

Handling of High Explosives in War Time*

Hundreds of Thousands of Tons of Ammunition Shipped from the Port of New York Without Accident—Heroic Service of the Picked Men of the Coast Guard

BY CAPTAIN GODFREY L. CARDEN, U. S. COAST GUARD
 Captain of the Port of New York during the Great War
 Written exclusively for *The Journal*

NO FEATURE connected with the forwarding of munitions to overseas forces during the years 1917 and 1918 was more carefully guarded from the public than the loading of high explosives. The great bulk of these shipments passed through the Port of New York. Single ships carried cargoes of T N T, picric acid, and smokeless powder exceeding five million dollars in value. An explosion of one of these vessels in New York Harbor would have meant a disaster more terrible in consequences than even the one at Halifax.

The responsibility with regard to the safe loading and expeditious dispatching of all explosives coming forward through New York rested with the United

ling was supervised by the office of the Captain of the Port.

No accident occurred, and not one life was lost.

The total value of the explosives carried on the 1,698 vessels as loaded was \$547,953,143.32.

The heaviest single shipment of explosives was by the steamer "Honduras," which cleared for Bordeaux, France, Feb. 26, 1918. This vessel carried a mixed cargo of picric acid, powder, and guncotton of a total weight of 7,849,153 lb. The value of this cargo was \$6,915,599.00. The next heaviest shipment was by the steamer "St. Louis," which cleared for Cette, France, on Jan. 18, 1918. This vessel carried a mixed cargo of picric acid, T N T and smokeless powder to a total weight of 8,669,965 lb. The value of this cargo was \$5,889,535.00.

Prior to Feb. 26, 1918, or before the Espionage Act provisions in re jurisdiction over territorial waters of the United States became effective, all rules and regulations governing anchorages at New York were promulgated by the War Department. These rules were recommended in the first instance by the Chief of Engineers of the Army, and when approved by the Secretary of War had the force of statute law.

The River and Harbor Act, approved March 4, 1915, made it mandatory for the Coast Guard to enforce such rules at New York, with reference to anchorages, as issued by the Secretary of War. Included in the terms of the anchorage regulations were rules as to the safeguarding of the waters and shipping at New York. These rules bore directly on the handling of explosives.

The functions previously performed by the War Department, as enumerated, above, passed to the jurisdiction of the Treasury Department under the terms of the Espionage Act. This was on Feb. 26, 1918. The representative of the Treasury Department charged with the enforcement of the anchorage regulations was designated Captain of the Port for the Harbor of New York and vicinity.

The winter of 1917 was rigorous in the extreme. There was an unusual amount of ice in the harbor; shipping was congested for want of sufficient anchorage ground, and explosives and munitions were accumulating in the upper harbor in dangerously large quantities. These were conditions as they were found on Dec. 13 of that year. The first need was for men and patrol vessels. Practically no personnel was on hand at New York to cope with the big movement of explosives that was coming forward, and immediate patrol measures were imperative in order to clear up a dangerous situation.

The quick response of Coast Guard Headquarters to the request for 100 surfmen from the Coast



CAPTAIN GODFREY L. CARDEN

States Coast Guard, and the Coast Guard officer directly charged with supervising and enforcing all rules and regulations for the safeguarding of explosives on water craft is the Captain of the Port.

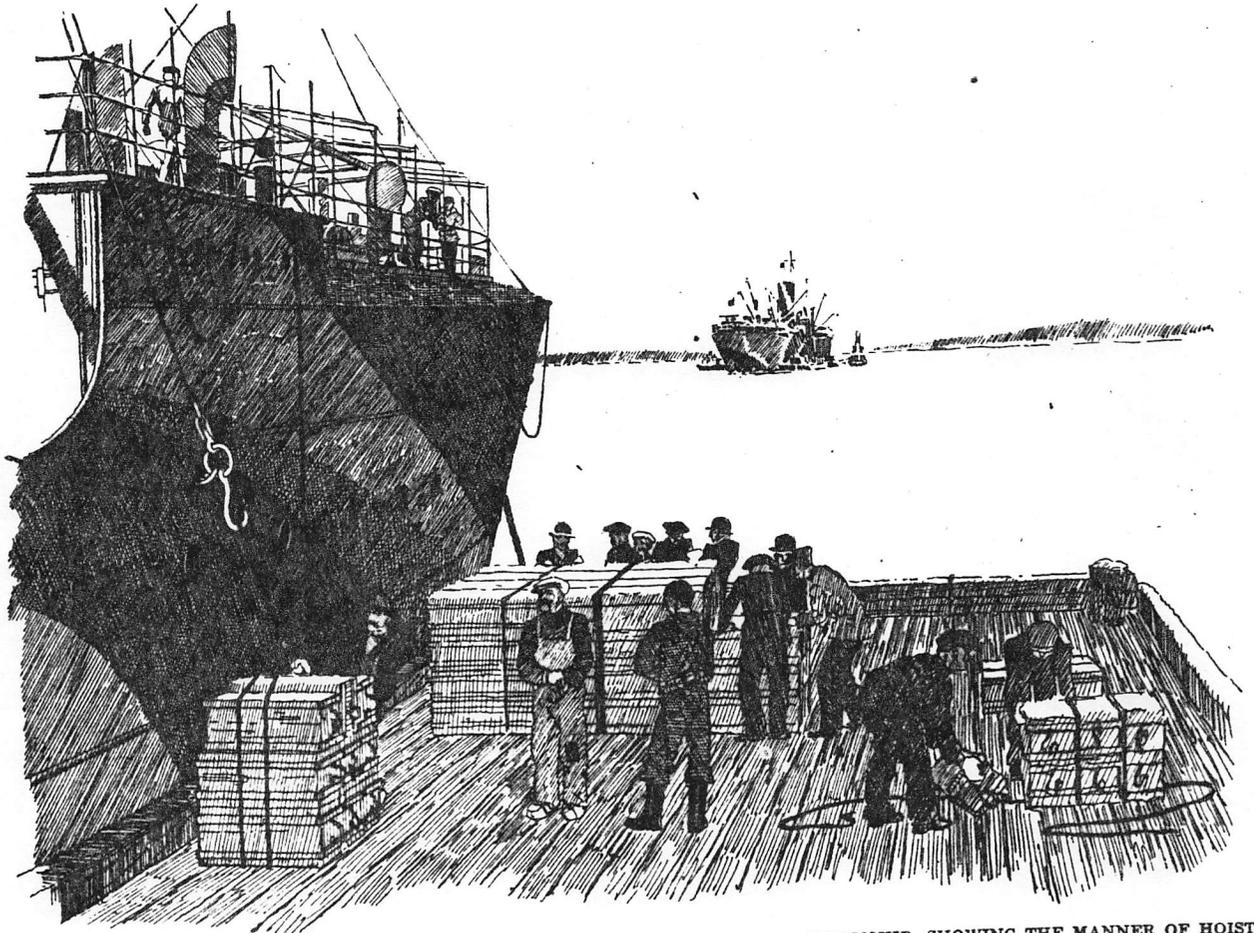
Huge Tonnage of Explosives Shipped from New York

During the period from Dec. 13, 1917, to the end of the fiscal year, June 30, 1919, there was supervised at New York the handling of high explosives in bulk, shells loaded with high explosives, smokeless powder, fulminates, dynamite, ammunition, and various explosive accessories, to a total of 345,602.57 tons: In all, 1,698 vessels were loaded in effecting this movement. Every stage of the process of hand-

*The facts contained in this article are here made public for the first time.—EDITOR.

Guard Life Saving Stations in the Great Lakes afforded the material for a nucleus for the magnificent organization which was later developed. The surfmen—all strapping big fellows of superb physique, disciplined and dependable to an extraordinary degree—swarmed in to the number of 150. They were immediately organized into a company, and later formed the petty officers of the battalion. Active recruiting was begun from the outset and every Coast Guard Life Saving Station from Ogdensburg, N. Y., to Duluth, Minn., was made a recruiting station. The keepers of the station had a wide range of acquaintanceship in their districts, and sought out only young men of good character.

Approximately 65 per cent of the Coast Guard battalion came from northern Wisconsin and Michigan. The copper country furnished about 150 men. From Louisville, Ky., 125 men were taken. The Louisville contingent was enlisted by the Keeper of the Coast Guard station at that place. Every man who enlisted did so for general service; that is to say, for duty in any part of the world. None of the men assigned to the coast service battalion of New York for duty supervising explosives knew in advance where they were going. It was also a fact that before a recruit was deemed fit to do duty on board an explosives ship he had to submit to a severe period of training, starting off with drill of the hardest



SCENE ILLUSTRATING THE TRANSFER OF HIGH EXPLOSIVES FROM BARGE TO STEAMSHIP, SHOWING THE MANNER OF HOISTING NINE CASES AT A TIME. THE WORK WAS ACCOMPLISHED IN ABSOLUTE SILENCE, EXCEPTING THE SOUND OF AN OFFICER'S COMMAND, OR THE CREAKING OF THE TACKLE, OR THE WASHING OF THE WATERS OF THE BAY AGAINST THE VESSELS' SIDES.

In addition, recruiting stations were opened at Chicago, Buffalo, and Grand Rapids, but for the most part the recruits were obtained along the fringe of the Lakes. In all, more than 22,000 men were examined. From this force 1,644 men were selected for the New York Division—this latter number representing the Coast Guard force available for the Captain of the Port in July, 1918. The standard for admission to the Coast Guard battalion was placed very high. The minimum height was 5 ft. $7\frac{3}{4}$ in. Later, 5 ft. 10 in. was the minimum height essential for entry into the last company recruited.

kind, supplemented by class instruction work in the classroom of the barracks.

The Instruction of Guards

In class the recruit was instructed minutely in the handling of explosives, to the end that he, in turn, when placed over a gang of stevedores would know when to order a stop in any movement. Familiarity with explosives is often a dangerous state of mind. Stevedores were prone to become careless. They had been fortunate enough not to have been mixed up with an explosion. The burden of our instructions to our men, and repeated over and over again

to the older men, and to all concerned was, in effect, "Remember you are dealing with high explosive. Treat it as high explosive, and remember, too, that there is no chance for a second mistake."

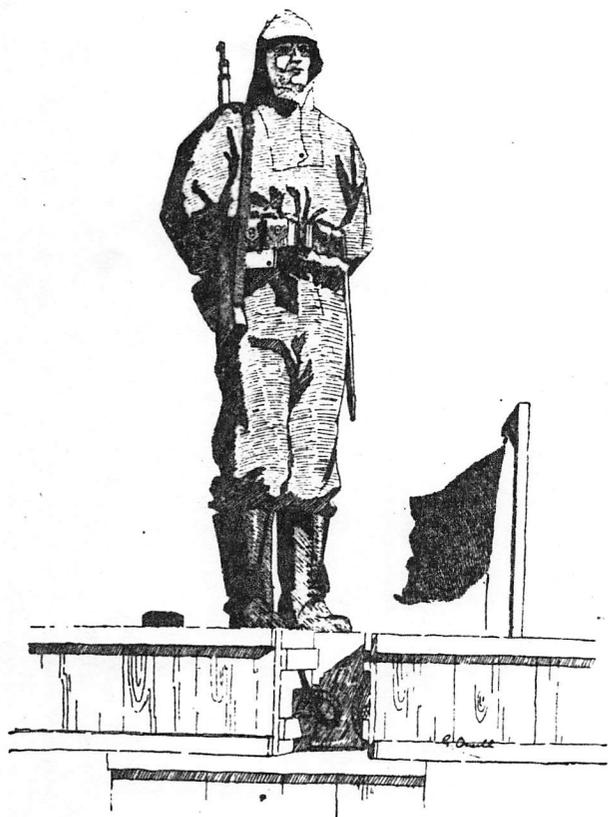
But we went farther than this in the handling of stevedores and all concerned at New York: Any man who through carelessness or inattention hazarded the safety of a ship and all on board was in the same category as a traitor to his country. To lose a ship by carelessness was to play the enemy act; and the guards had instructions to deal with any careless person the same as with an enemy. No chances were to be taken.

The general features governing the handling of explosives were set forth in General Order No. 10,

Secretary of War. Commissioned and warrant officers in charge of enlisted men on anchorage patrol or engaged in the inspection of vessels loading explosives, or in guarding vessels carrying munitions and lying in the prescribed anchorage area, will be held responsible for the strict compliance, on the part of the men of their command, with the rules as laid down.

2. With reference to the anchorage area at Gravesend Bay set apart for the loading of vessels with munitions, there will be a rigid enforcement of the rules and regulations of the War Department, as above approved.

3. Allow no vessel to enter the area set apart for the loading of explosives until that vessel is ready in every respect to receive munitions. In other words, do not permit a craft to occupy a mooring in that area until actually ready to go ahead with the taking on of munitions. The all-important consideration is to expedite the forwarding of munitions overseas, and to permit a vessel to occupy the prescribed area when not fully ready may prevent some other vessel from entering which is in all respects ready.



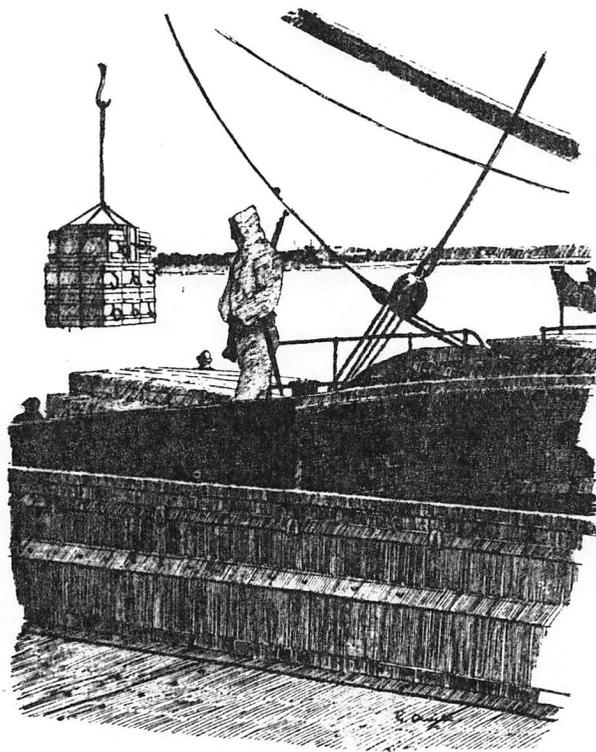
TYPE OF COAST GUARDSMAN EMPLOYED IN CONNECTION WITH THE SHIPMENT OF OVER FIVE HUNDRED MILLION DOLLARS' WORTH OF HIGH EXPLOSIVES FOR THE PORT OF NEW YORK DURING THE WAR, WITHOUT A SINGLE ACCIDENT

which, as commanding officer of the battalion, I issued on Jan. 10. This order remained in effect throughout the war, and its rigid enforcement met practically every situation which arose. That order read as follows:

Jan. 10, 1918.

General Order No. 10

1. Rigid enforcement of the rules and regulations for the anchorage of mines of the Port of New York as approved by the Secretary of War, Dec. 26, 1916, is ordered on the part of every officer attached to the New York Division of the Coast Guard. This order applies with equal force to rules and regulations supplementary to the foregoing with reference to the anchorage ground of the Port of New York which have been, or in future may be, issued by the



SCENE ILLUSTRATING THE MANNER OF TRANSFERRING HIGH EXPLOSIVES FROM A BARGE TO A VESSEL IN NEW YORK HARBOR, WITH COAST GUARDSMEN ALWAYS IN ATTENDANCE

4. Make inspections of stevedores and all authorized persons engaged in the loading of munitions before these persons go on board the vessel to be loaded. The precautions as to covering of footwear, not having matches on person, absence of steel hooks or other metals must be attended to before the loading is boarded.

5. Before loading commences scrutinize with the greatest care all purchases, whips, gear of every sort, and do not permit any loading to commence until, in the judgment of the supervision Coast Guard officer, all rules and regulations are complied with, and, so far as can be determined, all gear is safe and adequate.

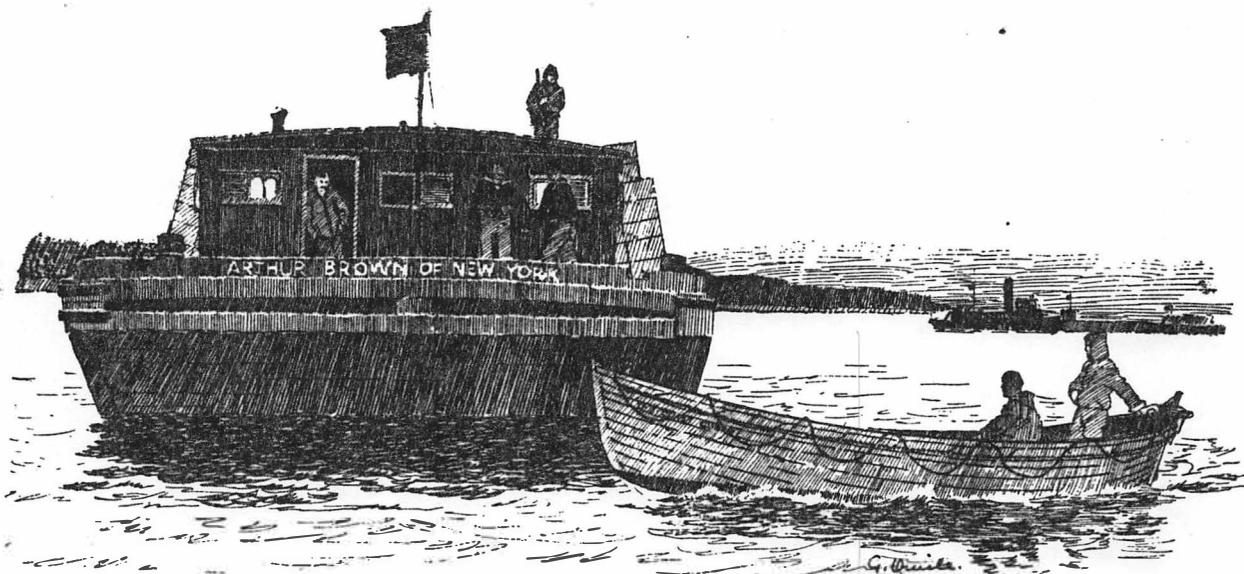
6. Instantly stop loading if any sign of weakness in gear is apparent and do not permit this loading to be resumed until satisfactory gear is established. In every instance err on the side of rigidity in the enforcement of regulations rather than take any chances.

7. Do not permit any loading until a careful inspection has been made of the vessel to be loaded and every precaution outlined in the War Department rules and regulations has been complied with. Be very particular to see that all

members of the crew of the vessel, from master down, are fully complying with the rules.

8. Observing any person who is careless or who in any way interferes with the safety of the loading work; remove that person from the vessel to the patrol steamer and report action. Take no chances with any careless person about. Let these facts be clearly understood in advance by the master, and the boss stevedores, and let the stevedores themselves know, when mustered, that not the slightest infringement of the regulations will be permitted.

9. It is imperative, first of all, that the loading be conducted in every essential with that degree of safety which is prescribed by the rules and regulations, even if the loading must be executed somewhat more slowly than would be possible otherwise. The loss of a shipload of munitions might mean the loss of a battle; it might affect a campaign—results far more wide-reaching than the mere loss of a ship or those on board. Expedition can be rightly accomplished in urging the quick arrival of barges with their loads, but there must be no rushing of munitions on board at the risk of safety.



A TYPICAL EXPLOSIVES BARGE EMPLOYED IN TRANSPORTING HIGH EXPLOSIVES TO SHIP IN NEW YORK HARBOR DURING THE WAR

10. Keep at all times when loading a competent man at each hatch where munitions are entering. This man must keep his eyes constantly on the gear and on the men working the same. Direct him to stop hoisting on board the instant he perceives any sign of weakness of equipment or carelessness in handling same.

11. Inspect frequently, night and day, all vessels in the restricted area above referred to. See that sentries and men on watch are at their posts and alert. Allow no unauthorized person on board, and permit no vessel to come alongside of vessels loading explosives or alongside of barges having explosives aboard without permission of the Coast Guard officer in charge.

12. There must be a commissioned or warrant officer of the Coast Guard constantly on duty aboard each vessel in the aforesaid munitions anchorage area, and if, for any reason, an officer is not available, the deck must be taken by the leading petty officer available. The commissioned officer of the Coast Guard at Gravesend will arrange the watches with due regard to efficiency, but ordinarily it is expected that sentries will be maintained in two-hour stretches.

13. Place instantly under arrest any unauthorized person found on board or attempting to come on board without permission.

14. When a vessel has completed loading, arrange to have her leave the anchorage as rapidly as possible in order that there may be no delay in having her berth occupied by another vessel which is prepared to load.

15. The Division Commander expects intelligent, painstaking effort on the part of every officer and man assigned to this responsible duty. Follow the rules and regulations carefully, and wherever it is possible to better these rules and

regulations in consequence of practical observation or experience do not hesitate to make such suggestions in order that the Division Commander may promptly refer the same for authority to enforce if deemed advisable.

16. For the present, officers and men assigned to duty in Gravesend Bay will continue there for a period of not less than three days. When relieved and on return to the Barge Office, make immediate written report covering the duty performed. Make this report full and specific.

Loading Done by Civilian Stevedores

The actual stevedoring of munitions ships was performed by civilians under high pay. No stevedore might work on a munitions vessel without a pass from the Captain of the Port, and, for that matter, no person other than the master and crew of the vessel loading could enter an explosive anchorage area without a pass. To see that this rule was obeyed was the duty of the Coast Guard. It called

for the utmost vigilance to insure that no unauthorized craft of any kind passed inside an explosive anchorage area.

All stevedores before going on board a loading vessel were necessarily searched. It was essential that every precaution be taken to prevent through the medium of an enemy agent the introduction of any mechanical appliance on board whereby destruction might be accomplished after an interval of time. No metal might be carried by any person working on a munitions vessel. Tools had to be incased in rubber boots or burlap. All fires were extinguished except those in charge of an attendant, and no work was sanctioned which called for the striking of metal against metal.

In the holds, all constructive work had to be completed before loading began. This was a difficult matter to bring home to many shipowners, who had counted on the loading period to prosecute repairs about decks, and below. Not a hammer was permitted to be struck in the loading grounds.

The very first day following the issuance of instructions, on taking charge more than twoscore

of steel hooks were reported as taken up by the guards. A stevedore who could without qualm drive a steel hook into a metal bound package containing high explosive was deemed to belong to that class of men which had become dangerous through over-familiarity. Both the steel hook and the man were removed.

The average man would not have to be told that smoking in the vicinity of high explosives was interdicted. Yet it is a fact that a foreman of a stevedore gang was removed from one munitions vessel for this very act of smoking. If the foreman of a gang does not hesitate to smoke if he finds a chance, what is to be expected of his men?

The rule was early adopted that before a vessel might enter a loading area she must be trimmed, and lacking only her cargo of munitions. The holds for the explosives were required to be broom-swept clean, and the construction in the hold to comply fully with the regulations. This called for close inspection by the Coast Guard. Having passed the inspection, the vessel, with a full detail of guards on board, proceeded to the anchorage.

The stay in the loading area was akin to a stay in a magazine. No communication was allowed with the shore or with other craft except that incident to the arrival and departure of barges loaded with explosives. As fast as loaded, the vessel was required to quit her anchorage to make room for another craft.

High Degree of Efficiency Attained

Far from being a deterrent, the supervisory work over the loading of munitions served to accelerate operations. There was no loafing, no idly standing about, no talking—only a steady clock-like precision to the work. Everywhere the Coast Guardsman stood sentry over a group of stevedores—on deck, below hatches, and in the farthest corners of the ship. Let a stevedore drop a package, or handle a barrel or box in a careless manner, and the action that followed was generally swift and drastic. Not a winch could turn on any ship in that loading area until the Coast Guard gave the word, and no port-hole, whip, or other piece of gear might be used until it had been examined and pronounced safe.

Very early in the new period the slings holding thirteen boxes of wet guncotton broke when the load was directly over the hatch. Fortunately it was wet guncotton. Had it been dry picric acid there is little doubt as to what would have happened. It was this occurrence, which I learned took place before I assumed charge, which occasioned close scrutiny of all gear. On finding that this gear, which Coast Guard men had condemned, had surreptitiously been restored, I ordered that all gear when condemned be cut. The effect of this order was the appearance of a plentiful supply of coils of various sizes of manila for recourse whenever our men found it necessary to remove gear.

Quick Loading

Under the supervision of the Coast Guard, vessels were frequently loaded in seventy-two hours and in a few instances in forty-eight hours. These same

vessels, it was said, had formerly used up two weeks or even fifteen or sixteen days to accomplish loading. Of course the acceleration in the arrival of munitions at tidewater as the war progressed must be taken into consideration, but there is no doubt that supervision over the work and the munitions was a decided advantage in reducing time. Whether or not this was due wholly to the certainty that the stevedore would lose his pass unless he worked satisfactorily, it is a fact that a new speed and celerity became evident with the appearance of the Coast Guard, and with the further result that there was



ARRANGEMENT OF QUARTERS ON TYPICAL EXPLOSIVES BARGE, SHOWING APPEARANCE OF METAL- AND ASBESTOS-LINED ROOM, WITH COAST GUARDSMAN INVARIABLY IN ATTENDANCE

accomplished the dispatch of large quantities of explosives without loss of life or accident of any kind. Considering the volume of explosives handled and the urgency for dispatch, this, it is believed, is a unique record.

It was a disappointment to many of the Coast Guardsmen that they did not see service overseas. All had enlisted for service in any part of the world, but when the seriousness of the work at New York was understood the command cheerfully undertook to carry on to the end.

Men Win Commendation of the Government

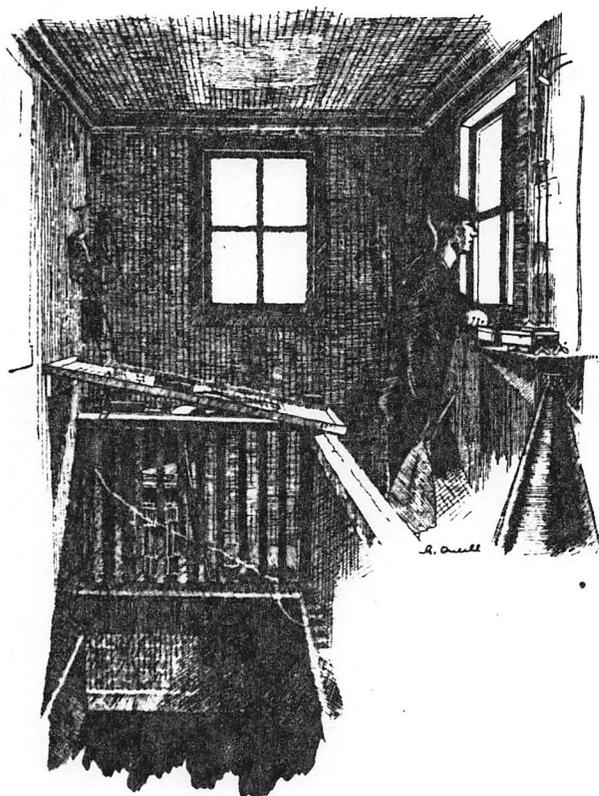
A letter from the Secretary of the Treasury dated Aug. 30, 1918, and read to the entire command, had a wonderfully stimulating effect. Officers and men perceived that their efforts were appreciated in high quarters. The Secretary's letter, addressed to the Captain of the Post, was as follows:

During several recent visits to New York I had occasion to convince myself of the splendid service that is being rendered by the men of the Coast Guard Service in safeguarding the various anchorages for explosives in and around New York Harbor. I realize that there is nothing spectacular in this work, and I can fully appreciate the desire of many of

your men to get into more active fighting service. I wish, however, that you would impress upon them the magnitude of the service which they are rendering their country—a service which means so much not only to the safety of the cities in the immediate vicinity of these anchorages but also to the speedy supply of ammunition so urgently needed by our courageous boys at the front. Please say to them how much I appreciate the service that they are rendering. Make them feel that it is a service quite as important to the winning of the war as their presence in the front line trenches.

W. G. McAdoo,
Secretary.

The explosives loading areas at New York comprised anchorages in Gravesend Bay and at Sandy Hook light. Originally only the Gravesend Bay anchorage existed, but owing to the greatly increased volume of explosives which was arriving,



LOOKOUT, IN HIS STATION OVERLOOKING NEW YORK BAY, WHO OBSERVED, AND CHARTED THE EXACT POSITION OF EVERY VESSEL WITHIN THE AREA DEVOTED TO THE HANDLING AND LOADING OF HIGH EXPLOSIVES

provision was made whereby ships could be loaded in the vicinity of Sandy Hook. There was the further advantage that in the event of an explosion the scene of the disaster would be far removed from populous centers. Here again the disadvantage of civilian stevedores became apparent, as these stevedores had to be conveyed from New York, Brooklyn, or Staten Island in the morning and returned at night. The travel of itself was costly, and, as might be expected, not popular with stevedore employees. The Sandy Hook anchorage was availed of so long as weather conditions in that vicinity permitted.

In the actual handling of explosives the rules were as few as possible, but based on practical experience. All vessels carrying explosives and desiring to proceed to an anchorage provided therefor, were required to obtain in the first instance a pass from the

Captain of the Port. Permit to load explosives on barges at railroad terminals was likewise required. In this way there was a control over the actual loading and the movements of vessels at New York. It was also required that all other vessels, especially tugs and stevedores' boats, engaged or used in connection with loading explosives on vessels in anchorage areas, carry written permits.

All barges carrying explosives were required to be in charge at all times of competent persons, and such barges were required to be provided with ground tackle and deck equipment, specified by name, to be approved by the Captain of the Port. For every ten barges or less in number there was required, on the part of the owners, the attendance of one tug.

No smoking was permitted on or near any vessel, barge, or scow carrying explosives, and no person under the influence of liquor might approach such vessels. Vessels carrying explosives were forbidden to carry inflammable liquids, inflammable solids, oxidizing materials, mineral acid, nor explosives liable to spontaneous ignition or to give off inflammable gases, unless the explosives be stored in separate rooms or otherwise so separated as to effectively prevent danger to the explosive from any of these articles or from the vapor thereof.

Where blasting caps, detonating fuses, and fulminate of mercury in bulk were loaded on the same vessel with high explosives, it was required that they be placed in a different compartment, the distance in a straight line, from the compartments containing them, to the explosives to be not less than 25 ft.

On barges carrying explosives of any or all descriptions, in which oil lights or stores are used, it was required that the cabins containing such oil lights or stores be protected by covering wooden walls, partitions, floors, and ceilings with two thicknesses of one-quarter inch asbestos board placed with joints broken and covered with No. 20-gage metal. This precaution must also be applied to doors, and the doors from the cabin into other parts of the boat were required to be provided with substantial springs, making them self-closing.

Stoves in barge cabins must, according to the regulations, be placed at least 18 in. from all partitions, and a sheet-metal shield, 5½ ft. in height, securely fastened to the floor and the wall, was required placed midway between the walls and the stove. The stove must be at least 5 in. from the floor of the cabin, supported on legs or on hollow tile. The stovepipe hole in cabin was required to be 18-in. larger in circumference than the stovepipe. Screens were required for the stovepipes. No artificial light was permitted in the holds. Only flashlights might be carried.

On the loading vessels, care was taken to see that no packages of explosives were rolled, dragged, or slid over each other or over the decks. Boards were laid on the packages for a flooring. In transferring high explosives in bulk, blasting caps, detonating fuses, and fulminate of mercury, from one vessel to

another, they were handled by regulation chute and mattress, or by hand. Where there was a difference in elevation between the vessels, or condition of weather rendered it impossible to use the chute or load by hand, recourse was had to mechanical hoists or to crate or basket. When such crates were used, or when packages were hoisted in by sling loads, care was exercised that all loads were deposited on mattresses.

Where an inclined chute was used, such chute was made of 1-in. planed boards with side guards 4 in. high, extending 3 in. above top face of bottom of chute and throughout its length fastened with brass screws. D-shaped strips or runned not more

or packages of high explosives were taken beyond the explosives loading area, generally Raritan Bay, and there repaired if such were practicable.

Employment of Civilians Disadvantageous

With a full appreciation of the skill of many stevedore gangs, the experience gained is against the advisability of introducing a civilian element in which compensation largely, if not altogether, and compensation of very high rate, is an incentive. The men of the Coast Guard shared with the stevedores all dangers inherent to working among masses of high explosives. The service of the former was patriotic, as they had enlisted voluntarily, and yet many of the stevedores, it is understood, earned in one day as much as, if not more than, the equivalent of the half-month's pay of the Coast Guardsman who was charged with the responsibility of seeing that the work was properly performed.

It was because of the numerous delays occasioned by reason of returning stevedores to their homes at night and getting them aboard in the morning—none of which ought to have occurred with the elimination of civilian help—that the recommendation was made that all loading be conducted so far as possible at Sandy Hook, utilizing prisoners-of-war from the Continent, to be placed in camp there—a suggestion which was prevented from further development by reason of the signing of the armistice.

To the vigilance of the officers and men of the Coast Guard may be attributed the absence at this port of any such catastrophe as occurred at Halifax. The potentialities were all here. A providential guidance willed, however, that the munitions should go forward without mishap of any kind.

Metallic Tungsten and Molybdenum Produced by New Process

Those connected with the tungsten or molybdenum industry may be interested in the following item, which appeared in "Commerce Reports" for Dec. 16: "A Norwegian firm, A/S Norsk Staal (Elektrisk-Gas-Reduktion), has worked out, during the war, a general process for reducing tungstic acid into tungsten powder and molybdenum sulphide into metallic molybdenum. It claims that the final products, which are in the form of small tablets, are of the most superior quality, being completely free from sulphur, carbon, or oxygen. It also says that the price for converting the ores into metal is lower than by any other method known by it. It is at present projecting a plant for the reduction of tungstic acid in Norway, and would like to form connections with an American company to use the methods in this country. The firm is at Dronningensgt, 22, Christiania, Norway."

A World Shortage of Phosphate is feared by some English manufacturers of superphosphate, according to the Bureau of Mines. They point to the shortage of phosphate fertilizers in South Africa, which has prevailed for nearly three years, as further evidence upon this point. Steels are being taken there to utilize more fully the ~~also known~~ ^{success} ~~in the~~ ^{posit}. Men were loading holes in soft ~~as in hard~~. Lots of ground was

We have taken the responsibility, without consulting Captain Carden, of publishing the following letter here. We hope he will forgive us—*Editor*

Treasury Department, Washington

September 5, 1919.

My dear Captain Carden:

I have examined with the deepest interest the illuminating report which you have presented covering the operations of the office of the Captain of the Port and Harbor of New York and Vicinity for the period from Dec. 13, 1917, to June 30, 1919.

Your report presents a record of achievement of which you and every officer and enlisted man in the Coast Guard may well be proud. I have followed your work and that of the men under your direction with the deepest interest and have been impressed with the difficulty of the task which confronted you. The enforcement of anchorage regulations during the war period was a duty which involved a heavy responsibility and which could not properly be performed except by a man who combined firmness of opinion with exceptional balance of judgment. Upon the proper discharge of these duties depended the safety of many thousands of inhabitants of the city of New York and vicinity. The safeguarding of these public interests had to be reconciled with the necessity of an expeditious lading of high explosives for the use of our army as well as the armies of our Allies. The performance of this task required great patience and did not carry with it the rewards that have come to so many other branches of the military and naval services. For this very reason the obligation of the country to you and to the men under your charge is greatly enhanced.

I desire to take this opportunity to give expression to this obligation and at the same time to request of you to inform all the officers and enlisted men under your command that I am fully conscious of the magnitude of the service which they have rendered and desire to express to each and every one of them the thanks and appreciation of the national government.

Most sincerely yours,

(Signed) CARTER GLASS,

Secretary.

Captain G. L. Carden,
Captain of the Port of New York.
Barge Office, New York City.

than 6 in. apart and running lengthwise of the chute were required to be fastened to the upper surface of the bottom part by means of glue and wooden pegs extending through the bottom part and runners. Where dynamite packages are being handled, the chute must be occasionally wiped down with waste moistened with machine oil. The mattress required on all the vessels which loaded munitions measured 4 ft. wide and 6 ft. long and not less than 4 in. in thickness. In lieu of a mattress, a jute or hemp mat of like dimensions was permissible.

When the chute was used, men were stationed at intervals to check the descent. All ruptured boxes

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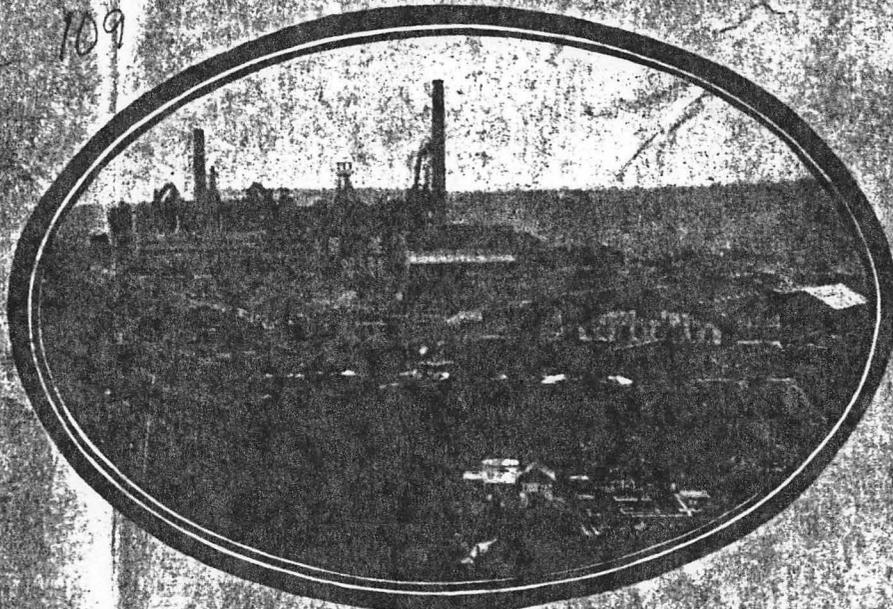
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Handling of High Explosives in War Time

by Capt. Godfrey L. Carden
Captain of the Port of New York during the War

Mine Bookkeeping

by C. B. Holmes
Chief Accountant War Minerals Relief Commission

Standardized Cross-Cut Rounds

by Howard Drullard

Editorial:
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