner. The Pendulum Engine is proposed as possessing very important advantages in all the particulars above mentioned.*

* In relation to steam engines, about which so much has of late been said and written, I will here make a suggestion respecting the estimate of the *power* of an engine, in regard to which, there is a great deal of obscurity and uncertainty, both in contracts and in speculations on the subject. In estimating the power of an engine, for instance, as being equal to that of a certain number of horses, only the diameter of the cylinder and length of the stroke are sometimes given, without taking into consideration, the force of the steam and rapidity of motion, with which the engine is calculated to operate; for it is apparent that doubling the rapidity of the motion of the piston, with the same force of steam to the inch constantly acting upon it, will double the power of the engine, as much as doubling the surface of the piston on which the steam acts, supposing it still to act with the same force upon the square inch. It is evident that [illegible] without an adequate supply of steam, will not make a powerful engine; and on the other hand, that a comparatively small cylinder, with a high pressure of steam, and running with great velocity, would make a powerful one. In estimates of this sort, we must, therefore, take into consid-

One advantage of the Pendulum Engine is obvious, not only to a mechanick, but to any person not at all skilled in mechanicks, on the first inspection of the engine, or even a print of one, namely, the application of the power by connecting the piston-rod *immediately* with the crank-pin. Here the lever-beam, connecting-rod, and all the gearing apparatus of whatever kind, interposed between the piston-rod and crank-pin, in fixed engines of all descriptions, is at once dispensed with. The cost of maintaining this gearing is thus avoided. This part of the machinery, in fixed engines, is, as every practical engineer well knows, very liable to get out of order, and the engine must occasionally be stopped to repair it. This inconvenience is also saved by the Pendulum Engine. And, then, this gearing or intermediate machinery, in some fixed engines, as for instance an engine standing on end, and working upwards by a connecting-rod, constantly opposes the motion of the crank, by its gravity, except at the dead points, when the connecting-rod is precisely perpendicular. The resistance from this cause is not great, but whatever it may be, it is saved in the Pendulum Engine. Again, this intermediate gearing is liable to friction, which is a constant impediment that must be overcome by a constant expenditure of power for this purpose. The Pendulum Engine avoids this impediment. By considering how much power would be requisite to keep this intermediate gearing and machinery of a fixed engine in motion, precisely as it moves when the engine is in operation, some estimate may be formed of the saving of power, made in this particular, by the Pendulum Engine. This single advantage of that engine, unless it is offset by some important disadvantage, will, the inventor apprehends, be a sufficient ground for a decided preference of it. But it has other advantages which are conceived to be of much greater importance.

The object being to produce a rotary motion of a crank, it is evident that a fixed engine cannot effect this by a power acting constantly in a right line, for the right line, in such case, is the continuation of that of the piston-rod, and as the crank revolves, the crank-pin, at the end of it, must be out of this line, in all parts of the circle of its revolution, excepting the two points called the *dead points*, at which, in fact, the power ceases to act. So that during all the time when the power acts upon the crank, to give it a revolving motion, it acts at an angle; constantly varying, but still always at an angle. Every practical engineer knows very well, as does also every theoretical mechanick, as well as every man of ordinary observation, though he be neither a practical or theoretical mechanick, that this circumstance must occasion a loss of power, greater or less, according to the angle at which the power thus acts. The lateral reaction upon the piston-rod, occasioned by this circumstance, shows the amount of power that is thus absolutely lost; and this lateral action is so great, that unless the engine and piston-rod are very strongly supported, the piston-rod will be bent or broken, or the engine thrown out of its position. We, therefore, always see the piston-rods of fixed engines very strongly supported at the sides, by slides, or parallel rods, upon which this wasted power is expended. This loss will take place, though the surfaces brought in contact by the lateral horizontal pressure, or pressure perpendicular to the direction of the piston-rod, are perfectly smooth. To illustrate this, suppose the object to be, to raise a ten pound weight six feet; now if it be raised by the hand perpendicularly, without putting it in contact with any other body, it will be necessary only to exert a power equal to ten pounds' weight, with an additional power to produce the motion through the six feet; but if the weight, having a perfectly smooth surface, is applied to a perpendicular plane, the surface of which is also perfectly smooth, and slided six feet up this plane, and if at the same time it is pressed against this plane, an additional force must be exerted equal to the lateral pressure against the plane. And if the surfaces of the weight and perpendicular plane are not perfectly smooth, and no surfaces are so, still an additional power must be exerted in order to overcome the resistance arising from the roughness of the surfaces. Precisely so it is with the lateral horizontal pressure by the check pieces of the cross-

A power equal to this pressure, and an additional power for overcoming the resistance from the roughness of surfaces, is absolutely lost. This loss is entirely avoided in the Pendulum Engine. In comparison with a fixed engine, of which the connecting-rod is three times the length of the crank, (which has been considered by machinists a safe proportion of these parts,) the saving of power made merely by its direct application in the Pendulum Engine, is 16 2-3 per cent. When a longer connecting-rod is used for the fixed engine, the difference will be less. The connecting-rod and crank are, however, very frequently about in the above proportion in fixed engines. This saving is a matter of demonstration by the easy and ordinary process of the resolution of a force, indirectly applied, into the two parts—that which is lost, and that which takes effect. For this superiority of the Pendulum Engine, therefore, I have only to refer to lines and figures and a familiar principle in mechanicks.

In connexion with this subject of friction, another circumstance in the construction and operation of the Pendulum Engine, ought not to be omitted; the importance of which struck me still more forcibly than before, on the examination of the certificates annexed. Every body knows that the piston, within the cylinder, and the piston-rod at the cylinder head, must be packed perfectly tight, to prevent the escape of the steam. In fixed engines, the piston-rod must be braced and supported by a cross-head and slides, or parallel rods, in order to prevent the lateral reaction, from bending or breaking the piston-rod, or throwing the engine out of place. The piston-rod then must be fixed, exactly and firmly, at three points, namely at the piston or lower end, at the upper end, and at the head of the cylinder. Now it will be very obvious that, if these points do not perfectly correspond, and if the piston-rod and the slides by which it is supported on each side, are not perfectly straight and true through all the length of the stroke, an extra friction must take place, greater or less, according to the degree of the irregularity. It needs no experience in steam engines, to know how exceedingly difficult, and, I may perhaps say, absolutely impossible, it is, to adjust these points perfectly to each other; a perfect adjustment of them in all positions of the piston, would require at least as great precision and perfection of workmanship, ed mathematical instruments. And if they are perfectly adjusted to-day, a slight wearing by friction, or a slight jar of the foundation, may derange them to-morrow. By observing a fixed engine, when in operation, a greater or less lateral motion of the cylinder, alternately one way and the other, may usually be observed at every stroke. This shows that these three points at which the rod is fixed and supported, are not perfectly true, and do not perfectly correspond through the whole length of the stroke. A greater or less amount of power must, therefore, be expended and lost, in heaving the whole weight of the fixed cylinder, and all the strong and heavy fixtures connected with it, to and fro, and in overcoming the extra friction thereby occasioned. The piston-rod acts as a lever, bearing against one side of the stuffing box, at the cylinder-head, and the piston will be pressed with an equal, greater, and lesser force, in its different positions, against the cylinder on the opposite side. This imperfection and waste of power would of course appear in the wearing and injury of the packing of the piston-rod and piston, at those parts upon which the lever is acting, and the packing must therefore be renewed so much the more frequently. The condition of the packing and the frequency of its requiring to be renewed, are accordingly one important test of the power lost in this extra friction, and in heaving the cylinder and heavy fixtures towards one side and the other, alternately, at every stroke. This test demonstrates the superiority of the Pendulum Engine in this respect; for, by the annexed certificates, it appears that the packing of fixed engines requires to be renewed at least four times as often as that of the Pendulum Engine. The importance of this circumstance I leave to the consideration of engineers.

Another advantage of the Pendulum Engine, is, that in the motion given to it, in operation, the weight assists in passing the dead points, that is, the two points at which the crank is parallel with the piston-rod. I do not know of any engine upon any other plan, which, by its own intrinsick motion and operation, assists itself over these points, by the mere action of gravity. On the contrary, in engines of a different construction, gravity, as far as it acts at all, more frequently acts as an impediment to the operation of the engine.

In the Pendulum Engine, the whole weight of the cylinder, piston, and piston-

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eration the extent of the surface of the piston on which the steam acts, the degree of pressure of the steam to the square inch, and the rapidity of the motion of the piston.

It is a popular error, also, not to distinguish sufficiently the engine from the boiler or generator, which is, in fact, as distinct from the engine, as the strength of the mechanick is from the tool with which he works. It may, therefore, not be superfluous to apprise persons, not conversant with steam enginery, that the remarks made above on the Pendulum Engine apply to the

glance at the machine, the idea has occurred to some machinists, that considerable power must be expended in keeping this weight in motion, and thus lost. They confound the principle of the construction of this engine with that of one suspended in the middle, so as to balance itself, which has mostly gone out of use, and the objections to which will, I think, serve to illustrate the advantages of the Pendulum Engine in regard to the action of gravity. The balanced engine, when put in motion, like all other bodies in this respect, has a tendency to continue the motion, and the greater the velocity is, the greater will be this tendency. Accordingly, when it comes to the extreme position, by the motion of the crank, the momentum it has acquired, tends to an entire revolution of the cylinder, in opposition to the movement of the crank, and the result of these two contending powers of steam and gravity, is the bending or breaking of the piston-rod.

It will, as it appears to me, be obvious, upon the slightest consideration, that the Pendulum Engine is not theoretically liable to any such difficulty, and that it is not practically so, is, I think, very satisfactorily proved by the annexed certificates. As a pendulum of about 39 1-8 inches vibrates seconds, a Pendulum Engine of which, with the piston and piston-rod, the centre of oscillation is at a distance of 39 1-8 inches from the centre of motion, that is, the centre of the gudgeons, will, when put in motion, tend, by the force of gravity, to vibrate seconds; and that, whether the arc in which it vibrates be a greater or smaller part of a circle—if we throw out of consideration, as we will for the present purpose, the difference between the vibrations of a pendulum in the arc of a circle and in a cycloid—and it will continue to vibrate seconds, if power enough is applied merely to overcome the friction on the gudgeons, and the resistance of the atmosphere, which latter may be thrown entirely out of the question. As to the friction on the gudgeons and at the joints of the steam-pipe, it is only a substitute for that of the joints of the connecting-rod of a fixed engine and is much less than that; for I find by experience that there is very little wear at the gudgeons of the Pendulum Engine, which will run a long time before the boxes need to be screwed up, whereas the joints of the connecting-rod of a fixed engine, are subject to great wear, and require to be frequently

suming that the friction at the gudgeons and joints of the steam-pipe, in the Pendulum Engine, is not greater than that of the joints of the connecting rod of a fixed engine; and since the former is a substitute for the latter, there is at least no loss in this respect in the Pendulum Engine. For the present purpose, then, we will assume this friction of the two species of engines to be exactly equal, and throw it out of the question in making the comparison between the two, in relation to the effect of the gravity of the cylinder and piston and piston-rod on the operation of the Pendulum Engine. In regard to gravity, the cylinder of the Pendulum Engine will represent a pendulum of a little less than two-thirds of the length of the cylinder of the engine, so that a Pendulum Engine, of which the cylinder is four and a half feet in length, will, as far as gravity and oscillation are concerned, represent a pendulum of 30 to 36 inches in length. As such a pendulum vibrates seconds, it follows that an engine of which the cylinder is four feet and a half in length, will perform 30 to 35 revolutions in a minute, without the least disturbance or impediment from its gravity; and an engine, of which the cylinder is twenty-seven inches in length, will perform some where about 50 or 60 revolutions a minute, without any obstruction from this cause. To this degree there can be no question that gravity concurs perfectly with the motion of the cylinder of the Pendulum Engine. But it appears from the facts stated in relation to the engines already in operation, that it may be run at double this velocity at least, to advantage. The engineer of the Pendulum Engine at the Navy Yard in Charlestown, from observing the action of the engine, estimates that it might be advantageously driven a hundred revolutions a minute.—This allows of a greater velocity than that at which a fixed engine can be driven without endangering its gearing.*

*The circumstance that the Pendulum Engine, by dispensing with the gearing of the fixed engine, admits of a much greater rapidity of motion, may be of great importance, if it should be established, that the weight and surfaces being given, the friction will be as the *time* without regard to velocity, since in such case, the greater the velocity, the less will be the proportional loss by friction. I am inclined to think that this is a law of friction, and I suspect it is the result of this law which attracted the attention of Mr. Herepath, of England, in his report on locomotive engines, recently republished in the Boston Daily Advertiser, and which he considers as connected

It is then one of the advantages of the Pendulum Engine, within the ordinary proportions of length and diameter of cylinder, that, by dispensing with gearing, it admits of being run with greater velocity than a fixed engine of similar proportions, and the influence of gravity, instead of hindering, rather favors its being driven with such greater velocity.

But the other advantage arising from the influence of gravity upon the action of the Pendulum Engine in helping the crank over the dead points, will be considered by many persons as more important. This influence of gravity, which is constantly maintained by nature and costs no fuel, gives the greatest momentum at the two dead points of the circle of the crank, precisely where it is wanted, and it affords this assistance without any loss or sacrifice, at any other points, for this purpose; being an assistance spontaneously arising from the intrinsick principles of the operation of the machine.

Considering the concurrence of the action of gravity with the motion of the cylinder, I think it will follow, that the largest engine may be constructed on the pendulum principle, without the slightest obstruction from its gravity.

Every circumstance in the effect of gravity accords with, and facilitates, the operation of the Pendulum Engine. Thus if the revolutions of the shaft, and consequently the balance wheel and crank-pin, are perfectly uniform and regular, the cylinder must swing quicker, when the crank-pin is in the upper part of the circle described by it, because the distance from the centre of motion, that is, from the gudgeons, to the crank-pin, is then shorter (the distance which the crank-pin traverses in its circle, from one extreme of the vibration of the cylinder to the other, being less,) than when the crank-pin is in the lower part of its circle, and the cylinder is making its vibrations between the same extremes in that part.—In order to accommodate the influence of gravity to this circumstance, the pendulum should be shorter, when the crank-pin is in the upper part of its circle. Now this is precisely the fact, for when the crank-pin is in the upper part of its circle, the piston, and piston-rod are withdrawn towards the upper part of the cylinder, and thus the weight, being drawn up towards the centre of motion in this part of the revolution, gives a shorter pendulum, and thus adapts the action of gravity more exactly to the

A perfect coincidence in the motion of the pendulum and crank-pin, occurs in one other respect. The pendulum moves slowest towards the extremes of its vibrations; and the *horizontal* motion of the crank-pin across the circle described by it, supposing the crank to revolve uniformly, precisely corresponds to this motion of the pendulum: that is, if a perpendicular line be drawn through the crank-pin, and move with it, this line, as the crank moves uniformly in its circle, will pass over its horizontal diameter at each vibration, that is, twice in each revolution of the crank, and it will pass more rapidly over the part near the centre and more slowly over the extreme parts. Thus we see that the action of gravity in the vibration of the pendulum, and the motions of the crank-pin in the uniform revolution of the crank, accord and harmonize with each other in all particulars.—From these causes arise that beauty and facility in the motion of this machine, which have been remarked upon by many persons who have witnessed its operation.

LESTER'S PENDULUM ENGINE.

(Concluded, from p. 277.)

Another circumstance in favor of this machine, is, that the variation of the length of the cylinder and projected part of the piston-rod taken together, (which length is greater or less, as the piston-rod is more or less projected from the cylinder in the course of the revolution of the crank,) gives it a mechanical advantage over the fixed engine. In turning a crank with a connecting-rod, one end of which holds upon a pin at the end of the crank, the other end, at which the power is applied, is either fixed to one point, as in the Pendulum Engine, or moves in a straight line, forward and backward, a distance of twice the length of the crank, as in the connecting-rod of the fixed engine; it is evident that the longer this connecting-rod is, the more advantageously the power will act upon the crank-pin in the part of its circle most distant from the power; and the shorter it is, the more advantageously the power will act when the crank-pin is in the nearest part of the circle. In the Pendulum Engine the cylinder and projected part of the piston-rod, together, serve instead of the connecting-rod, and the length of these two together is greatest when the crank-pin is in the most distant part of its circle, and least, when it is in the nearest part, and varies constantly between the two extremes, becoming gradually longer in approaching the distant part, and gradually shorter in approaching the nearest part. Here, then, is a positive mechanical advantage gained by the Pendulum Engine over the fixed engine, without any sacrifice or special application of power for this purpose. It is an advantage arising spontaneously from the principles of the operation of the machine, the exact amount of which, taking given lengths of the connecting-rod in one case, and of the cylinder and piston-rod in the other, may be mathematically calculated, though to compute it with precise degree, or rate per cent. of saving, they amount, I will not undertake to estimate. Mr. Burt, whose certificate is annexed, and who is a scientifick machinist, possessing, at the same time, a great deal of practical experience in mechanicks, estimates the advantages of this engine at twenty per cent. over those having a fixed cylinder. Whether they amount to so very great a proportion as this, I refer to the consideration of intelligent engineers and mechanicians.

It is no object with me, nor would it, in the event, be any benefit to me, to induce any person to form an exaggerated opinion of the advantages of the Pendulum Engine. I prefer that its reputation with the publick, should be such only as shall be founded in the strictest truth. At the same time I will not affect to conceal my entire confidence, that the more it is examined and proved, and the better it is understood, the more it will recommend itself.

As practical application and use are the true tests of all machinery, I have requested some persons who have been acquainted with the operation of this engine, to make statements of the results of their experience and observation. Their statements are annexed. They are made by persons who have no interest whatever in obtaining for the machine a better reputation than it merits. Some of them are persons of mechanical science, others are practical engineers; and a number of them are sufficiently well known to the publick, to insure confidence in their statements and opinions.

There is one application of steam engines which now excites great interest, I mean that to locomotion on land, to which, though no direct experiment of the kind has been yet made with the Pendulum Engine, I think it is well adapted. As soon as engines shall be required in the United States for this purpose, I shall make an experiment to test its qualities in this respect. Some intelligent engineers have expressed an opinion that it is decidedly the best plan of construction of an engine for this use.

EBENEZER A. LESTER.

Boston, August 2, 1830.

CERTIFICATES.

Charlestown, June 14th, 1830.

Being requested by Mr. Ebenezer A. Lester, to make a statement respecting his Pendulum Engine, I can say, in the first place, that I have had charge of steam engines, what complicated. This gain is the greatest in the shortest lengths, in comparison with the cranks, in the two cases, and diminishes, but still exists, as they are increased. Taking the average of those comparative lengths in the ordinary proportions of construction, I think it safe to estimate the saving of power from this cause at from three to four per cent.

Another advantage in the plan and construction of this engine, remaining to be mentioned, arises from its working in a frame, the parts of which always maintain the same relation to each other, and, as it has in its operation no tendency to displace any fixtures or disturb the foundation, a great expense is saved in these respects, in putting up the engine, more especially in places where it is difficult to get a good foundation. The Pendulum Engine only requires a foundation sufficient merely to support the *weight*, without any necessity of providing for extraneous resistance to the action of the machine itself, as in the case of a fixed engine.

On this engine being first put into operation, a query was suggested whether it would have a greater tendency, than a fixed engine, to wear the cylinder ovaling or untrue. I felt great confidence, from the first, that it would not prove to be liable to this objection, and experience has fully shown, as will appear from the certificates annexed, that with any reasonable skill and care in keeping it packed, it will wear perfectly true, which is not always the case with fixed engines even with the greatest attention of the engineer. So far, therefore, from there being any objection to it in this respect, it might be enumerated as one of its advantages, that it is less liable to wear the cylinder unequally, than a fixed engine; though there is no doubt that an engine, on this or any other plan, may wear the cylinder unequally, in case of gross negligence in keeping it packed.

Such are, in my estimation, the advantaed low-pressure engines on Bolton and Watt's plan, and also high-pressure engines. I have been employed about half of the time above mentioned, at Baltimore, and the rest in Boston and Charlestown. About three years ago, when Mr. Lester stated to me the plan of his Pendulum Engine, I objected to it on account of its swinging, thinking that it would injure the packing, and be liable to get out of order. About two years ago one of his Pendulum Engines was put in operation at the Navy Yard in Charlestown, in Massachusetts; this engine I put up, the same having been made by Mr. Lester, at his works in Boston, and I have run it ever since it was put up, and it has been running pretty much all the time, day and night; it has run about two-thirds of each twenty-four hours; and I have found, from my experience, that the engine is superior to those on the old plan, in those points in which I, at first, supposed it would be defective. There is less friction on the piston; the packing does not wear so much, and the engine is not so liable to get out of order. The last packing of this engine run seven months and a half. The packing of one on the old plan, is commonly required to be changed from once a fortnight, to once a month, and more frequently in a high, than in a low pressure engine. I am confident, that a high pressure engine on the old plan, in doing the work of this engine, would have required the packing to be renewed, at least once in three weeks. The injury to the packing, and the frequency of renewing it, is one important test of the friction of the engine, as every engineer very well knows; and the circumstance of this packing running so long, is a clear proof, that there is a very great saving of friction in this engine. The first packing ever put into it, run four months, when the cylinder was in a rough state; the next packing run six months. The last time this engine was packed, which was about six weeks ago, I tried the cylinder to ascertain whether the inside was worn, and how it was worn, if at all; but I found it to be perfectly true. The reason for making this examination, was, that it had been said, as I was told, that the inside of the cylinder of an engine upon this plan, would wear oval; I was accordingly induced to examine this engine particularly, as above stated, and found it not to be worn in the last out of true. I think, one very great superiority of this engine, is, the advantage the construction gives for passing the dead centre, which it passes with more ease and power, so that it will have a greater effect on the crank, and operate with a greater power, than one on the old plan, of the same size, and with the same force of steam. This advantage is derived partly from the assistance that the weight of the

cannot be avoided in engines on the old construction. One reason of its being less liable to get out of order, is, that there is no gearing to be used betwen the piston-rod and crank, whereas the gearing of this description required by the engines, upon the other plans, increases the friction, and also is more or less liable to get out of order.

The engine in operation in this navy yard, is a nine-inch cylinder, of a twenty-eight inch stroke. The work required of it varies; it is used for pumping out the dry dock, and also has four lathes, and two grindstones attached to it. At times it has driven these lathes, and the grindstones, and two large pumps of a foot diameter each, and four smaller ones of six inches diameter. The large pumps lift a column of water of about forty feet, and the weight is estimated to be about a ton each. The four smaller ones, lift sixteen feet, making a weight of about two hundred pounds each, 4800 pounds in the whole. The crank of the engine, as will appear from the length of stroke already mentioned, is fourteen inches. The strokes of the large pumps, with the cranks heretofore in use, have been thirty-two inches and three quarters, and those of the smaller ones, twenty-four inches. The strokes of the pumps are to those of the engine, in time, as 7 to 25. The engine is calculated to run sixty revolutions a minute, and is ordinarily worked at about that rate. With the present boiler, being a cylinder of 18 feet long by 3 feet diameter,* the engine has been driven seventy revolutions a minute, and with a larger boiler, might be driven with safety at a much greater speed; I should say at least, at a hundred revolutions per minute. And as far as my experience goes, I should say that increasing the velocity, would, in this engine, be a greater gain in the application of the power, that is, it could be made with greater economy; and the gain by increasing the power, by an increase of the velocity, is, I am confident, greater in this engine, than in those of the old construction. The lathes above mentioned, are used for turning iron and wood.

Since this engine has been in operation, not one dollar has been laid out in repairs upon it. NOAH BUTTS.

Dry Dock Office, Charlestown Navy Yard,
June 21, 1830.

Dear Sir,

Engagements have hitherto prevented my answering your inquiries concerning the oscillating steam engine, made and erected by Mr. Lester, which is now employed in draining the works of the Dock. I now make the following statement, referring you for further particulars to the certificate of Mr. Butts, the engineer, who assisted in setting it up, and who has ever since been engaged in directing its operations.

The engine was first set to work in May, 1828, and has ever since been daily used in pumping water from the foundation of the Dock. No part of the machinery has given way, nor has the engine failed to do all the work which was required. It has, in every respect, answered my expectation, and were I to engage in a similar undertaking, I would obtain a similar engine for the same service. Its simplicity and compactness render it peculiarly adapted to constructions like the Dock, where a slight and temporary foundation only can be had. I have always viewed its operation with peculiar pleasure, and am convinced that it has been more economical than any other engine of the same power, I could have procured. I regret I had not provided one like it for draining the works of the Norfolk Dock in Virginia.

With great esteem, your obed't servt.
L. BALDWIN.

WILLARD PHILLIPS, Esq. Boston.

BOSTON, May 21st. 1830.

Having been employed during the two past years at the Navy Yard in Charlestown, during which time one of Mr. Ebenezer A. Lester's Pendulum Engines has been constantly in operation there in pumping out the dry dock, my attention has been attracted both to the principle upon which it is constructed and to its practical operation. I will not undertake to say how powerful an engine may be advantageously constructed and operated upon the principle of this one, nor whether it may be best adapted to a large or a small engine, but I am well satisfied that for an engine not exceeding a twenty horse-power, the principle is entirely unexceptionable, and has some circumstances which strongly recommend it. One advantage, which is obvious to every mechanick on the first inspection of this engine, is its great simplicity and compactness of construction, which is attained without the sacrifice of any mechanical advantage in the application of the power to the crank. If there is any difference between this and the common engines in this respect, it is in favor of the Pendulum Engine. But I proceed upon the supposition that the mechanical power of the same force of steam upon the square inch in this engine, upon the crank, is the same as in other engines, though some persons, as I understand, suppose there is a gain in this respect in favor of the Pendulum Engine, of from five to eight per cent. the degree or rate depending partly upon the comparative length of the piston-rod and crank—and connecting-rod, (say, if such be used) and crank—in the two cases. How this may be, I will not [illegible] an opinion; but suppos-

* The engine is ordinarily operated with steam power 20 to 30lbs. per inch, and occasionally at

ing the differen engines to be equal in this respect, still the Pendulum Engine, by dispensing with the connecting-rod, lever-beam, and every other species of gearing and machinery ordinarily interposed between the piston-rod and crank, saves the friction of all this intermediate gearing and machinery, and all the joints requisite in such gearing, and consequently avoids the inconveniencies arising frequently from this machinery, and especially the joints getting out of order, and also avoids the expense of repairs thereby rendered necessary. This advantage is so great, and at the same time so obvious to any mechanick, or any person in the least conversant with machinery, that it is unnecessary that I should point it out or specify it more particularly. It appears to me to be a very material and important circumstance in favor of this species of engine.

Although I have spoken of an engine within a twenty horse-power, I do not intend thereby to imply an opinion as to the extent of power to which engines of this description may be advantageously used; perhaps engines of any size may be advantageously constructed upon this plan, keeping within certain limits as to the velocity of the vibratory motion of the engine itself, one obvious way of doing which, without the use of any gearing, would be by lengthening the piston-rod, for the longer the piston-rod is, the length of the crank remaining the same, the less will be the vibratory motion of the engine to produce a given number of revolutions. I have put the above limit as to the size of the engine, therefore, merely that I may keep within my practical experience and observation respecting this engine; nor do I suggest the above remedy for too great a velocity or motion of the engine from any distinct opinion that any precaution of this sort may be necessary, for it may turn out that the vibrations will not be too rapid in an engine of any size, if it be operated so that the strokes are not more rapid than is consistent with the most economical use of steam. It is a question then whether the engine is liable to any difficulty of this sort though it should be of a much larger size than I have above specified; and if it be liable at all, it is a case that would seem to admit of an easy remedy.

It is not necessary to remind persons, who are at all conversant with steam engines, that, upon whatever plan they may be constructed, their operation and success, depends very materially upon the skill and care of the engineer who has the management and superintendence of them when in operation. An engine on Mr. Lester's plan, or on any other plan, will be liable to get out of order, and be subject to derangement, if not properly and skilfully managed, liable to derangement, than those on the old plan, provided the skill and care of the engineers, who operate them, is the same. The engine at the dry dock, has done a good deal of work, having been in operation day and night, for two years, and I can confidently say, that no engine could have operated better, and I think, that one on the old plan, could not have been kept in operation so long a time, for so little expense of repairs.

Some have suggested that this engine, by use for any length of time, will wear the cylinder, so as to make it elliptical on the inside, and thus render it difficult to keep it well packed. This is an entire mistake; the engine at Charlestown, has been repeatedly examined, and no appearance whatever of this kind, is observable. On the contrary, the packing has stood remarkably well, and required very little renewing.

ALEXANDER PARRIS.
Superintendent of Dry Dock, Charlestown Navy Yard.

We the undersigned having been employed at the Navy Yard in Charlestown, and having daily seen the operation of the Pendulum Engine erected by Mr. Lester at the Dry Dock, since its erection, do hereby certify, that for simplicity in its construction, durability in its parts, and effects in its operations, in our opinion it is superior to any other plan of engine (with which we are acquainted) now in use, and from the combinations and arrangements of the machinery, it may be operated in situations where, for want of firm and solid foundations, other plans of engines could not be erected.

EDWARD BATTLES, WM. BUTTS,
WM. ANDEM, B. BAKER,
B. F. PERHAM, A. BATES,
W. BECKFORD, J. TURNER.

Navy Yard, Charlestown, July 14, 1830.

Boston, July 28th, 1830.

Dear Sir,

I am well acquainted with the arrangements of Mr. Lester's Pendulum Steam Engine, and have always entertained a favourable opinion of it, so far as I could exercise my judgment, without having an opportunity of studying accurately its practical performance. Mr. Lester, before he had constructed one, communicated to me his plan, on which we frequently conversed. It seemed to promise many advantages, and the only doubt, which occurred to my mind, was whether the cylinder might not become oval. This, it is whispered *is* the defect, but on inquiry I cannot trace the report to any fact, and am inclined to think it has arisen from that unmanly, malignant spirit of detraction, which so often attempts to check the progress of improvement. Mr. Lester's belief always was, that his cylinder would be less liable to be worn out of true, than one fixed, and results have supported his conclusion, or at least have proved that it is not neces-

by him for the use of the Dry Dock at the Navy Yard, Charlestown, which has frequently come under my observation, has now been in operation more than two years, day and night, a sufficient time to detect such an imperfection if it existed. The person who attends it, a skilful mechanick, familiar with the working of steam engines, has informed me that it had run six months without being repacked, and that he opened it rather from prudential considerations, than from any indication of its being necessary. On examination he found all its parts in remarkably good order, and that the engine would have continued to act much longer with perfect safety. This is an advantage, which they who are obliged to repack every month or six weeks, will know how to appreciate. From this, it appears, my early doubts were not well founded. I thought the Pendulum Engine would have a superiority in connecting the piston-rod immediately with the crank. The pitmans, parallel movements, and side guiding bars with slide boxes, are thereby superseded, and by diminishing the number of moving parts, without increasing the velocity or extent of any of the remaining rubbing surfaces, the friction must be reduced. The movement of the valves can be very simply effected by the oscillation of the cylinder so as to dispense with rods, eccentricks, and other expensive appendages. While the Pendulum Engine retains all that is essential to power, it is very much simplified in its mere mechanical construction, and is consequently an improvement. It is, I conceive, well adapted to boats, and in an especial manner to railways; but you know the difficulty of introducing novelties. An inventor has innumerable obstacles to overcome; he has to be long exposed to disappointment, opposition, and obloquy, before he can hope for success. Experience is the only test by which the publick will be ultimately influenced, and Mr. Lester has the gratification of knowing that experience has thus far decided in his favor.

With much regard,

Your friend and serv't.

RICHARD D. HARRIS.

WILLARD PHILLIPS, Esq. Boston.

This is to certify that I have erected and put in operation, at the Woollen Manufactory of Benjamin Buzzey, Esq. in Dedham, a Pendulum Steam Engine, by Ebenezer A. Lester, of Boston, on or about the first day of June, 1828. It has been in operation daily since that time, and has given full and complete satisfaction, being simple in its construction, easily attended, and not liable to be disordered.

GEO. H. KUHN.

Boston, Oct 1, 1829.

This is to certify that I am the superintendent of the Woollen Manufactory of Benjamin Buzzey, Esq. in Dedham, and that the Pendulum Engine erected there by Ebenezer A. Lester, of Boston, has been under my direction from about the first day of July, 1828. It has fully answered my expectations; being simple in its construction, easily attended, (not requiring a professed engineer) and from the test thus far had, it does not appear to be more liable to wear, either in the cylinder, piston, or piston-rod, than other engines. It does not require packing oftener than

I further certify, that in the month of July last, I was informed that this plan of engine was liable to wear the cylinder oval, and also the piston and piston-rod untrue, in consequence of which, I was induced to cause the engine in this factory to be examined, when it was found that the cylinder, piston, and piston-rod, were not worn in the least, out of round, but on the contrary, were in excellent order, smooth, true, and fair. THOMAS BARROWS.

Dedham, Oct. 2d, 1829.

The engine referred to in the foregoing certificates, has been in operation daily, (Sundays excepted) up to this time. The facts above stated, are confirmed by further experience, and we continue to be well satisfied with the engine. The packing has been entirely renewed only three times.

June 29th, 1830, GEO. H. KUHN.
THOMAS BARROWS.

Extract of a Letter, from the Rev. Enoch Burt, of Manchester, Conn. dated, June 11, 1830.

It is now six months since I have had your Pendulum Engine in operation. It works well. From a practical as well as scientifick acquaintance with the various engines now in use, I at the first examination (viz. at the Dry Dock in Charlestown,) pronounced it in my own mind vastly superior to any other plan, and from operating it for six months (during which time it has never been repacked) in my manufactory, I am fully confirmed in my opinion of its superiority; it is, you know, only a 4 1-2 inch calibre and 18 inches stroke, and I run it but 35 revolutions per minute: (it would be advisable to run it much quicker, but this speed is best for my work) and with steam at 25 lbs. per inch, it drives my fulling mill, calender, shearing and drying machines and raises the water for the works by a pump of 4 inch calibre and 9 inches stroke, from a well 25 feet deep. I have run it three days with one cord of 2 feet wood, (oak)* which is sufficient. The simplicity of it is admirable. It exhibits all its parts in operation at a single view. I have no trouble in keeping it tight and in order—and I do not hesitate to say that it will, with a given quantity of steam, produce an effect 20 per cent. greater than can be produced in one of the same size stationary cylinder. This arises from the great diminution of friction, by the direct application of the power to the crank. It runs perfectly smooth—no noise—and with proper attention no way liable to get out of order. Those who want steam power, need only make themselves acquainted with the Pendulum Engine to give it at once a decided preference to every other kind now in use—for it only wants to be known to be preferred, and this is the engine that is fitted from its construction (and the only one) for railroads. I need not wish you great success in introducing it; the intrinsick excellency of the invention must insure it. If my opinion is of any service to you in forwarding its introduction, you are at liberty to make what use of it you think proper.

Yours, &c. E. BURT.

Mr. E. A. LESTER.

* That is, half a cord of the usual length of 4 feet.

ches calibre and 28 inches stroke, operates with steam from 60 to 70 pounds per inch, 60 revolutions per minute, with 2 cylinder boilers of 2 feet 8 inches diameter, and twenty feet in length each.

Such is the result of experience, in respect to this engine; certificates of similar import might have been added, respecting other Pendulum Engines that have been put up, but they were deemed unnecessary. The engines, above referred to, have been so thoroughly tested and proved, that the result, in respect to the principles of construction and practical advantages of the machine, are deemed to be as conclusive, as if a hundred of them had been in operation for ever so long a time; since if it were constructed upon erroneous principles, *one* could not be made to operate successfully and advantageously, and the constant operation of *one* for two years, is certainly sufficient to develope its properties, and show the objections, if any, to which the principle is liable. It was deemed the less necessary to add any further certificates, as no fact can be stated in relation to any engine of this description, which has ever been put into operation, that can, in the slightest degree, detract from, or tend to throw the least doubt upon, the results of the operation of the engines particularly referred to in these statements.

The following restrictions upon Mr. Lester's Engine, has been sent us by a scientifick correspondent. As our pages are always open for the free discussion of the merits or demerits of inventions, we freely give it room. We must be allowed to say, however, that we do not think our correspondent's objections very serious, either in detail, or the whole. Mr. Lester's application of steam, and machinery, is certainly one of great merit, and one, perhaps, in which as few objections can be brought as in any other—this, we think, our correspondent will admit himself.

building no. 4

BUILDING NO. 4: Offices for the USS CONSTITUTION. According to the DPW records, this building was constructed in 1827. However, all of the yard plans beginning with 1857 do not record this building until 1864. The property that this building sits on was not purchased until 1863 if records of the yard plans are correct. If the building dates from 1827, then it was built by a private citizen using Building No. 5 as a party wall, an unusual practice if allowed by the Navy.

Externally the building features resemble one built nearer to the 1864 date with the flat metal-covered shed roof and the double dentiled brick cornice along the north wall. Other than the north cornices, the building is a plain two story brick building constructed in the most irregular manner. That is, the building lines do not follow the conventional practices of using uniform door and window bays, right-angle corners and uniform heights to the walls.

BUILDING NO. 4, additions and corrections.

Isaac Hull, former Commandant, originally owned the land referred to as Oakman and Eldridge's Wharf. (See Middlesex South Registry of Deeds Book 801, p. 95.) The land was transferred to John S. Tyler, and then by him in 1851 and 1853, jointly to George W. White and Charles S. Darrow. (Book 581, p. 267; Book 611, p. 118; and Book 681, p. 216.) A map of property definition, filed in Book 801, p. 97, and dated October 13, 1858, indicates that the storehouses which would become Buildings 3 and 4 were on the site. Precise dimensions are given. The land was obtained by Oakman and Eldridge in 1861 (Book 841, p. 494), and transferred to the U.S.Navy in November, 1862 (see attached deed, Book 871, p. 469,) "...together with all the buildings, wharfs, and other structures.. Hence, building 4 was indeed constructed prior to Navy ownership in 1862, and records of 1858 show it in place. Early yard maps generally did not show any buildings outside the boundaries.

In 1875, and again in 1882, Building 4 was noted as an "oil store." While Building 97 existed, the Main Gate, (1903-1958) part of Building 4 was incorporated for security purposes and related storage. The downstairs was, after 1948, used for a package store, with additions also serving as a convenience station for the USF Constitution.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

PIER NO. 1, CODE NO. 421, important drawings.

(Many of the early drawings in this file, northeast end of building 200, concern the original purchase of the land in 1862.)

nn.	"Plan of Oakman and Eldridge Wharf, Navy Yard, Boston, May, 1861." Four buildings are shown, including building number 4, next to the main entry to the yard.
421-04 955D251	"The original plan and survey of "White's Wharf" so called, made by Mr. Babbitt, apr. Engineer at the time of the purchase of the property by the U. S. Government, May, 1861." Noted on one side: "Darrin and White to City of Charlestown, Middlesex So., Book 801, page 95." Pencil on parchment, indicates all dimensions of Bldg. 4.
421-02	"This plan was left with Admiral Stringham by Mr. Oakman" written in pencil at bottom. Buildings 3 and 4 are clearly indicated, no date., Shows several wharfs in the area, other properties besides the O and E land.
421-08	A similar site plan of this same general date. (Appears to be a tracing of the 421-04 plan discussed above.) Building No. 4 is labeled "Brick Store House".

PUBLIC WORKS DEPARTMENT, VAULT DRAWINGS

BUILDING NUMBER 4, important drawings.

4-01 391-A7	"Built of Brick, with division wall, Iron doors on the front, wood sash doors on the end and rear, Roof covered with tin, and used for drying Tarpaulins, wood stairs on the rear used for conveying Tarpaulins onto the roof." Building occupied by Construction and Repair (C&R), January, 1872. Drawing on opaque linen.
4-02	"Alterations and Additions to first story for Labor board Office." September 27, 1938. (Labeled "VOID").
4-03	"Alterations and Additions to first story for Labor Board Office; Plumbing" Oct. 3, 1938. (VOID)
4-07	"South Extension, first and second floor plans, 1942." VOID. Number 4 was to be used in conjunction with Gate House 97 for papers, pass-photo section, offices, and records. (on reproducable vellum).
4-10 VOID	Building 4, "Alterations for a new liquor store, April 9, 1948, Liquor store to be on southeast side, facing old Pier 1.
4-10	Accepted December 3, 1948. For new liquor store. Police gate control still occupied other one-half of building, receiveing a new doorway, new back elevation, at least in parts.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

<u>BUILDING NUMBER 4, important drawings</u>.

4-04	"Alterations to Lightling Plan, first floor, Oct., 1938."
4-05	"Removal of brick wall", replaced by posts under the panel points of the trusses, (Part of the interior brick division wall), May 11, 1939.
4-06	Sprinkler system, December 6, 1940.
4-09	"Proposed South extension, foundations and framing, plans and details, 1942.
4-11	Liquor Store, electrical, plumbing, HVAC, Dec., 1948.
4-12	Repair of roof trusses, Nov. 15, 1950, (refer to photos).
4-13	New Liquor Store and storage, Nov. 14, 1951. Shows older, existing extension, in the nook between the juncture of buildings 4 and 5.
4-14	C.P.O. Club, installation of Air Condt. machines, February, 1952.
4-15	Electrical, Sept. 3, 1952.
4-19	Enlargement of Package Store area, prelim., March, 1958.
4-21 etc.	Four drawings on Liquor Store rearrangement, arch., plumbing, structural, and electrical; March, 1961.
4-25	C.P.O. Club lounge enlargement, March 7, 1968.
4-26	C.P.O. lounge enlargement and fire stairs, Dec. 1963, drawing superceded by 4-33 and 4-34.
4-29	Fire alarm system, plans, April 15, 1964.
4-32 etc.	Three drawings for Lounge enlargement of C.P.O., March, 1968, arch., mech., electrical, fire.
4-35	Alterations to C.P.O. Club, November, 1968.

Commonwealth of Massachusetts
A Copy from Records of Middlesex So. District Registry of Deeds
Book 671 Page 489

Attest John H. Corcoran 2nd Asst Register.

KNOW ALL MEN BY THESE PRESENTS That We, Samual Cahman and Benjamin W. Eldridge of Somerville in the County of Middlesex and Commonwealth of Massachusetts, Merchants, in consideration of one hundred and twenty three thousand dollars to us paid by the United States of America, the receipt whereof is hereby acknowledged do hereby give grant, bargain, sell and convey unto the United States of America, all that lot of land and flats in Charlestown in the County and Commonwealth aforesaid, together with all the buildings, wharves, and other structures thereon, and with all the rights and easements thereto belonging, bounded Northwesterly on two lines by Water Street one line measuring one hundred and thirteen and seventy hundredths feet and the other line measuring fifty four and fifteen hundredths feet, Northeasterly by land and flats of the said Grantee now used for the purposes of a Navy yard, there measuring Six Hundred and Ninety one and fifty hundredths feet, Southeasterly by the Harbor Commissioners line so called two hundred and seventeen and thirty nine hundredths feet and Southwesterly by land and flats now or late of William Caswell (known as Caswell's Wharf) six hundred and fifty three and fifty hundredths feet, also all our right, title and interest in and to any and all land or flats lying Southeasterly or Easterly of said Harbor Commissioners line, adjoining

the granted estate, being the same premises conveyed to us by Charles S. Darrow and George W. White by two deeds both dated January 15 A.D. 1861, and recorded with said Middlesex County Deeds (South District in Book 841, Page 494 and Page 495. and are more particularly delineated on the plan to be recorded herewith dated July 1862, and called "Plan of land and wharf in the City of Charlestown sold by Oakman and Eldridge to the United States" which plan is to be taken as a part of these presents for further description and explanation of the premises intended hereby to be conveyed, the granted estate is conveyed subject however to the rights and easements conveyed by the said Darrow and White to the City of Charlestown by deed dated July 1, A.D. 1858 and recorded with said Middlesex County deed (South District) in Book 801 Page 95, to which reference is to be had for description of said rights and easements, the covenants of seisin and warranty in this deed shall not apply to any part of the granted estate below the line of low water mark. TO HAVE AND TO HOLD the granted estate unto the United States of America and its assigns, to its and their own use and behoof forever, and we the said Samuel Oakman and Benjamin W. Eldridge for ourselves and our heirs, executors, and administrators do covenant with the United States of America and its assigns that we are lawfully seized in fee simple of the granted estate, that said granted estate is free from all incumbrances other than those created by the deed of the said Darrow and White to the City of Charlestown above mentioned, that we have good right to sell and

convey the same to the United States of America and its assigns forever, subject as aforesaid, and that we will and our heirs, executors and administrators shall WARRANT AND DEFEND the granted estate to the United States of America and its assigns forever against the lawful claims and demands of all persons except as aforesaid. IN WITNESS WHEREOF We the said Samuel Oakman and Benjamin W. Eldridge together with Eliza A. Oakman, the wife of said Samuel Oakman and Catharine Eldridge, the wife of said Benjamin W. Eldridge each in token of her release of all rights of DOWER AND HOMESTEAD exemption in the granted estate, have hereunto set our hands and seals this first day of July in the year eighteen hundred and sixty two. - - - - -

Signed sealed and deliv-ered in the presence of	Samuel Oakman	(seal)
Seth J. Thomas to B. W. E.	Benjamin W. Eldridge	(seal)
D.W. Gooch to Samuel & Eliza Oakman	Eliza A. Oakman	(seal)
Attest: John R. Poor	Catharine Eldridge	(seal)

COMMONWEALTH OF MASSACHUSETTS. Suffolk ss. Boston, Sept. 30th A.D. 1862. Then personally appeared the above named Benjamin W. Eldridge and acknowledged the above instrument to be his free act and deed, before me, Seth J. Thomas, Justice of the Peace.

Middlesex ss. Nov. 1, 1862. Rec'd & Recorded by

Caleb Hayden Reg.

brick store

BUILDING NO. 5: Present Officer's Club. This building is thought to be the only surviving example of the original buildings constructed at the Navy Yard in ca. 1803. Its survival is probably the result of its south wall forming an effective barrier for the main entrance gate to the yard. The internal use of the building has varied over the years commencing with its use for naval stores and offices for the yard to classrooms and barracks for the Naval Reserves in 1923.

Building No. 5 seems to have retained its original building characteristics of a brick structure, three stories high with a slate roof hipped at both ends. In plan, the east end is squared off but the west end is canted, making the building 19 window bays long on the south wall and 22 bays on the north wall. Other than the fenestration mentioned the building is plain and simple.

The building was completely remodeled by the WPA in 1936. All three floors and the roof, according to plans and photographs examined, were removed and replaced. The interior rooms were completely rearranged. In 1941, the building became the Officer's Club on the first floor. From 1941 until the present day the interior room arrangement and finishes have undergone constant change. The exterior walls revealed little of these changes except for the bricking up of window and door openings until 1961 and 1971 when large "picture" windows were installed in the south wall on the second floor. Obtrusive air conditioning units concealed by a flimsy serpentine brick wall have been installed on the asphalt drive along the south wall. Sometime after 1937, the white paint was removed from the exterior brickwork. All of the original brick chimneys have been removed.

BUILDING NO. 5, additions and corrections.

Early in the yard's history, communication between the Navy agent in Boston and the Secretary of the Navy focused upon a request for building a brick or stone storehouse: on August 20, 1801, the secretary Robert Smith wrote to the new navy agent in Boston, Samuel Brown "...you will immediately proceed to the building of a Storehouse, in the Navy yard, at Charlestown, 130 by 40 feet, three stories high, with a good cellar under the whole. The house shall be built of brick or stone..." (see Preble, pp. 58, 62.) Whether such a building was built is a moot question. In Preble's notes for the year 1811 (p. 79) he writes the the building appears to have been accomplished. Winsor, in his Mem. Hist. of Bost., vol. 3, p 338, using an edited version of Preble's notes, concludes that (1) the storehouse was indeed built by 1803, and (2) this was the same building that is currently Building no. 5. His conclusions may well be inaccurate.

In the unedited version, Preble continues the chronology of the yard's development and for the year 1813 finds an inven-

tory of buildings in the yard (including their function) prepared by the Commandant and sent to the Secretary in Washington. There is no mention of any brick store, but there is a reference to a three-story wooden storehouse, with a cellar, 40feet by 60 feet. (Preble, p. 94-95.) At this point Preble also states that the only buildings that were mentioned in 1813 still visible in the yard in 1823, were the Commandant's House and a wooden shed that he used as an office. Further, in 1817, the following appeared in the logs of the yard (Preble, p. 118): "...one of the old buildings in the yard was removed to the wing of the new brick House..." The house was stated as being near the western gate. Again, on Nov. 22, 1817, the masons were bricking the cellar under the "new storehouse" and raised it above the level of the tidewater. In 1822 (Preble, p.132) the painters moved their shop from outside "into the new brick store in the yard." Evidence is strong, therefore, that building 5 was built sometime between 1817 and 1822, that it originally served as a storehouse, and later a painters' workshop. The painters remained until about 1901 when they moved to building 10, and finally to building 125 in the year 1908. Building 5 is probably not the oldest surviving structure in the yard. The Commandant's House probably is.

In the last decades of the 19th Century the building housed on the first floor: offices of the paymaster, clerk, and dispensary, print shop, painters shop, and watchman. On the second floor were administrative offices, Naval institute and library. On the third floor was the apothocary, paint loft, and varnish room. In the cellar was storage for paints, oils, old copper, etc., and a boiler house for supplying steam heat for buildings 5, 6, B, C, D, E, F, and G.

BOSTON NAVAL SHIPYARD, FILES IN PHOTO LAB.

BUILDINGS NUMBER 4 and 5, important photos.

F457-N3	Ocean side (back) of Nos. 4 and 5, March 8, 1902.
3756, etc.	Printing shop interior to No. 5, ca. 1910.
nn.	Barber shop interior to No. 5, ca. 1910.
4581	Store, interior, No. 5, ca. 1910.
4044	Building 5, Museum entrance, July 24, 1918.
4045	Ditto, Lincoln Ave, (pier 1), 1918.
nn.	No. 5, First Ave. Side, (Commessary Store), 1918.
4046	Ditto, paving of first ave., July 24, 1918.
5780	Museum, Library, etc. exterior, Feburary 18, 1921.
824-36 etc.	April-October, 1936. Twenty progress photos on interior showing changes in Nos. 4 and 5 from start to finish, displays interior structure well in some photos.
454-37 455-37	Building 5, showing repairs on roof, northeast corner, June 5, 1937.
487-47 etc.	Building 4, structural details on interior, showing deflection of timber top-chord of composit timber and metal truss (3 photos), 1947.
1034-62 etc.	Building 5, negatives of exterior dated Feb. 6, 1962.

PUBLIC WORKS DEPARTMENT, VAULT DRAWINGS

BUILDING NUMBER 5, important drawings.

(The vault only contains blueprints of drawings made by private architects, the earliest dated 1947!)

"Remodeling mess hall and longue, by William Hoskins Brown, Aurburndale, Mass; July 21, 1947." 5 sheets.

"Commissioned Officers Mess, by Edward J Aisner, Newbury Street, Boston." June 16, 1952. 4 sheets on entry, lightling, and interior alterations.

"Alterations to Dining Room and Kitchen, Commissioned Officers Mess, by William L. Galvin, architect, Charlestown." no date; 5 sheets.

"Cafeteria Plan, first floor, Commissioned Officers Mess, Julius J. Baldi, food service consultant, Belmont, Mass." November 7, 1959. 1 drawing.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

<u>BUILDING NUMBER 5, important documents</u>.

5-01
352 C76 Position of new safe, Paymaster's office, Oct., 1869.

5-02
353 B82 "Plan of First Story, Elevations, and Sections of Navy Store, No. 5, March, 1869." "Built of Brick, with brick division walls, and wood partitions, roof covered with slates, copper gutters. Houses the office of paymaster, clerk, dispensary, printing, paint, and watchman's quarters.

5-02
...A79 (misnumbered?) "Cellar, Second, and Third Stories of Building Number 5, February, 1872.) Third story held Construction Paint loft; Second story held the Museum, Library, and Storage; and the basement was for storage.

5-03
334 C70 "Plan of oil room in Navy Yard Store Building, October 3, 1867.

5-04
etc. Plan of stairway in Building No. 5, several pencil drawings, no. date.

5-07
1135C224 First Story plan, proposed addition of wc's, about ca. 1870.

5-08
413 C86 Boiler for Building 5, August, 1874.

5-09
etc. Two drawings, Part of First Floor, 1918, (shows commessary stores, pay offices, etc.

5-14 Basement and first floor, 1918, mainly occupied by commessary store, plans revised in 1932.

5-15 Second and third floors, 1918, mainly occupied by chapel, rifel range, band; locker and drill rooms, revised in 1927.

5-16 "Space available for meat and vegatable market (actually in Building no. 4) October, 1918. Four at this point also has printing shop and female wc's.

5-20 to 5-40	General alterations of 3/18/36, rather extensive changes, the second and third floors were converted to rooms, the first floor became a drill hall. Building number 4 was involved, too. Arch., structural, electrical, plumbing, HVAC drawings.
5-43	First, second, and third floor summary of architectural plans, 1939.
5-44 to 5-51	Proposal for lounge and mess hall, October, 1941. An addition already exists between buildings 4 and 5 that houses fingerprinting and photo identification.
5-52 etc.	Three drawings for second, and third floor alterations, rooms and bedrooms, ventilation and lighting.
5-55 to 5-65	Minor changes, rehabilitation, and alteration
5-66 etc.	Four drawings, Second floor officer's recreation room, southeast end. May, 1945.
5-72	Building revised to 3/4/50, floor plans.
5-80	Galley ventilation, November 28, 1951.
5-87	Second floor banquet and mess hall, March, 1953.
5-88 to 5-91	Com. Officer's Mess Hall and Galley, architectural and ventilation changes, second floor, October, 1952.
5-93 etc.	Constitution Area convenience station, arch., heating, plumbing, and lighting, March 25, 1955.
5-97	Rearrangement of office and upper longue, plans, sections, and details.
5-100 to 5-110	General rehablilitation, July to November, 1958; including plumbing, air conditioning, and ventilation.
5-112 etc.	First floor rehab., addition for walk-in refrig., three drawings, inc. mech and electrical. 3/10/59.
5-115 etc.	Two drawings for toilet rehab., first floor, inc. heating and ventilation, 7/1/59.
5-117 etc.	Two drawings for Constitution convenience area, and package store enlargement, June to Aug, 1959.

5-120	Galley power panel, Sept. 1959.
5-121 to 5-140	Rehab. to first floor and kitchen, rather extensive changes to services in the area; November, 1959 to October, 1960.
5-141	Second and third floor rearrangement, 10/17/60.
5-143 etc.	Four drawings, shelter for entrance, storage etc. for ground level, arch., structural, electrical, etc. April, 1961.
5-147 etc.	Second and third floor, metal stairs and fireproofing, four drawings, July 26, 1961.
5-152	Second and third floor arch. rehab. and rearrangement, 1/9/62.
5-157 etc.	Drainage, of galley rehab., voil and valid drawings. Nov. and Dec., 1963.
5-162	Buildings 4 and 5, fire protection, first floor, 10/64.
5-165	Attic, rehab. architectural, gravity venti., 8/31/65.
5-166	First floor rehab, arch., smoke vents and windows, 9/22/65.
5-167 to 5-172	"Alterations to Bachelor's Officer Quarters, Third Floor" 7/7/65. As built, sepia drawings.
5-195 to 5-198	Second floor, plans sections, elevations, details, for alterations, including picture window. March 15, 1971
nn.	Plans and specifications for renovation of Building 5, by Bedar and Alpers, Inc, Newbury Street, Boston, 4/21/72. New window wall on south face of second floor, primarily changes on second floor, ten drawings.

pitch house

BUILDING NO. 10: This building may be the "Pitch House" of 1852 that appears on the Yard Plan of 1857 situated on Pier No. 1. Its exterior design is identical to elevation drawings found on an undated drawing done on parchment paper similar to that used in the Navy Yard during the 1830's to the 1850's. The plan of the first floor of Building No. 10 is quite similar to that found in the old drawings.

The old drawings show a two story brick building, five bays long and three wide, having a gable roof with a broad chimney located near one end. The cornice along the eaves and up the gable end is shown finished off with brick dentils. All of these features are present today on Building No. 10, with the exception of the chimney which was removed in 1937.

Building No. 10 first appears in its present location on the Yard Plan of 1901. If this is the "Pitch House" of 1852 then it was moved to this site at this time. Its use in 1901 was identified as a paint shop until 1908, then a storehouse until 1911, a wireless station and receiving ship offices from 1912 to 1918. From 1919 until 1946, the building served as a laundry, then a sonar lab from 1948 to 1957 when it was converted into a battery charging shop. In 1972 work was begun to convert the second floor into a museum space to display artifacts from the USS CONSTITUTION. A wooden viewing platform for the public was built along the east side of the building at this time.

In 1920, a two-story, two bay brick addition was built against the north end. A hip roof was constructed over the addition creating its present day unsymmetrical appearance. In 1923 a wooden lean-to was added to both ends of the building only to be removed and replaced with a metal Quonset addition in 1952. The Quonset was removed in 1965. Extensive alterations were completed by the WPA in 1937 including new underpinning, new roof ventilators, new doors and window sash throughout, paint removed from the exterior brickwork, rebuilding of all "settled brickwork" and the repointing of all brick masonry. Since this time all of the window openings on the west side have been replaced with glass blocks.

BUILDING NO. 10, additions and corrections.

This building is indeed the old "Pitch House" from 1852. Between 1899 and 1902 the vicinity of Building 10 was undergoing great change: the "Fitchburg Slip" was under construction on a site immediately next to the old location of the Pitch House; and Pier I, with a traveling crane, was under construction next to that. Building 10 (then a paint shop) may be seen on the old location as late as May, 1900, in the Fitchburg drawings An old sepia-toned photograph, dated August 2, 1900, titled

"Paint Shop, looking West" clearly shows the building undergoing a move. It is raised up on temporary wooden foundations, with wood braces in many of the window and door openings for protection. The building is five bays long and 3 bays wide, with a wide chimney. (This photograph is located in the files of the editor of the Boston Naval Shipyard News, F-10,#8, being held for NPS takeover.)

The roof trusses used in 1852 show clear understanding of the concepts of tension and compression with relationship to material. The trusses were composite, wood and iron, with the former carrying compression, the latter tension. The bottom tension chord was of wood only for functional reasons. This structurally elegant statement was fairly new (but by no means original) at this time in history.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

BUILDING NUMBER 10, important photos.

F436-N15	Early view of southeast sides of No. 10, surrounded by water, ca. 1902.
nn.	"Paint shop, C & R, June 28, 1901," exterior and three interior photos, sepia toned but excellent quality.
nn.	Addition seen from northwest, September 30, 1918.
5813	Laundry building from west, March 25, 1921, and same from the east, same date; 3"x5" prints.
694-37	View south and east of No. 10, before repairs, September 10, 1937.
nn.	Building 10 shouing foundation repairs; October 7, 1937.
814-37	Alterations to Building 10, view southeast, Nov. 1, 1937.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

BUILDING NUMBER 10, important drawings.

10-01
615 D177 "Plans, Sections, Elevations of Building No. 10: used by Construction. Outside and division walls of brick, partitions of wood; part of the first story was used formerly for tar boiling purposes. copper gutters, roof covered with states." Five bays, nice composite roof trusses, ca. 1870.

10-04
to
10-10 "Laundry Building No. 10," a WPA project of repairs and alterations, plans, elevations; August 23, 1937. Repointing took place, and the original trusses are still depicted.

10-13 First and Second floor plans, August, 1939.

10-14
to
10-22 North Extension for Sonar Transducer Lab, drawings dated from November, 1947 to February, 1948. The building was lengthened by two bays.

10-33 Platform from which to view the USS Constitution, June 15, 1972.

10-27
etc. Two drawings on the new sprinkler system installed, March, 1951.

PUBLIC WORKS DEPARTMENT, VAULT DRAWINGS.

BUILDING NUMBER 10, important drawings.

10-18 "Sonar transducer laboratory", electrical, Feb. 1, 1948. Plans indicate that on the first floor were a test tank, shop, and storage area, etc., and that the second floor contained the transducer lab, crystal lab, tank room, and support facilities.

scales house

BUILDING NO. 19: Weigher's Office and Yard Scales. This building, constructed in 1918, replaces the old yard scale house of 1871 which was located farther west on First Avenue. It is a one-story brick structure with a flat roof. The exterior brick work was designed in an imaginative way with rectangular panels, square and diamond shaped motifs throughout.

BUILDING NO. 21: Inactive Carriage House for the Commandant. The records of the DPW indicate that this building was constructed in 1840 probably as a carriage house. It appears on the Yard Plan of 1857, our first complete plan after the one of 1828. It remains unidentified on each successive yard plan until 1880 when it is called the "Greenhouse." In 1908 it is called the Commandant's Watch House and in 1911, the Commandant's Barn. From 1913 until 1964 the name reverts back to a greenhouse until 1964 when it is identified as an inactive carriage house. The term greenhouse probably originated in 1880 when a glassed-in addition was built across the south gable end and a small door opening was cut through the granite wall for access. This greenhouse addition was used, after two subsequent remodelings until after the 1950's when it was removed.

Building No. 21 is a one-story granite structure with a slate roof, gabled on the south end and hipped on the north end. It has absolutely no architectural refinements. The granite blocks used in the wall construction appear to be left over or ones rejected from the granite buildings of the yard. There is no definition of the window sills or lintels nor is the arched door opening to the west built with stone voussoirs but simply stones corbeled over the archway. The walls and corners of the building have no workmanship or quality. It is a strange building indeed.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

YARD SCALES, BUILDING NUMBER 19, important photos.

nn.	Foundation and pit beside the Scale House.
4280	Foundation of Scale House, September 30, 1918; poor photo.
4433	New Scale House from the east, October, 30, 1918.
4744	Completed Scale House from west, March 3, 1919; (a view for the end of Building 28 is also given in the photo.)
455-33	Driving piles to support railroad tracks near scale house, and pit for new scales, May 19, 1933.
973-33	View of Yard Scale House, looking west, August 1, 1933.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

BUILDING NUMBER 19, SCALES HOUSE, important drawings.

19-01	Diagrams for the Weigher's Office, U.S. Navy Yard, October, 1871 (Fairbank's Standard) Wood frame building, this was the original scale's house; wash on linen.
19-02	Plan of Scale pit and curb, probably for new scale's house, no date, on brown paper.
19-03	"Plans and Details for Scale House, Sept. 3, 1918."

engine house

BUILDING NO. 22: Woodworking and Sheet Metal Shop. According to the records of the DPW this structure was built in 1832. Its original plan was L-shaped, three stories high and is the first of the large granite buildings in the yard. It may have been designed by Alexander Parris.

Part of its original function was to house the machinery that operated Dry Dock No. 1, completed in 1833. By 1857, the yard plan describes the north wing as containing a sawmill. In 1856, one Navy record states that a one-story brick ell was constructed off the east side of the south wing creating a U-shaped building. This addition contained a boiler house and a sizable smokestack that stood up into the 1930's.

The north and west walls of this building have an equal number of window bays, 10, on all three floors. The sash are 12 lights over 12 inserted into plain recessed openings. Three of these openings on the first floor of the west wall were doorways with jambs slightly recessed from the main wall. The stonework is comprised of fine hammered granite blocks laid in mortar backed with brick. The roof is hipped and covered with slates. The skylights are apparently part of the original design. The eaves contain a projecting overhang cut from granite blocks complete with a quarter-round molding, fillet, fascia, soffit and stone cut gutter lined with copper. Except for minor alterations to the doors and some first floor window sash plus the addition of an exterior fire escape, this building is relatively unchanged on the exterior.

BUILDING NO. 22, additions and corrections.

In 1829, $30,000 was appropriated for a building on Site 55 of Baldwin's Plan of the Yard, "...to be built of Granite, completely fireproofed, and to be used in part for the Engine and pumps connected with the Dry Dock." The building shown on Baldwin's Plan is ell-shaped, on the location of what is now Building 22. Correspondance exists which points to Alexander Parris as designer of the engine house (see Letters, Commandant, Charlestown, Mass., to Navy Commissioner's Office; National Archives.) In 1831 the building was not yet begun, as the site was being occupied by the stone and stone-cutters for the Dry Dock. Nevertheless, it was expected that the foundations would be commenced before the end of the year. (Preble, p. 178.)

The original building may have been built in two stages. One of the early drawings dated July 10, 1832 (22-02) shows a structure 40 feet by 60 feet. This is clearly the machine segment, but the larger form was not indicated. In 1840, in Parris' portfolio, Buildings and Machinery Errected..., he does include several large signed plates of the floor plan of 22, showing the 40 foot by 60 foot machine segment, as well as the 40 foot by 100 foot sawmill. Overall dimensions are identical with that which exists today. Much of the machinery for the

engine room and sawmill are shown.

Charles Stuart had the following to say about the Engine House, published in 1855, his information is dated and perhaps somewhat inaccurate:

> The engine house is built of cut granite, one hundred feet in length and forty feet in bredth, three stories in height, and covered with a slate roof. Sixty feet of the lower story of this building is occupied with a pendulum engine of 16" cyclinder and 4 foot stroke, and five plain cyclindrical iron boilers each 30" in diameter and 26' in length. The residue of the structure is used for a saw mill and machine shop. (Navy Dry Docks of the United States, p.62)

In 1856 the brick addition was added, and the boilers were removed to this area. A chimney was added in 1870.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

ENGINE HOUSE FOR THE DRY DOCK #1, BUILDING NUMBER 22, important photos.

nn.	Entire northwest and southwest sides, Sept. 20, 1902.
F457-N18	Corner detail along First Ave., August 3, 1903, photo faded and torn.

PUBLIC WORKS DEPARTMENT, VAULT FILES.

BUILDING NUMBER 22, important drawings.

22-01 219 D64	"Plan of cellar door for engine house," Copy, June 18, 1832. on linen paper.
22-02 220 D65	"Ground Plan of the Engine House," Copy, July 10, 1832. (4'=1".) Shows engine boilers and two wells. entire size of building shown is 40'x60', or that part of 22 closest to and parallel with the dry dock. (Undoubtedly from Parris' office).
22-07 357 E27	"Drawing for belting, Dry Dock Engine Chimney" October 14, 1870. Stonework drawing for base of chimney.
22-08 360 B84	"Details of Dry Dock Engine chimney, October, 1870" Elevation and section; ink on linen.
22-09 362 D100	"Plan of Cornice for Dry Dock Engine chimney, September 9, 1870.
22-10 363 C78	"Diagrams of Dry Dock Engine chimney, Finished: December, 1870, height: 84'6", 198,000 red bricks, ink wash on linen.
22-11 365 C79	Diagram showing flews from Boilers to Chimney at the Dry Dock Engine House. January, 1871.
22-12 388-C82	"Detailed Drawings of angle blocks for the Dry Dock Engine Chimney; October 10, 1870."
22-14 395 A81	Plan of Second and Third Stories of Building No. 22; May, 1872. Second story: machine shop, pattern shop, dry dock engine room, store rooms (roof of extension clearly visible.) Third story: block shop. Ink on linen, two pieces due to rip.)
22-16 425 B94	Plan, Elevation, and Section of Wheel pit for Dry Dock Pump, December, 1879; ink wash on linen.
22-17 605 D174	Detail for Dry Dock engine Chimney, pencil on brown paper, no date.
22-18	Elevation of base of Chimney, stonework, no date, probably Sept.-Oct., 1870.

22-19
610 D175 "Diagram of Cornice of Dry Dock engine Boiler House." n.d.

22-20
611 B127 "Pumps and Block Maker's Workshop," plan, no date, but clearly early. Drawings on both sides: on front, workshop with interior dimensions of 97'x37'; on back, drawing of pump. Ink on brown paper.

22-22
622 C143 Diagrams of flues, foundations, and sections of Chimney at Dry Dock. Sept. 30, 1870; ink wash on linen.

22-23
623 C144 Dock Engine Boiler House, n.d., but pre May, 1872 (see 22-14), pencil on tan paper.

22-24
900 D224 "Stonework at Dry Dock wells" n.d. but perhaps ca 1855, early, red ink dimensions on ind drawing.

22-25
908 D232 Dry Dock pump wells, August, 1855. Plan and section, ink and wash and pencil on tan paper.

22-26
930 B201 "Plan Showing Approximate dimensions of Boiler House, Pump Room and Pits, Building 22." (In pencil: "October, 1890"), ink on vellum.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR ACTIVE FILES.

BUILDING NUMBER 22, important drawings.

22-13 349 A80	Elevation and Section of Building 22, May, 1872. "Built of fine hammered granite, backed with brick, division walls of brick, partitions of wood, roof covered with slates, stone gutters lined with copper, Boiler house of brick, roof slated, the flat portion tinned and painted, copper gutter. Occupied entirely by Construction.
22-15(?) ... A82	"Plan of Cellar and First Story of Building No. 22. Cellar contained: pump wells and iron tank for pumps to take care of leakage. First story: engine room over pumps, boilers in adjacent addition.
22-75	First, Second, and Third Floor Plans, 1939.

carpenter shop

BUILDING NO. 24: Riggers Loft and Laborer's Shop; Docking Office; Marine Railway machinery; Reference Standard Laboratory

This is one building that has a date stone installed in the gable ends at the time of its construction in 1847. The files of DPW contain a well delineated set of drawings for this structure dating from 1900 and 1913.

Building No. 24 was constructed as a support facility for ship repairs in Dry Dock No. 1 Its original function may have been a joiner's and carpenter's shop. At least this description is written on the yard plans between 1857 and 1883 as such. After this, it seems to have served mostly as a rigger's and laborer's shop.

Architecturally speaking this building can be called a two-and-a-half story structure since it has three major floors. The third floor was designed with windows in each gable end as well as a double row of skylights, nine lights to each row, in each roof slope. Large double doors were centrally located in both end walls on the third floor. The building was designed with a cupola near the north end. Its design compares favorably with the cupola on Faneuil Hall in Boston, designed by Bulfinch in 1806. In 1913, the cupola and skylights were removed and replaced with the existing monitor roof. The interior floors were removed and replaced with concrete floors supported by concrete columns. Additional changes were made to some of the window and door openings. A brick and wood extension was built across the east wall in 1942 and a brick elevator shaft constructed at the north gable end effectively removing much of the original stonework.

One of the original door openings at the ground level in the south gable end has been altered to permit the installation of heavy chains that connect the marine railway to the machinery that operates it in Building No. 24.

Building No. 24 measures 70'-6" x 197'. It was constructed five bays wide and 15 bays long. Like Building No. 22, this structure was built of fine hammered granite blocks laid in mortar. The base stone projects about 2½ inches providing a sloping watertable. The window lintels and sills are more accentuated than Building No. 22 and the door openings are articulated by post and lintel construction cut from solid sections of granite. The two surviving wooden and glass door frames in the west wall indicate the more elegant appearance of the structure when it was new. These doorways were all protected with solid iron shutters. Above the iron doors appears a 26 light transom window which may be part of the original design.

The cornice along the eaves and up the gable ends has a wide overhang and was built from granite blocks. It consists of a smooth ovolo molding, a fillet, fascia and soffit. Separate but integrated as a visual part of the cornice is a molded cyma recta copper gutter that is fastened to the slate roof. The gutter terminates at each end of the roof.

BUILDING NO. 24, additions and corrections.

The building served as the principal "Joiner's Shop", at least until 1866, when the new Joiner's Shop, Building no. 36, was completed. By 1873, the first level held the Carpenter's shop, copper store, boiler room constructor's office, and galvanizing shop; the second floor held storerooms and draftsmen's offices, the third floor (attic) served as a rigging loft and boatswain office. An early etching dated before 1854 shows No. 24 quite well; entitled "A Comprehensive View of the Charlestown Naval Shipyard," it was published in Gleason's Pictorial (Vol. 7, no. 9, pp. 133.) This etching was discussed in the Boston Naval Shipyard news (Vol. 10, no. 5, March 10, 1945).

In another Shipyard article:

> In 1847, the present Rigger's Shop, Building 24, was built of Quincy Granite. It housed the administrative offices and the new trades that, in conjunction with rigging and sailmaking, were necessary in the construction of wood and steel ships. The Riggers and sailmakers in Building 24 outfitted many naval ships. In 1861, the second floor of the shop was used as a recruiting office for volunteers in the War Between the States. It served the same purpose in the First World War. (BNSN, vol. 13, no. 19, Nov. 22, 1948.)

Two early sepia toned photographs, located with the files of the Boston Naval Shipyard news, F-10 #8 and #9, show the building from the east and west, providing views of all four sides, plus cupola.

Partially built on filled land, the building appears to have settled in an uneven manner; the whole cornice line gently rising and falling as one scans down the length of the building.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

BUILDING NUMBER 24, important photos.

nn.	Interior and roof removal, and subsequent construction, a 31 photo sequence spanning from July 1913, to February, 1916.
F401-N73	East side of Building 24, August 13, 1900, during construction of Dry Dock #2.
2120	Following reconstruction, west side from Pier 1, July, 1915.

PUBLIC WKS DEPARTMENT, VAULT FILES

BUILDING NUMBER 24, important drawings.

24-01
346D84 "Foundations for Joiner's Shop Boilers," April, 1864; (written in pencil), ink wash drawing on opaque linen. (This may in fact be foundations for building no. 36, as of 1874 the "joiner's shop" was in building 36.)

24-02
346D96 "Sketch of chimney in Rigging loft," January 9, 1868.

24-03
408 A87 Plan of the 2nd story and loft of building no. 24; May, 1873 (sheet no. 2.) Rigging loft held quarter-man and boatswain's offices. Second story held mostly storerooms, with a receiving room, delivery room, clerk's office, constructors and draftsmen offices. Ink on linen.

24-04
411 A 90 "Plans, Sections, and Elevations of Building No. 24," (Sheet no. 1.) Front and end elevation, first story plan and section. First story has receiving store, carpenter's shop, copper store, boiler room, Constructors' offices, and galvanizing shop.

24-05
607... Plans and elevations of work shop to be built at the U S Navy Yard, Charlestown, no date, but elevation has a granite block with "1847" marked on its face. The size of all granite pieces are marked in red. On linen.

24-06
608 C140 "Galvanizing Shop," October 7, 1867, on vellum. (24-08, with the same title, is a copy of 24-06)

24-07
619 A106 "Joiner's loft floor," in pencil labeled Bldg. 24, and "Rigging loft floor," no date, on linen.

nn. Building No. 24 "Rebuilding", a total of six sheets, including masonry plan, roof framing plan, all dated 1914.

tinner & plumber shop

BUILDING NO. 28: Reference Standards Lab; Quality Rel. and Assurance Div.

The construction date of this building is fixed by the DPW as 1850. Plans, sections and elevation drawings dated 1866, 1894, 1895 and 1926 are kept in the basement vault of Building No. 200. The drawing of 1866 shows this building to be four bays wide and 10 window bays long, constructed of red brick, two stories high with an attic. It is a gable roofed structure covered with black slate. The yard plans between 1857 and 1865 identify this building as a coal house, probably for the storage of coal for Building No. 22. Between 1866 and 1904 the building was converted and used as a tinner's and plumber's shop. In 1905, three bays were removed to permit the laying of rail tracks for a crane. These three bays were added to the north end of the building in 1918. Red-orange bricks were used for the extension and the change of color is quite noticeable.

In 1948, the interior was changed over to a printing shop until 1958 when the present laboratory functions were shifted here. An outside fire escape was added in 1943 and 1968.

The building represents an architectural style somewhat similar to the Federal style such as Faneuil Hall, except the window heads are squared off instead of being arched. The residual use of a semi-circular attic window in both gable ends ties this design back to the early 1800's. It is a simply designed structure with little architectural style.

BUILDING 28, additions and corrections.

This structure was originally a one story, brick storehouse for coal used in the Dry Dock engine. According to Preble's analysis of notes for the year 1870, the building was raised to two stories, was divided vertically, and became the new shops for the Tinners and Plumbers. The actual plans of the yard, however, imply that this conversion was completed in 1866, for in 1867 the building is already labeled for Tinners and Plumbers. The plans, sections, and elevations were drawn in 1866 as well. Due to this change, and due to later changes by removing and then adding bays, it is questionable how much of the one story, original coal house work remains.

Sometime before the turn of the century, the name of the building, and perhaps part of its function changed to that of the "old light station". Two early sepia toned drawings exist dated August 4, 1900, showing the building from the southeast and the northwest, before the shortening took place. (One photo is in the photo files, the other in the BNSN files, F-10, #8).

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

BUILDING NUMBER 28, important photos.

3931 and 3935	Extension to Building 28, from the north, showing north side before changes and during changes, June 22, 1918; two photos.
3987	New extension to Building No. 28, July 5, 1918.
5809	Interior counter and serving area, Feb. 17, 1921.
5810	Interior Hall, Feb. 17, 1921.
5835	Restarurant and Recreation Building from the west, March 21, 1921.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

BUILDING NUMBER 28, important drawings.

28-14	Fire escape, December, 1943.
28-16	"Print Shop building 28: Reinforcing of 2nd floor." July 3, 1947.
28-19	"Consolidated printing plant, electrical lighting," October 3, 1947.
28-20	"Ditto," electrical power; October 23, 1947.
28-22	"Sprinkler system - wet-" December, 1948.
28-24	"Reference Standards Lab equipment room", plans and details of mechanical and electrical, Jan. 23, 1963.
28-29	"Metal fire escape..." January 10, 1966.
28-31	Fire escape structural, August 28, 1968.

PUBLIC WORKS DEPARTMENT, VAULT FILES.

BUILDING NUMBER 28, important drawings.

28-01 330 D93	"Proposed Addition to Dock Engine Coal House for Plumbers and Tinner's Shop, April, 1866; Estimated cost $28,000; wash on tan paper. Building depicted is ten bays long by four bays wide.
28-02 331 D94	"Plan of First and Second Stories of Tanner's Shop, November, 1866."
28-04 1324 D333	Sketch: Steam openings in boilers, Dec. 2, 1898, on vellum.
28-05 1123 C220	"Plans, Elevations and Sections of Building 28, September 22, 1894; vellum.
28-06 1205 D 305	Ditto, showing "Proposed location of Boilers for electric light plant, July 31, 1895, blueprint.
28-07 1125 C221	Original of 28-06., vellum.
28-08 1308 E126	Plan of First story, n.d., (ca. 1895).
28-12	Building 28, Second floor, September 29, 1926; enlargement of window.

muster house

Building No. 31 houses the Telephone Exchange and Hearing Clinic and was built in 1852 as a free-standing octagonal, brick, tower-like building, three stories high with a cupola and a surrounding one-story porch. It was called the "Muster House" between 1852 and 1905. The concrete and brick additions to the north were added in 1941 and 1943; those to the east in 1945.

Building 31, additions and corrections.

The Muster House was originally two stories, with a cupola, built between 1852 and 1853. The building appears on the Plan of the Yard for 1853. In 1867, $5,514.38 was requested from Congress to add a third story to the building, with a new cupola. This was carried out with an appropriation of $3,300 in April of 1871. The additional space was for draftsmen and clerks. By 1873 the building was occupied by the Civil Engineers and Draftsmen, as well as serving as the Muster house. Some beautiful Victorian furniture was designed in 1871 and again in 1890 to serve as cabinets and desks, these have since disappeared from the building.

There are two striking features about Building 31: its shape and its clock cupola. The octagon developed on a large scale following the 1848 publication of Fowler's book,(see attached article.) There are few if any octagonal buildings left in Boston, besides Building 31, and relatively few throughout the country. This particular structure appeared early in the development, and demonstrates the yard's (and the government's) attitudes toward, and support of, new architectural endeavors.

The clock tower was authorized for the original two-story building in 1852, at an expense of $225. (Preble, p. 322) Whether this same clock was reused in the 1870 addition and cupola change is unclear. The 1867 drawing for the third story addition clearly shows the clock in place (31-04). The clockworks that exist in the building today are marked: "Howard and Davis, Makers, Boston, Mass." and operate on a falling weight system. The gearworks and machinery appear to be in an excellent state of repair.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

<u>Building 31, important photos</u>.

F31 N1 "Navy Yard, Boston, Mass., Building 31" ca. 1905. exterior view with porch, before the construction of the Building 120.

F31 N2 View of some early scales, probably kept in 31. a small, faded photograph.

2450 Interior of Lab., (electrolytic batteries connected to a series of light bulbs.) nd.

5782 "Capt. of Watch and Telephone Exch., Building 31," from the southwest, February 18, 1921.

nn. View of Building 31, with porch; 120 can be seen in the background, from the southwest, ca. 1930. neg.

nn. View of 31, with porch, and building 120 in place, 3x5 print, 8x10 negative, from the southeast.

nn. Removal of porch, nd. negative.

PUBLIC WORKS DEPARTMENT, VAULT DRAWINGS.

31-01
244B48 "Plan for a Muster House," November, 1852. Two stories with a cupola.

31-04
662D186 Proposed Third Story addition with a new cupola, estimate $5514.38, August, 1867.

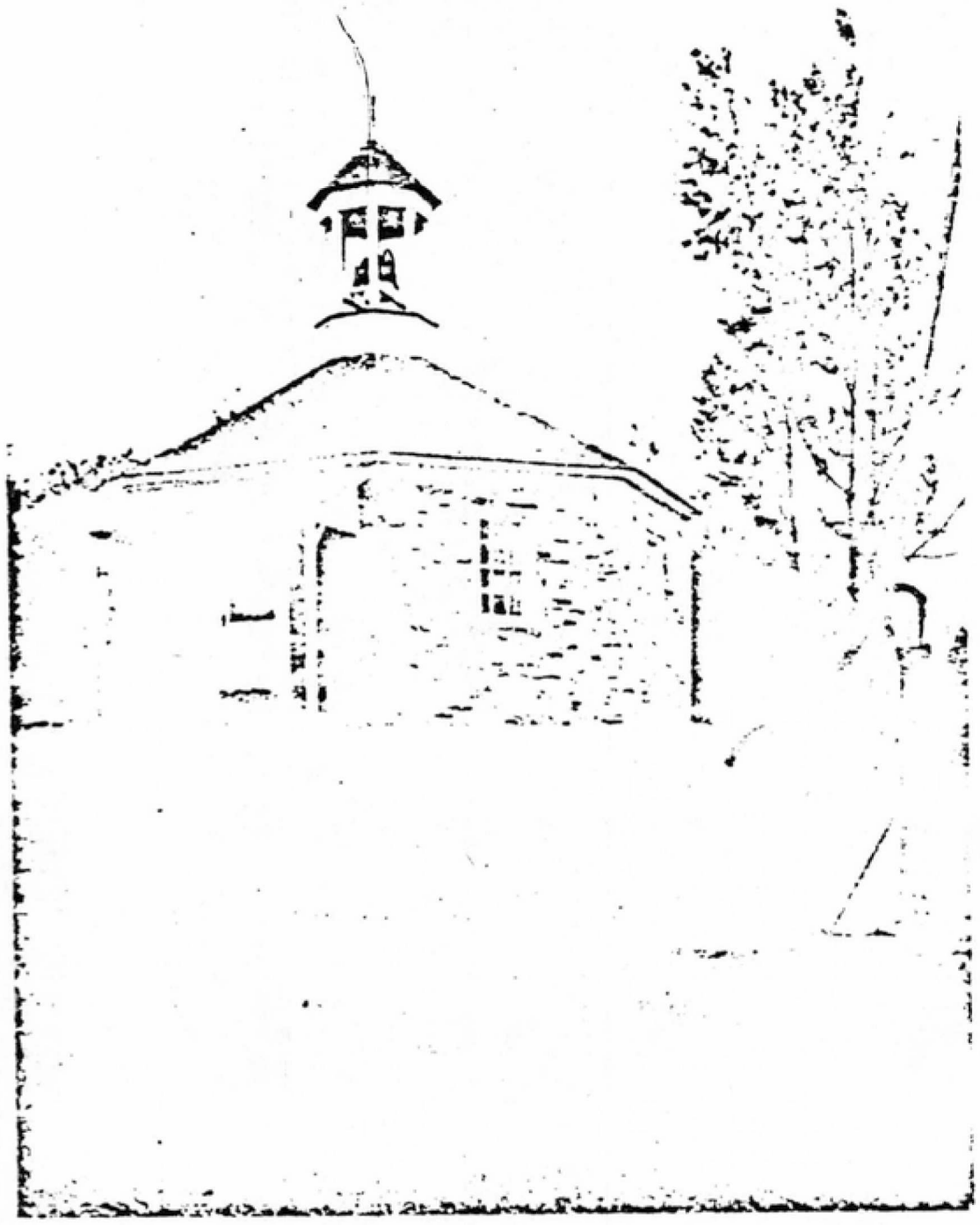
31-03
406A85 "Plans, sections and elevations of Buildings 31 and 32." In 1873, 31 is occupied by Civil Engineers and Draftsmen, Muster and Muster Clerk. Clock is shown in clock tower. Ink on parchment.

31-10
and
31-14 Furniture, beautiful details for interior woodwork for cabinets, desks, etc. Dated 1871.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

Building 31, important drawings.

31-06 939B210	"Plans of Building 31, showing proposed heating system, first, second, and third floor Muster and Civil Engineering, ca. 1890.
31-08 1239D319	Ground plan changes to office of Captain, July 16, 1898; ground floor also contains telephone office.
31-09 1240E120	Plan showing areas of rooms on First Floor, for sizing carpets, August 17, 1898.
31-15	Reflector for the clock. February 6, 1934.
31-16 to 31-25	Building 31, North Extension: Foundation, Basement, First, Second, Third, and Roof framing, and stairway alterations, December, 1941. Addition for telephone building, the old 31 is called "lab".
31-27	Changes in toilets, n.d.
31-28 to 31-38	Second North Extension, April, 1942.
31-41	Air conditioning and ventilation.
31-43	Alterations for X-ray equipment, electrical and heating plans.
31-46	Sketch of proposed Corpsmen barracks, October 13, 1952. Floor plan of octagon as a barracks.



Above: Boquet Schoolhouse (1826) in Essex, N.Y., built by Benjamin Gilbert. (Stephen T. Whitney)

"A Home for All"

The Octagon in American Architecture

John J-G. Blumenson

HISTORIC PRESERVATION, vol. 25, no. 3, July-September, 1973. pp. 30-35.

The search for the perfect building, with the ideal form and the most efficient structure, has engendered many creative building designs. In America the search for a form expressive of American ideals has led architects to experiment with new materials and various geometric forms. Experimentation with one geometric form—the octagon—resulted in an American phenomenon, octagon houses.

The use of the octagon for the single famly residence became so prevalent between 1850 and 1860 that the period has been labeled the time of "the octagon fad." But octagons were adopted for numerous other uses before and after the fad. An octagonal courthouse was built in Oregon in 1852; an octagonal arsenal was built in Williamsburg in 1714; the Dutch colonies used octagons for early structures—in fact, the first octagonal building in the colonies was a Dutch trading post built in Trenton, N.J., in 1630. Many eight-sided barns were built in New England and the Midwest; and schoolhouses, prisons, windmills, lighthouses and a host of other public buildings also appeared as octagons.

The octagon was popular as well in garden architecture. George Washington built not only a 16-sided barn but octagonal garden houses on his Mt. Vernon estate. In the South octagonal garconnieres (bachelor apartments) were built on the grounds of many plantations during the 19th century. The private house, however, provided the greatest outlet for variation of the octagon form—two, three and even four octagons have been combined to form one single dwelling.

Thomas Jefferson's use of the octagon for domestic and public buildings is further evidence that interest in the octagon existed long before the 1850's fad. As early as 1770, Jefferson proposed an octagonal chapel for Williamsburg, based on the circular Roman Temple of Vesta. Among his plans for Monticello were several incorporating the octagon. The culmination of Jefferson's experiments with octagons was Poplar Forest (1806–22) in Bedford County, Va., a house designed as a series of octagons and rectangles within a larger octagon. Poplar Forest is the first mature manifestation of an American interest in the octagon for a domestic residence. Jefferson's objective in designing this estate was to provide a comfortable retreat for himself; like most early American architects, both professional and amateur, Jefferson generally designed homes for the few who could afford the extra expense of architectural advice. It was Victorian phrenologist Orson Squire Fowler (1809–87) who brought the octagon form within reach of the working classes.

Not until the middle to late 19th century did architects begin providing designs for the working classes. Fowler, in particular, was among the first in directing his attention to the needs of the common man and his family. Fowler was best known as a lecturer on phrenology, the pseudo-science of analyzing character from the shape and bumps of the head. After graduating from Amherst College in 1834, Fowler established a phrenology practice in New York City with his younger

brother Lorenzo. Business was so successful that he opened additional offices in Boston and Philadelphia. He also established a publishing business with Samuel Robert Wells.

He conducted phrenological examinations of many famous people of his day, including Horace Greeley, Walt Whitman and James Garfield. Sometimes the examinations were quite revealing; a diagnosis of General Custer found that he had a tendency to overdo things. Fowler founded the *American Phrenological Journal*, wrote several books on phrenology and published articles on such subjects as hydropathy (water cures), mesmerism, psychology and marriage counsel.

His talents also included architecture. As an amateur architect, Fowler made a significant contribution; he is considered instrumental in rethinking the plan and function of the house. He questioned the wasted spaces in conventional house designs. "Why continue to build in the same square form of all ages?" After Fowler published *A Home for All; or, the Gravel Wall. and Octagon Mode of Building . . .* (1848) advocating the use of octagonal designs for houses, barns, schools and churches, octagons began appearing throughout the United States. By the 1860's octagonal buildings had cropped up from Maine to Florida and from Delaware to Oregon and California.

In the 1850's Fowler began an extensive lecture tour program in the United States and Canada. No doubt he informed his audiences not only of his social and architectural beliefs but also of a real-life example—the experience of building his own octagon house in Fishkill-on-the-Hudson (1848–53).

This house was one of the first examples of utility in design. The only concession to traditional style was that the exterior concrete walls were scored to resemble cut stone. An innovative planning feature on the first floor was that the eight major rooms all opened onto one another providing 300 square yards of living space. The total height of the house was 90 feet and the circumference was a generous 265 feet, consisting of 60 major rooms and 40 miscellaneous rooms and closets. Other special features of the house were a two-level ice house, an attached greenhouse, iron cooking stoves and ranges, ventilators for fresh air circulation, speaking tubes for communication from basement to all levels, water filtration system, hot and cold running water, indoor water closet, gas heat (for both water and air), gas illumination and a roof slightly pitched toward center directing rainwater to the cisterns.

Unfortunately, the house was ill-fated. Financial problems forced Fowler to sell it in 1857. After that the house was resold many times and eventually became a rooming house. After a typhoid epidemic and circulation of mysterious ghost rumors, the house was abandoned, and, in 1897, dynamited as a public hazard.

Fowler's book *A Home for All* went through nine printings, and a revised edition was published in 1853. It was a popular book and must have provided momentum for the octagon fad. The book was intended "to cheapen and improve human homes and especially to bring comfortable dwellings within the reach of the poorer classes."

The study of phrenology led Fowler to conclude that building one's own house should satisfy two basic phrenological needs—to have a place to call home ("inhabitiveness") and to be creative ("constructiveness"). Fowler looked to nature to fulfill these needs. It was through nature that he found the octagon form. "Nature's forms are mostly spherical," he wrote, ". . . in order to enclose the most material in the least compass." He chose the octagon because it is the linear form that most closely approximates the circle, and he proved mathematically that the octagon contains one fifth more room than a comparably sized square. The octagon house also has a central stairwell providing easy access to all parts of the house, receives twice as much sunlight as a square, never has any cross-lights, accommodates an encircling veranda with eight exposures, has no hallways dividing the house and therefore no costly and unhealthy drafts.

Fowler also turned to nature for the perfect building material. "All that is wanted," he wrote, "is stone and lime" to form what he called the "gravel wall." This wall is "simple, durable, easily applied, everywhere abundant, and easily rendered beautiful. . . ." Its low cost and superior quality were unequalled, Fowler believed. To make the gravel wall, "the stone requires to be of various sizes and tolerably fine sand, all the way along up to stones as large as you can well deposit." In order to economize and strengthen the wall, he recommended use of "oyster sheils, brickbats, furnace cinders. . . " as aggregates. In building his own house, Fowler obtained most of the wall materials from the foundation diggings.

During a speaking tour in 1850, he traveled to Wisconsin. There he met Joseph Goodrich, who had built a hexagonal concrete house for himself in Milton, Wis., in 1845. Goodrich bolstered Fowler's theories on the gravel wall. In fact, Fowler was so impressed with the Goodrich house, built with imported Portland cement, that in 1853 he enlarged his book to include the house and credited Goodrich with invention of the gravel wall. Fowler was among the first to appreciate the plastic qualities of concrete. He wrote, "How useful to be able to cast or spread mortar into any shape and have it harden into stone."

He favored, as well, the plastic qualities of glass. "I can not resist the growing conviction that glass is Nature's roofing and flooring material, impervious to water, unaffected by extremes of weather, indestructible by time, and exactly adapted to light the house from the roof, why is it not as well adapted to roofing as to windows? All requisite is to cast it so thick as to prevent hail from breaking it, and, if you wish to walk on the roof, to sustain a person's weight. Crystal-Palace glass effects this end. . . . Can not this glass be cast on the roof by having small portable furnaces, so that they can be stationed on the roof, and melt and run your sand, saltpeter, and potash on the spot, and all in one solid sheet?"

Fowler was so inspired by the qualities of glass that he even proposed walls of colored glass. "If glass can be used for roofing, it could be run in all sorts of forms and molds of beauty,

shell house

BUILDING NO. 32: Presently used by the National Shawmut Bank and the Employees Credit Union Bank.

Built in 1857 for the storage of shells this building was originally called the "Shell House" until 1891 when it became offices for the Commandant. Between 1910 and 1944 the building served as a pay office and from 1944-1950 its function changed to the personnel compensation office, office for the Safety Supervisor and space for the Safety Shoe Store.

Built of brick over a granite foundation supported by wood pilings, this building was originally constructed symmetrically three bays wide and five bays long. The exterior walls were designed in the manner of the Renaissance period with blind arcades accentuating the four wall surfaces. An interesting feature of the arcades is the reduction in radius of the arches from south to north as the building decreases in height above the sidewalk.

Building No. 32 is oriented north and south. When it was built, it effectively terminated the eastward vista from Gate No. 1 across the "Gun Park" and "Shot Park" prior to the construction of Building No. 199. The original structure was without windows but after 1891 several openings were installed. According to the Yard Plan of 1869, a one-story shed addition was built across the west wall; this was removed in 1875. In 1910, a permanent brick addition of two bays was added to the north end repeating the arched motif in a very skilled manner. A temporary wood addition was built to the north in 1918, then removed in 1929. In 1941 and 1944 two wooden additions were added along the west wall much like it exists today.

The exterior walls of this building appear very well maintained as does the slate roof. The aluminum sided addition is most detracting.

interweaving, as in carpets, any varieties and combinations of beautiful figures. In this case iron should be used in place of floor timbers as rafters, the sun and light kept out, or softened by paints, and all kinds of colors could be added thus rendering floors and roofs most beautiful, and dispensing with lath and plastering overhead."

In his book Fowler went to great lengths to illustrate the superiority of the gravel wall. But in a subsection he wrote, "This octagon form can be adopted for brick or frame buildings about as well as in the gravel wall. An octagon angle is not quite as easily framed as a square, yet it is not difficult, and when bricks are used, they can be either clipped, or laid up with their corners projecting, thus furnishing an ornamental cornice."

Fowler provided an assortment of plans and elevations in *A Home for All*—all variations of the octagon. He advocated the octagon form for schoolhouses because he thought that the octagonal arrangement of seats gave "the teacher a far more sightly and advantageous stand point," while placing the students more equidistantly from the teacher. The octagon form is better acoustically—"square angles break the sound, and cause echoes far more than the octagonal ones." Furthermore, with one window per side, the octagonal schoolhouse would not only "look better and more proportionate" on the exterior, but be more equally lighted on the interior. Fowler's sincere concern for comfort and for sharpening the students' minds led him to adopt radiant heat for schoolhouses. This, he believed, would prevent cold feet which "occasion cold, headache, and mental dullness, besides deranging the circulation permanently and breeding disease most effectually."

While Fowler was expounding his utilitarian architectural concepts, other architects were providing octagonal plans and designs more in line with the romantic revival styles so appealing to the mid-19th century American. In 1852 Samuel Sloan published *Model Architect*, a book that included plans, elevations and a description of "an oriental villa" based on the octagonal mosque, the Dome of the Rock in Jerusalem. He built Longwood (1861), an octagonal villa in Natchez, Miss., which provided an alternative to Fowler's octagons. The public could select either Fowler's utilitarian, economical designs or Sloan's more lavish and complicated plans for their own houses. Longwood exists today, still unfinished. Construction of the house was brought to a sudden halt at the outbreak of the Civil War when workers returned north.

The octagon fad resulted in almost every imaginable combination of plans and styles. None, however, was an absolute copy of Fowler's pure octagon or Sloan's flamboyant designs. Two houses that approached Fowler's concept of the octagon are the Richards House (1854) at Watertown, Wis., derived from "A Superior Plan for a Good Sized House" in *A Home for All*, and the Elderkin House (1856) in Elkhorn, Wis., based on a cottage plan in Fowler's book. The fashion for octagon building quickly spread to the West Coast. San Francisco at one time had as many as eight octagons. Today only two remain—the McElroy House (1861) and the Feusier House (c. 1857–58), which has a mansard third story added later. Both of these were built with the gravel wall Fowler recommended. An elaborate home combining four octagons and four squares was built in Texarkana, Tex., by J. H. Dranghan in 1884.

The spatial effect created by combining octagons with other geometric forms was initiated by Jefferson in the 18th century and carried on in the 20th by Frank Lloyd Wright. Wright experimented with the octagon early in his career. As Mark Peisch points out in *The Chicago School of Architecture*, Wright's interest in geometric building forms, particularly the octagon and square, could be attributed in part to the existence of many octagon houses near his home in Madison, Wis.—something that could not have been overlooked by anyone interested in architecture. His interest in employing the octagon with other architectural forms resulted in such structures as the Romeo and Juliet Windmill (1896) in Spring Green, Wis., in a form integrating octagon and diamond; the River Forest Golf Club (1901) in Chicago, Ill., with a central octagonal space; the octagonal library of Wright's Oak Park studio (1895) in Chicago, Ill.; and the Glasner House (1905) in Glencoe, Ill., which has three octagonal spaces serving as an anchor for a Prairie Style composition.

Using modern technology, architects in recent years have expanded on the experiments of Jefferson, Fowler and Wright. The principle of centrally planned structures has been applied to such advanced designs as the 12-sided House of Tomorrow that George Keck built for the 1933 Century of Progress Exposition in Chicago, and Buckminster Fuller's Dymaxion I (1927) hexagonal house suspended and rotating on a mast. Architects have projected the geometric form of the octagon into a three-dimensional building unit, using the octahedron as the basic building block in the design of housing projects and even entire cities. Moshe Safdie proposed a housing project (1970) for the East Side of New York in which the octahedron would be stacked in a variation of his better known Habitat in Montreal.

It would be an exaggeration to suggest that our major contemporary architects are directly indebted to Orson Fowler. It would be equally unfair, however, to discredit Fowler's contribution to architecture on the basis of his association with phrenology. In relationship to his contemporaries, Fowler, who had no formal architectural training, was a pioneer in functional planning as well as in technological areas. His writing on the potential uses of glass, concrete and iron, and his ideas of centralizing all the functions of the family house in a flexible plan earn Fowler the position of an avant-garde amateur architect. One can only speculate what this man might have designed if he had had professional architectural training. H

John J-G. Blumenson, visual aids coordinator for the National Trust, recently completed a master's thesis at George Washington University, Washington, D.C., on octagonal structures.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

BUILDING NUMBER 32, important photos.

F457-N6	East sides of original building 32, five bays long, ca. 1902; prior to dispensary, showing ropewalk in background.
nn.	Building 32 exterior just after addition, November, 1910.
4862	Enlarged building with windows, from tennis courts (parade ground), ca. 1912.
nn	Arcaded wall with windows, from the tennis courts, ca. 1912.
8963	Supurb negative of 32, east sides, showing enlarged building.
5783	Addition to Pay and Disbursing Office, Building 32, from north, February 18, 1921.
nn.	Building No. 32, ca. 1905, east entry side with only 3 windows.

PUBLIC WORKS DEPARTMENT, VAULT FILES.

BUILDING NUMBER 32, important drawings.

31-03
406 A85 — Combined: "Plans Sections and Elevations of Buildings 31 and 32, 1873"; plans, sects., and elevations of 32 on the right hand side. "Built of brick with Stone trimming, roof slated, copper gutter. Shed (attached to tennis court side of building) built of wood, roof shingled. Occupied by Ordnance for storage of unloaded shells."

32-03
602 E59 — Proposed alterations of 32 for Commandants and Captain's Offices, no. date., ink on tan paper.

32-04
490 B211 — Elevation and Section of Main entrance Doors, etc. for Commandant's Office, Building 32., Jan. 28, 1891; on vellum. (Two drawings exist of interior furnishings for Commandants' offices: 32-05: bookcase, 1892;and 32-08: secretary desk, drawn 1866 and probably used in the previous Commandant's headquarters, in the Marine parade ground yard.)

32-06
943 B238 — Window frames, sash, and trimming for Building 32; July 31, 1891; on vellum.

A Drawing proposing an addition from seven to ten bays as an enlargement to Commandant's offices.

32-30 — Door detail 1951 for the Bank. Much existing work of the 1890's was to remain.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

<u>BUILDING NUMBER 32, important drawings.</u>

32-01
249 C49 "Plans, Elevation, and Section of underpinning and cornice for Shell house, at Navy Yard, Boston, April 30, 1856. (working drawings for the granite.)

32-02
600 B126 "Proposed alteration to Building 32" (paper has watermark of 1868), on parchment, no date, ink wash. second story was proposed, with windows on both levels, roof was to be raised.

32-07 Plan of alterations of Ordnance Shell House for use as a Commandant's Office. April, 24, 1891, a note was added in pencil in 1903 (the existing foundation piles were found to be spaced about three feet apart, on center.)

32-10 Building 32, extension (two additional bays) for enlargement of Commandant's Office. June 10, 1910.

32-13
etc. Two drawings of wood side addition, 1917 and 1918, provided for increased banking facilities.

32-12 Conversion to "Pay Office", Plan of first floor, revised to July 11, 1914.

32-15 First floor plan of Disbursing Office layout, approved Oct. 30, 1936, attic used for record storage.

32-18 Building 32, Plans and Elevations, 5/42. shows existing wood addition and proposed office space not built.

32-20
etc. Safety Shoe store addition proposed May 1, 1945, at end of wood addition, and in the back corner of 32.

32-22
to
32-28 National Shawmut Bank proposed alterations, July, 1951. Link to the wood addition is proposed by removing three bays of blind arcade on the old tennis court side, placing steel beam to carry the three bays of arches that would be left.

ropewalk complex

Building No. 58 contains the Ropewalk and Industrial Relations Office. It was completed in 1836 for the making of rope and was used continuously for this purpose until it was phased out within the last five years. The first layout of this building appears on the yard plan of 1828 in its existing location, forming an effective barrier along Chelsea Street for 1360 feet. It was originally planned as a one-story building with a three-story head structure at the east end. Portions of the building were raised to two stories in 1864, 1865 and 1866. In 1943 a two-story addition was built above the west end for office space.

Building No. 60 is known as the Tarring House. It is a two-story granite building constructed in 1838 and possibly designed by Parris. One signed drawing showing the design of a truss to support the wheels and pumps is located in the DPW files. This building is connected to the Ropewalk with a metal bridge at the second floor installed in the mid-nineteenth century. This building was used for the tarring of hemp prior to weaving rope. One single iron shutter remains in place on a second floor window and two iron doors are still in place.

Building No. 62 is used for hemp storage and wire rope making. The original two-story granite building was constructed in 1837 for the storage of hemp used in ropemaking. It was probably designed by Parris. One signed drawing showing window frame detail exists in the files of the DPW. The two-story brick addition to the west was added in 1910.

Ropewalk Complex, additions and corrections.

The entire ropewalk was undoubtedly designed and planned by by Alexander Parris, at least from 1833 onward. This is supported by letters from both Commandant Elliott and Alex. Parris, currently kept at the National Archives, (old Military Records Div., Letters, Commandant Boston to Board...) Furthermore, several working drawings signed by Parris are located at the BNS (eg. 62-02), and the architects giant portfolio, Buildings and Machinery Errected..., contains signed presentation drawings of the entire complex and its machinery.

The original machinery was designed by Daniel Treadwell, a well known machine inventor for ropemaking and printing operations, a superintendent in the construction of Gore Hall, Harvard U., and a professor of science and technology at Harvard. Treadwell's early machines are depicted by Parris; all operations were controlled by power provided through engines in the Head House of the Ropewalk. The 1898 machines, obtained from the Walton Company, in Paterson, N.J., substantially replaced all earlier equipment, but the principals of ropemaking remained almost constant. Several Paterson machines (perhaps an early hackling machine) still remain in place in the Ropewalk.

The 1852 description of the walk, which appeared in Gleason's Pictorial, (vol. III, p. 184) is instructive: the discussion begins by calling the ropewalk an "...expansive structure, the finest in the country...an object worthy of the attention of strangers..." The article continues:

> The whole of the cordage for the navy is manufactured here; the ropewalk contains four railways, but one of which is generally brought into use ... there are eighty spinning jennies, seventy of which are in operation now; the daily manufacture amounts to about fourty hundred weight; the quantity of hemp kept on hand for use is about eight hundred tons, and there are fifty-five men employed in the establishment. The power is derived from one of Tuft's beautiful engines of sixty horse power, which, with the other machinery of the establishment, is well worthy of inspection.

> The building ... may be considered a model structure for its purposes. The principal building, as shown in the view, contains, in the basement, the engine room and boilers; the second story contains the spinning machinery, and the "walks," being a quarter of a mile in length, occupy the ground floor. The small building at the left is the tar-house, where all the yarns are tarred previous to spinning. The operations are very interesting, especially when "laying-up" a large cable.

Parris' own description of the buildings and their interiors, written in 1840 after their completion and initial operation, (included in the portfolio), is also noteworthy:

> ... this Ropery will be perceived ... consisting of a Head House 70 by 60 feet three stories high with a basement, a Laying-up Ground 1300 feet by 45 feet 200 of which is two stories. In the basement story of the head house are placed two Steam Engines one of 30 and one of 15 horse power, so arranged as to work together by couplings when required for laying-up heavy cables, etc. upon the shafts of these Engines are the main drums, from which the belts for carrying the Machinery for Spinning, Laying-up, Tarring, etc. The machinery for tarring is put in motion by a belt passing through an arch under the passage between the spinning and Laying-up rooms. The tarring house is 200 feet by 19 with projections at the center to give room for the stairs to the second story. A short distance North Easterly from the head house is the

Hemp Store House 140 by 60 feet and 32 feet high divided into two high stories and will contain 1200 tons of hemp. A cellar under the whole also the tarring house is used for storing Tar Cordage, etc. [sic] The walls of said buildings are built in the most substantial manner faced with rough granite and are two feet thick, backed up with brick one fifth part of the granite ashler goes quite through and makes the whole thickness of the wall. [sic] All the doors and window shutters are wholly of wrought iron, the roofs of all the said buildings are covered with the best welsh slates. Over the boiler and engine rooms is a brick arched ceiling supported by cast iron beams. The preparing and spinning rooms have cast iron pipes 7 inches in diameter which are placed quite round the rooms, through which the steam passes in its exit from the engines, and heats the rooms sufficiently for the comfort of the workmen and the working of the machinery.

NB. Many photographs and negatives of the various machines and processes that existed in the Complex are still available. Some are stored in the files of the editor of the BNSN, F-10, #8 and #9; Also, some are located in the file of the Ropewalk, F-3.

A Photo History of Rope and the Manufacturing Process was put together by David Himmelfarb, one of the last Superintendents of the Ropewalk. Much material and many photos are taken within the context of the BNS Ropewalk. It is a valuable source of material, currently in F-3, pending NPS takeover.

BOSTON NAVAL SHIPYARD, PHOTO LAB FILES.

<u>Ropewalk Complex, Buildings 58, 60, and 62; important photos</u>.

nn.	Etching of the Head House, from Gleason's Pictorial; (vol. 3, p. 185), Sept., 1852.
F58	Connection between the second story of the Ropewalk bridging over to the Tarring House, dated 1910.
F58	Construction of additional second story segment, March 3, 1910, contract 1401, roof and side construction, four photographs.
5986 5987	End of Ropewalk, eastern side surrounded by brick paving. May 11, 1921. Two photos, plus a glass negative of 5987.
5988	Nice view of Flirtation Walk, showing second story of Ropewalk, May 10, 1921.
11559 12691 12692	Three photos of Ropewalk in 1929, as a new wall is constructed along the Chelsea Street side.
5989	Head House with shutters still in place. ca.1921.
nn.	Side of Head House with flower boxes, ca. 1929.
nn.	Building 62 before wire rope mill addition of June, 1910. From the west.
436-39	Hemp House, good photo of 1939.
5896	Tarring House from the west..
3656-51 etc	Seven interior negatives and one print of Ropewalk operations. Good for display.
9146 etc.	Color ropewalk photos of machines, and rope.
15548,etc. 15501 " 15172 "	Ropewalk closing photographs, December, 1971; Black and white, and color negatives, various interior shots.

PUBLIC WORKS DEPARTMENT, VAULT FILES.

Ropewalk Complex, important drawings.

58-03 Proposal for a 55 bay (550 feet) second story addition to the ropewalk, estimated at $42,000., dated August, 1857.

58-06 Diagrams of stonework for the second story proposed addition. This covers the same proposal of 58-03, with more specific and detailed information. Dated April, 1865.

58-27 early "Plan of Ropewalk Engine" (written on back); ink wash on parchment. Plan and section of engine room, n.d.

58-09 etc. Measured drawings of May, 1879, ¼" = 1', six pieces together form a 1200 foot portion of the entire walk.

58-32 Nine bay proposed addition, Dec. 1908. A pencil note indicated that four bays were added (second story) in 1909 to conform to contract 1401.

60-03 Site Plan: "A plan to shew (sic) proposed alterations to be made in the location of the Tarring House and Hemp Store at the Navy Yard...necessary in consequence of changes made in plan of Ropewalk, Oct. 31, 1834" In the corner in ink: "Copy June 25, 1836.) "Rope-walk now being built." Shows other sites of the yard.

60-02 Boiler Room addition to Tar House, May 1, 1870.

62-01 Door Frames for Hemp House, March 20, 1837.

62- Entension for wire rope manufacturing. 1910, a set of 18 sheets.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

Ropewalk Complex, important drawings.

58-04	Plans, sections elevations, and details for addition to second story of Ropewalk, March 1865. (follow-up drawing covering same material of 58-03.)
58-33 etc.	Four bay addition built in 1909, contract 1401, of stone construction to match older construction.
58-64 to 58-88	Set of drawings for new wooden second and third story addition at the west end of the Ropewalk. Proposed extension, April 1943; November, 1943 Built, 1943-44.
60-01 473C98	"Plans, Elevations, and Sections showing the Boiler Room at Tar House as enlarged and the method of setting the new Bioler, March, 1870.
62-02 226E19	Window Details of Hemp House, signed Alex. Parris, Dated October 29, 1836.
62-04	Proposed extension for Wire Rope plant, 1909
62-35 etc.	Hemp House floor plans, 1945, showing older and newer portions of building: first floor has ropemanufacturing, rope testing, and hemp storage; second floor has "American Hemp spinning," and hemp storage.
62-51 to 62-54	Replacement of some of the Hemp House trusses, 1958.

"THE ROPEWALK"

Henry Wadsworth Longfellow

In that building, long and low,
With its windows all a-row,
  Like the port-holes of a hulk,
Human spiders spin and spin,
Backward down their threads so thin
  Dropping, each a hempen bulk.

At the end, an open door;
Squares of sunshine on the floor
  Light the long and dusky lane;
And the whirring of a wheel,
Dull and drowsy, makes me feel
  All its spokes are in my brain.

As the spinners to the end
Downward go and reascend,
  Gleam the long threads in the sun;
While within this brain of mine
Cobwebs brighter and more fine
  By the busy wheel are spun....

Ships rejoicing in the breeze,
Wrecks that float o'er unknown seas,
  Anchors dragged through faithless sand;
Sea-fog drifting overhead,
And, with lessening line and lead,
  Sailors feeling for the land.

All these scenes do I behold,
These, and many left untold,
  In that building long and low;
While the wheel goes round and round,
With a drowsy, dreamy sound,
  And the spinners backward go.

(Longfellow wrote this poem on May 20, 1854. Some feel he was referring to Hammond's Ropewalk in Portland, which the poet was aware of from his youth. That ropewalk burnt down in 1847. The day before writing the poem, Longfellow journeyed to Nahant and might well have passed the Charlestown ropewalk. The poem is probably a combination of impressions and memories.)

THE ROPEWALK.

In that building, long and low,
With its windows all a-row,
  Like the port-holes of a hulk,
Human spiders spin and spin,
Backward down their threads so thin
  Dropping, each a hempen bulk.

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As the spinners to the end
Downward go and reascend,
  Gleam the long threads in the sun;
While within this brain of mine
Cobwebs brighter and more fine
  By the busy wheel are spun.

Two fair maidens in a swing,
Like white doves upon the wing,
  First before my vision pass;
Laughing, as their gentle hands
Closely clasp the twisted strands,
  At their shadow on the grass.

Then a booth of mountebanks,
With its smell of tan and planks,
  And a girl poised high in air
On a cord, in spangled dress,
With a faded loveliness,
  And a weary look of care.

Then a homestead among farms,
And a woman with bare arms
  Drawing water from a well;
As the bucket mounts apace,
With it mounts her own fair face,
  As at some magician's spell.

Then an old man in a tower,
Ringing loud the noontide hour,
  While the rope coils round and round
Like a serpent at his feet,
And again, in swift retreat,
  Nearly lifts him from the ground.

Then within a prison-yard,
Faces fixed, and stern, and hard,
  Laughter and indecent mirth;
Ah! it is the gallows-tree!
Breath of Christian charity,
  Blow, and sweep it from the earth!

Then a school-boy, with his kite
Gleaming in a sky of light,
  And an eager, upward look;
Steeds pursued through lane and field;
Fowlers with their snares concealed;
  And an angler by a brook.

Ships rejoicing in the breeze,
Wrecks that float o'er unknown seas,
  Anchors dragged through faithless
    sand;
Sea-fog drifting overhead,
And, with lessening line and lead,
  Sailors feeling for the land.

All these scenes do I behold,
These, and many left untold,
  In that building long and low;
While the wheel goes round and round,
With a drowsy, dreamy sound,
  And the spinners backward go.

Honorable James A. Burke
House of Representatives
Washington, D. C. 20515

Dear Mr. Burke:

Thank you for your letter of July 19, 1971, concerning the closing of the Ropewalk at the Boston Naval Shipyard.

At the outset, I would like to assure you that the employees presently assigned to the Ropewalk will not be involuntarily separated from the shipyard's rolls as a result of this action. This assurance is based on our discussions with shipyard officials prior to and subsequent to making the determination to close the facility.

The decision to close the Ropewalk was based on a reduction in and virtual elimination of the research-and-development effort. The Ropewalk's rope-making capability had been retained in order to provide an economic base to support research, development, test and evaluation (RDTE), which consisted of limited research on new fibers and laboratory test work. The level of funding for RDTE was $20,000 in Fiscal Years (FY) 1968, 1969, and 1970 and $25,000 in FY 1971. Funds were not budgeted for RDTE for FY 1972 because of budgetary constraints, and this situation is expected to continue.

The discontinuation of the Ropewalk's research-and-development effort leaves the production of rope as the sole function of this facility, which in essence puts the Ropewalk in direct competition with private industry. Retention of the facility under these circumstances would be contrary to the Department of Defense's policy of relying on the private enterprise system, to the maximum extent consistent with the demands of national defense, for services or products which can be obtained from ordinary business sources.

With regard to possible inferior cordage being supplied by private industry, the contracts with industry for ropemaking will contain appropriate specifications (including the necessary inspection requirements) to assure acceptable quality. As with most contracts of this type, inspection will be conducted at the source. The testing of rope is performed in the shipyard's laboratory. This capability will be retained and will continue to be available for future test requirements as may be necessary to evaluate new developments in the cordage industry.

Concerning the cost aspects, the prices for rope which will be obtained by the Defense Supply Agency through competitive bidding should be favorable to the Department of Defense. As with most Government contracts, a careful evaluation of the price is one of the major considerations prior to any award.

As is indicated, we can no longer justify keeping the Ropewalk open. I trust that the foregoing will satisfactorily explain the basis for our decision to close the Ropewalk and respond to the specific questions which you raised.

Sincerely yours,

Charles L. [illegible]
Assistant Secretary of the Navy
([illegible])

Copy to:
COMNAVSHIPYD BSN

other buildings

BUILDING NO. 1 Gate House No. 2, Garages and Quarters. As early as 1857 a tank shed appears on the site presently occupied by Building No. 1. After their removal in 1905, it appears from the yard plans that a small shed for mason's supplies was erected and used until 1915 when it became a garage. In 1936 the WPA project remodeled the site by building a three car garage and quarters for the Commandant's chauffeur. It is possible that a portion of the mason's shed now occupied as a sentry station was incorporated into the existing building. In 1959, a sentry shelter roof was added over the sidewalk.

This building abuts a granite wall built in ca. 1822 which formed the west boundary of the yard. It is a one story brick structure of functional design with relief patterns of row-lock brick courses built into the wall just below the parapet of the roof and above each of the door and window openings. The interior rooms appeared to be plastered and painted surfaces.

Building No. 33 is called Frazier Barracks and was built in 1850 as a three-story granite storehouse and sail loft. This building along with granite Buildings No. 34 and 36 form part of the visual background along the eastern boundary of the proposed National Historic Site. It is constructed of rough ashlar granite with fine hammered trimmings and hip roof covered with slate. Much of the interior of this building has been altered.

Building No. 34 contains space for Blue Printing, Photo and Chemical Laboratories and was built in 1837. It was designed by Alexander Parris as a storehouse and was originally a large square open court building with only the north quarter constructed. The window openings were originally protected by iron shutters which have since been removed. The original signed drawings are in the files of the Department of Public Works. This three-story rough granite ashlar building along with Buildings No. 33 and 36 form an important visual background along the eastern boundary of the proposed National Historical Site.

Building No. 36 contains the Cafeteria, Sail Loft, Materiels and Standards Office and was built in 1866 as a joiner's shop and painter's loft. It is the third of the large three-story granite buildings forming part of the visual background along the eastern boundary of the proposed National Historic Site. It is built of rough granite ashlar with fine hammered trimmings and has a hip roof covered with slate. The interior was completely gutted and rebuilt in 1936 and then remodeled again in the 1940's, '50's and '60's.

Building No. 38 consists of the Navy Exchange, Theater, Library, Bowling Alley and offices. It was built in 1854 as a packing house and cooperage. It was used as a Naval prison and storehouse from 1890 to about 1924 when it was converted into office space. This is another three-story building the design of which may have been influenced by the trend set earlier by Alexander Parris. It was built of rough granite ashlar with fine hammered granite trimmings and a slate roof. It is situated on Second Avenue, east of Building No. 33 and is separated by Seventh Street but connected with a bridge on the second and third floors. The interior has been altered by the WPA in 1936. It was altered again in the 1940's, '50's and '60's.

Building No. 39 is used for administration. It is shown on the yard plan from 1863 to 1906 as the ordnance shop and then was gradually converted to office space. Extensions were added in 1893, 1896, 1902 and 1940. It is a three-story brick structure with granite trimmings built parallel to First Avenue. The second and third floor wooden addition on the north side was built out over Second Avenue in 1942. The interior was altered in 1936-37, and again in the 1950's, '60's and '70's.

Building No. 42: Machine Shop, or "Steam M

The earliest heavy machine shop in the yar
1856-57, of brick with granite trim. A si
used several years later for both building
The building housed the machine shop, the
smithery, and centrally located, free stan
with chimney. The original form was "U" s
onto the waterfront. Consultants were cal
to help plan the overall functional layout
advice was ultimately ignored. (see drawin
many changes throughout the years, some of
and even some of the original layouts for
arrangements are still evident.

In 1866 the open end of the "U" was filled
installed over what was later referred to
Palace Shop", and a courtyarded rectangula
with the "Boiler" as a free standing build
This boiler was enlarged to include a coa
Chimney for the boiler house was taller t
Monument, it had the potentials for an ob
top. (See BNSN, vol 27, no. 46, for refer
on this chimney.)

In 1882, the shop housed on the first fl
Smithery, Machine Shop, engine and blowe
Palace" machine shop, Iron store, Iron f
Brass foundry. On the second level the
machine shops, chief engineers office,
draftsmen, clerks, mastermechanic's off
rooms, pattern makers shop, and storero
the "Crystal Palace" and offices are bu

Many additions have occurred since the
complex that is difficult on first app
original south end exists today with o
about 1901. (42A-56) The northwest co
in 1939 to a three level machine shop.

Building No. 75 is the storehouse for steel. It was built in 1848 as a timber storehouse. It is the only surviving timber storehouse left from the 19th century. It was built from granite and wood and represents an excellent example of craftsmanship from this period.

Building 75, additions and corrections.
The siting of building 75 was proposed in 1828 on Loammi Baldwin's "Plan of the Yard" submitted to Washington. The site was originally labeled #38. George H. Preble, has the following entry in his notes on the Hist of the Bost. Navy Yard: for the year 1830 (p. 180) There was

> ...no general appropriation for the Yard but a specific one for $19,000 for two timber sheds, and making and repairing the timber dock. The Commissioners decided that the smaller timber sheds, from their positions on the extremities of the flats, could not be errected with any convenience at that time (many small sheds had been proposed by Baldwin for the extreme NE portion of the yard property), and therefore directed the authorized sheds to be built on site 38 of the plan, having a small space between them in order to comply with the law and so arranged as to be united at some future time, which was probably done in 1832 when an unexpected balance of the appropriations was donated to the improvement of these sheds.

Later (pp. 202,204) Preble notes that the timber sheds on site 38 were completed February 16, 1831 for $19,859.

Currently Building 75 is a one story, gabled-roof shed. The east and west ends have hammered granite corners with wood cornice and pediment (with some Greek Revival overtones). The pediments each hold two double-hung, 12 over 12 windows. The south side is comprised of a row of 38 wooden shed doors, attached by long, and very likely original cast-iron hinges to granite posts. The lowest set of hinges were removed and the doors lost their bottom 18 inches to allow for a higher interior concrete floor, providing easier truck docking. The pins for the lower hinges are still intact. The north side of the building currently butts directly to building 187.

BUILDING 79 was originally the "Boiler House and Coal Shed" for the Ropewalk complex. Built of brick, with granite trim, it measured approximately 40 feet by 90 feet. An addition occurred in 1858 to almost double its length; the window and door openings were re-arranged. In 1871 the new Boiler House for the Ropewalk; #96, was built, allowing 79 to be converted into the yard's first "wire rope manufacturing plant, requiring new machinery. In 1882, the first floor was occupied by an engine room and wire rope machinery; the second floor by hide cutting and more rope machinery. In 1942, the second floor was altered to provide classroom space for the apprentice school.

Building 96: Originally, this site was occupied by building 56, a boiler house for the ropewalk, built in 1871. In 1898, an addition was proposed to the engine and boiler house, lengthening it from 65 feet to about 117 feet, and an entire new foundation set for the new equipment. Whether any of the original fabric remains is a moot question, as the building was renumbered at this point to 96.

BUILDING NO. 109: Waterfront Office on Pier No. 1. The original building occupying this site was built in 1902 and used as a coal storage and handling plant. This wooden structure was razed in 1931 and a small building built, for an electric sub-station appears on the yard plans in 1932. It is possible that the existing one bay wide and three bays long, one story brick structure presently incorporated into Building No. 109 is this 1932 building. In 1944, a two story wooden addition was built around the earlier structure and the building has since been used as a waterfront office and electric sub-station.

The existing building possesses little architectural interest. Except for the small brick structure, the wooden building is plain. It has a flat metal roof and the walls are covered with asbestos siding. An observation post on the third floor at the south end overlooks the waterfront where Navy tugs and barges are moored. A dock for the Commandant's boat is located nearby. The condition of maintenance of this building is fair.

BUILDING NO. 110: Lead Room, Shop 72. This small one story brick building stands just north of the Paint Shop, Building No. 125. It first appears on the yard plans in 1901 and was identified as the "Pitch House" until 1934. After being vacant for two years in 1935-36, it became a storage house for paints, etc., until 1953 when it was assigned the name "Lead Room, Shop 72."

BUILDING NO. 124: Latrine. Located just north of Building No. 24, this small flat-roofed, brick structure first appears on the yard plans in 1903. It was built and still serves as a latrine.

Building No. 120 houses the dispensary. It was built in 1905 for this purpose. It is a brownstone building with masonry additions to the north which were built in 1915 and 1918. Later additions which filled in the rear wings were made by the Navy in 1941 and 1943. It is an important visual addition to the yard story.

Building No. 123, Pumpwell for Drydocks 1 and 2. Built in 1905.

BUILDING NO. 125: Paint Shop. Building No. 125 first appears on the yard plans in 1905 and was identified as a paint shop. In 1926, an electric sub-station was installed and in 1940, it housed the WPA paint shop facilities. This building was planned as a support facility for Dry Docks No. 1 and No. 2, and was originally used and continues to be used today as a paint shop. The exterior fabric has undergone little alterations except for the rehabilitation of the roof covering and ventilators, gutters, cornice and downspouts in 1961. In 1944 and again in 1963 a metal fire escape was added. By 1907, electric elevators were in use.

The exterior design of this building is one that is reminiscent of the early brick Romanesque churches found in southern Europe. It has a large central dominating gabled roof flanked on either side by two lower shed roofed additions. The window openings are arched and repetitive around the building. Blind arcades continue the rhythm wherever windows are absent. Entrance doors are located in the east gable end only.

BUILDING NO. 136: U.S. Marine Corps Administration Building. This building was constructed in two stages. The north half was built in 1909 as a three story brick structure with a basement. The roof was hipped, covered with sheet metal and punctuated with roof ventilators. It was built three bays long with the windows grouped in pairs. The main entrance was placed in the center of the west wall facing the parade ground. The window and door openings on the first and second floors were built with an elliptical arch and have a granite keystone. A dominating belt course runs around the building just above the second floor windows giving the third floor the impression of an attic story.

The south addition, built by the WPA in 1937, is almost a carbon copy of its predecessor. Like the north half, the roof cornice is carried visually by heavy carved modillion brackets. A small tower-like room was constructed above the roof in 1937; its purpose unknown at the present time. The new addition was built for garage space in the basement, shop for machine work, etc., on the first floor and classroom space on the second floor. In 1962, the basement was converted into an enlisted men's club. With the exception of needing paint on the woodwork, this building is above average preservation.

BUILDING NO. 194: Navy Exchange Service Station. Built by the WPA forces in 1937, this building represents a typical gasoline station of this period with a small enclosed room and an extended canopy covering the pumps. The original building was rectangular, one story high, built of brick. It had a hipped roof covered with slate. Since 1937 it has had two additions, one in 1949 to the south used for the lubrication of cars. The brickwork and roof are in good condition but the woodwork is poor.

This building is located approximately mid-way between Building No. 5 and Building No. 10 where an "Anchor Park" was located between 1859 and 1863. In 1863 the anchor park was done away with when a new brick joiner's shop was erected parallel to Dry Dock No. 1. The joiner's shop has long since been removed and crane and railway tracks have been installed there.

BUILDING NO. 198: Electrical Maintenance Shop, Eye Clinic, Ship's Offices, Ship Repair Storage, Rigger's Shop Space and Inactive Barracks.

Built in 1941 as a temporary storehouse, according to the yard plan of 1941. Later used in the 1950's and 60's as an electronics school, supply for medical and administration, space for the U.S. Navy Band, and Ship's Offices.

This structure is a typical World War II type of frame barracks building covered with white asbestos siding. Basically it is comprised of two U-shaped buildings facing each other and filled in between. It is sited between 1st and 2nd Avenues with the east end backed against the wooden addition of Building No. 32. This location was once the old "Shot Park" before tennis courts were constructed. When this building was erected the tennis courts were moved to their present day location to the west.

In 1943-44, this building served as barracks facilities. It may have been extended and raised to its present height at this time. At the present time the barracks facilities that remain are inactive.

BUILDING NO. 204: Chelsea Street Garage. The current use of this building is a Public Works garage for automotive vehicle maintenance and offices, drafting rooms, and the P.A. system for the navy yard. Built in 1942, it has undergone slight additions and alterations in 1948, '51, '63 and '69, according to the card file kept by the DPW. This building abuts the granite wall of ca. 1827 to the east. It is a partly two and three story frame building with a flat asphalt and gravelled roof. The building is located outside the original yard grounds.

BUILDING NO. 245: Gardener's Shed. Located in the northwest corner of the Navy Yard opposite the Commandant's House. According to the DPW records this building was constructed in 1929. It is a frame structure with a flat arched roof covered with metal. The exterior is finished with painted clapboards while the interior walls and ceiling are lined with beaded boards. Because of the double doors located in the east end, this building appears to have been built first as a garage and then later moved to this location. It rests on a concrete slab. Its present use is for storage of gardening equipment. Condition: good. Approximate size: 14' x 20'.

39-07	Plan (framing) of 1st floor of Ordnance, Feb, 1864.
39-20	Proposed extension of "New Ordnance Building" in June, 1867.
39-08	2nd and 3rd story framing of Ordnance building.
39-02	First story and elevation of Building 39, Feb, 1869; a measured drawing.
39-02 (sic)	"Design for Ordnance Store, Dec., 1862" Gun carriage shop, gunner's room, cordage store room, surveying and inspection room.
42-13 847B219	"Plan of Machine Shop, Foundry, Smithery, etc., as arranged by Messrs. Copeland and Everett of New York." In the construction of the building, the interior arrangement was not carried out and there was an entire reversal of the uses of the different wings. Boston, 1856.
42-12	Elevation of Machine shop, n.d., ca. 1856.
42-15	Completed plan and elevation, 1861.
42-05	Granite sizing, Drawing is torn into about six pieces.
42-04	Plan of Windows for "Iron Works", ie perhaps the Iron Store which used to sit between buildings 40 and 42.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

Other Yard Buildings, important drawings.

33-03 "Plan of First Story, Elevations and Sections of Store House No. 33, N. Yard, Boston, November, 1868." "Built of Rough Hammered Granite Ashlar, backed with brick with fine hammered trimmings, dimension walls of brick, stone gutters lined with copper. Roof covered with slates. Iron door and shutters." First story shows boiler house addition, equipment room, engine room and offices.

33-07 433D117 "Boiler House" Building 33, Oct. 13, 1881, on parchment.

34-01 223D66 "Center Part of Principal Front of Store House, Site 15, January 9, 1835, Alexander Parris, architect." Granite sizing working drawing, wash on parchment,

34-05 "Plan of 1st story, elevations, and sections of Store House 34, N.Y. Boston, October, 1868, from actual measurements" "Built of fine hammered granite, backed with brick, division walls of brick, roof slated, stone gutters lined with copper, Iron doors and shutters." (34-04 covers 2nd and 3rd stories.)

34-06 598D172 Detail of Granite in Archway, wash on parchment, n.d., (ca., 1835.)

34-07 Cellar and attic, October, 1868; form a part of the 34-04 and 34-05 set of drawings: attic used for temporary storage, cellar by Provisions and Clothing, for storage of beef, pork and butter.

36-11 387B89 "Plan of part of the Third Story of New Joiner's Shop, occupied by the Civil Engineers, joiners, April 17, 1872.

36-21 1352B343 Framing plan of 2nd and 3rd story floors of new Joiner's Shop, Navy Yard, 1863, on vellum. "Detail drawings of New Joiner's Shop, Bureau of Yards and Docks,...contract date Oct. 6, 1864."

36-22 1353A248 "Joiner's Shop and Painter's Loft., sizing granite pieces, on elevations, section of building and general floor plan and column placement.

36-47 20 foot crane runway, southwest end, errection plans and details, removal of four bays of 2nd and 3rd floors. 1936.

36-54	2nd floor central runway shown, this is a floor plan summary sheet, dated 1939.
36-59	1941 Proposed cafeteria.
38-02 etc.	Several drawings with the same style and character as the drawings for building no. 32. "Plan for cornice for Packing House and Cooperage, May 9, 1856. The original basement window details are similar to Building 34. See 38-01, and 34-07; as well as 32-01.
42-.. 1101B236	"Ground floor plan of U.S.Engine Factory, Dock Yard, Boston, August, 1866." fine line ink wash on parchment.
42-03 321B69	"Second floor plan of U.S.Engine Factory, August, 1866. The back end of the "U" is filled in.
42-02 246B50	"Plan of piling at Machine Shop, Smithery, and Foundry, etc., Pilings for the walls, commenced May, 1856; pilings for the interior work commenced 1857.
42-07	"Elevation of three story arch, filled with glazing April 15, 1862. Fine line on parchment.
77-02 456B101	Section of roof for gun carriage and mould loft. (This building has since been taken down, ca. 1940)
79-12 448C88	on front: "Boiler House and Coal Shed for Ropewalk" Plans and elevations showing the position of door and windows in the new part and the proposed position of doors and windows in the old part. Old building 40' x 90', and new addition 40' x 86'. On back: "Diagram of Coal shed at Ropewalk, and in pencil: "Wire rope building."
79-42 to 79-45	1942 change for the 2nd floor to an apprentice school.

PUBLIC WORKS DEPARTMENT, THIRD FLOOR FILES.

<u>BUILDING NUMBER 125, important drawings</u>.

nn. "Proposed Paint Shop, C and R Department (ie. Construction and Repair), May 31, 1903" Plans, sections, and elevations, shows a side wing on the south, but not the north. Blueprints.

125-03-B First floor plan, Feb. 8, 1904.

125-04 Second floor plan, original, Feb. 8, 1904.

125-06 End elevation and transverse section, Feb. 8, 1904.

125-07 Longitudinal section. Feb. 8, 1904.

125-39 etc. "North extension, to be used as lunch room." second option, August, 1916.

125-41 Proposed extension for lunch room, and showers, Oct. 16, 1916.

125-53 Rearrangement, 1954.

125-59 Roof rehabilitation, 1962.

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The following bibliography is arranged under eight subdivisions, listed below. Attempts have been made to include all relevant material obtained while exposed to the shipyard, as well as those sources that have been uncovered independently and included in other surveys.

I. General Histories and Environmental Surveys.

II. Commandant's House.

III. Marine Barracks.

IV. Dry Dock 1, and Engine House (Building 22).

V. Muster House (Building 31)

VI. Ropewalk, Tarring House, and Hemp House (Buildings Numbered 58, 60, and 62).

VII. Other Yard Buildings.

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