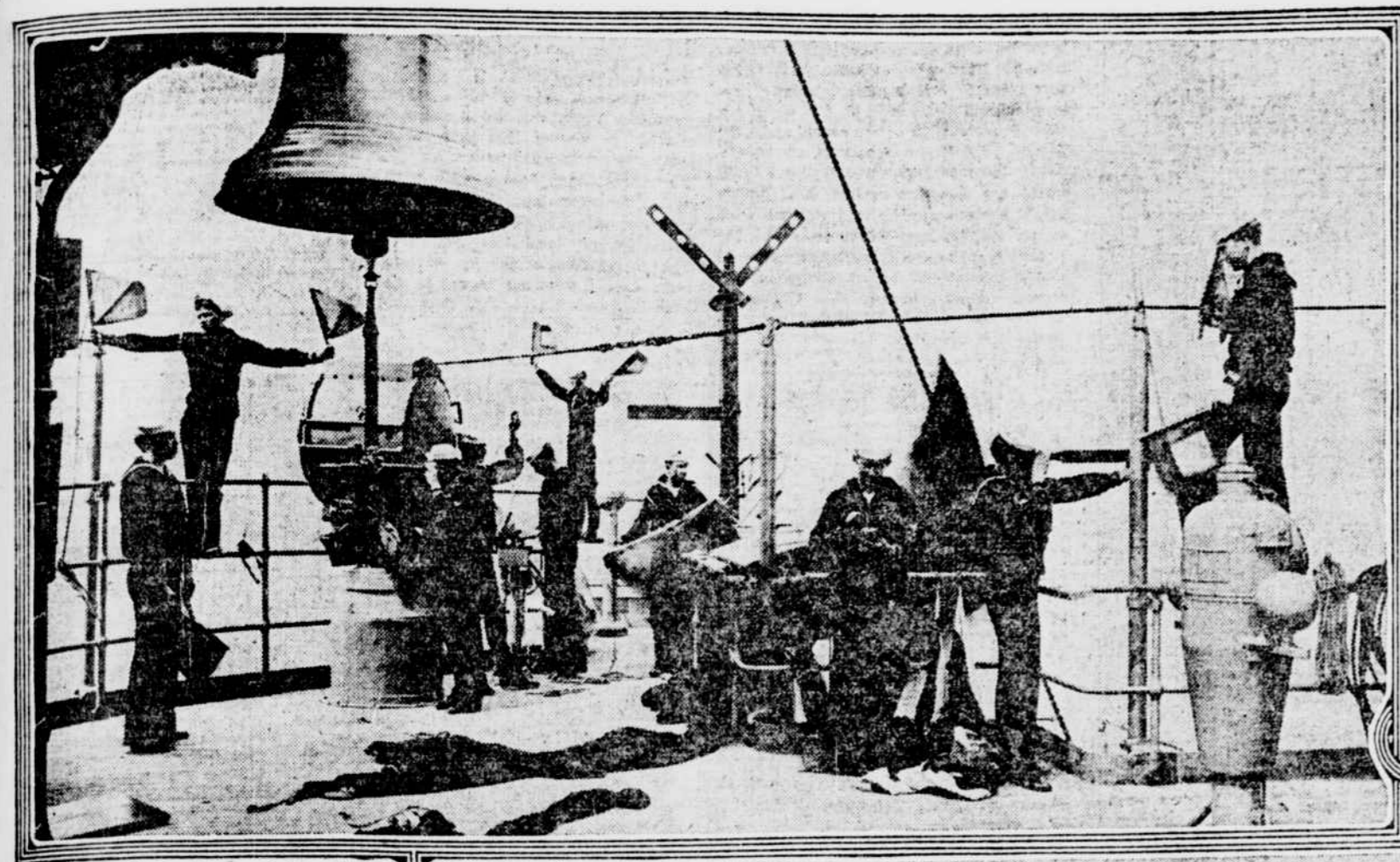
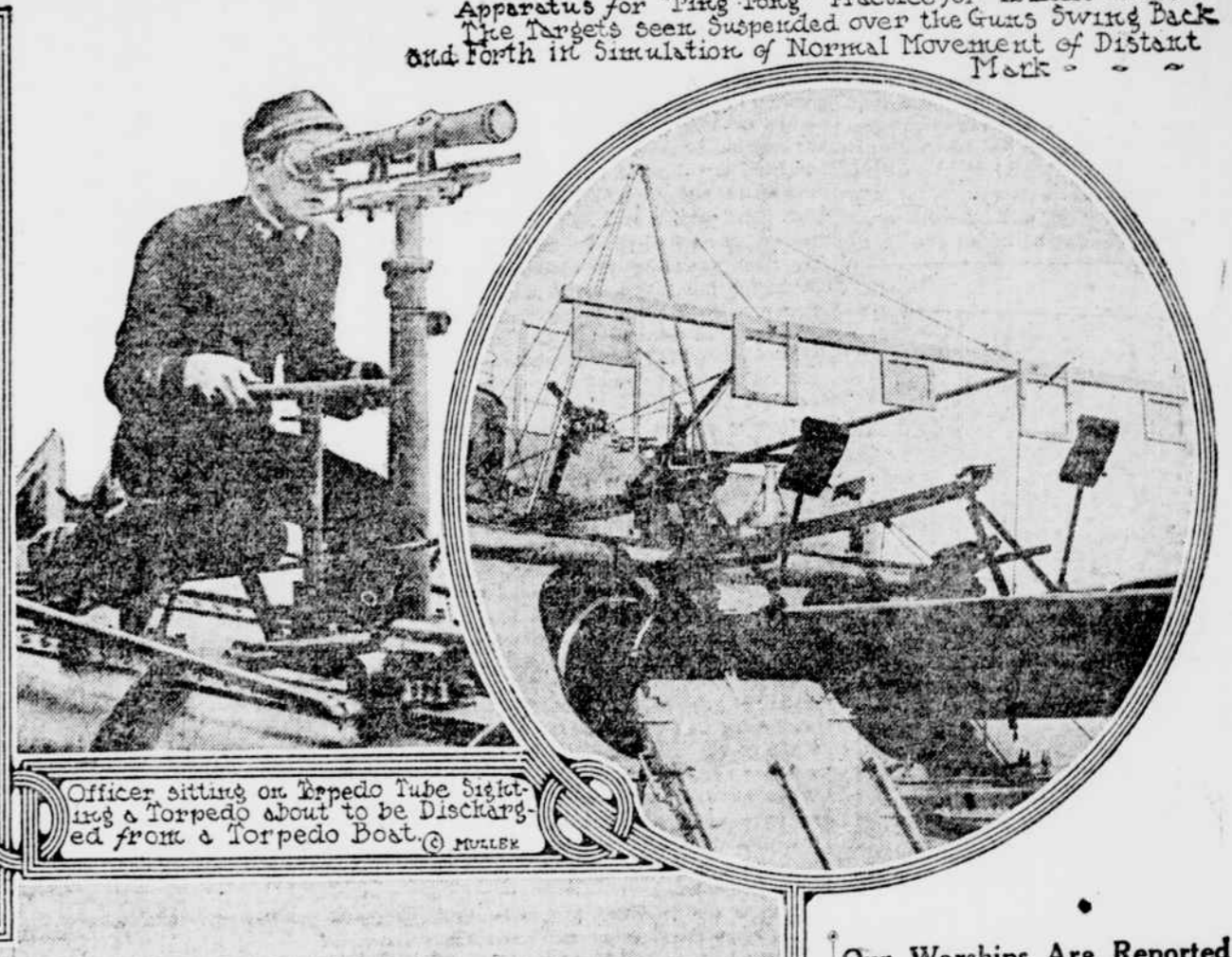


# United States Navy "Blazes Away" \$1,000,000 Annually in Target Practice



The Signal Bridge of the U.S.S. Minnesota. In the Centre is the Electric Semaphore Signal. © ENRIQUE MULLER.



Apparatus for "Ping Pong" Practice for 12-inch Guns. The Targets Seen Suspended over the Guns Swing Back and Forth in Simulation of Normal Movement of Distant Mark. © ENRIQUE MULLER.

## American Gunners Are Tested Twice Each Year Under Conditions Reproducing Those of Battle.

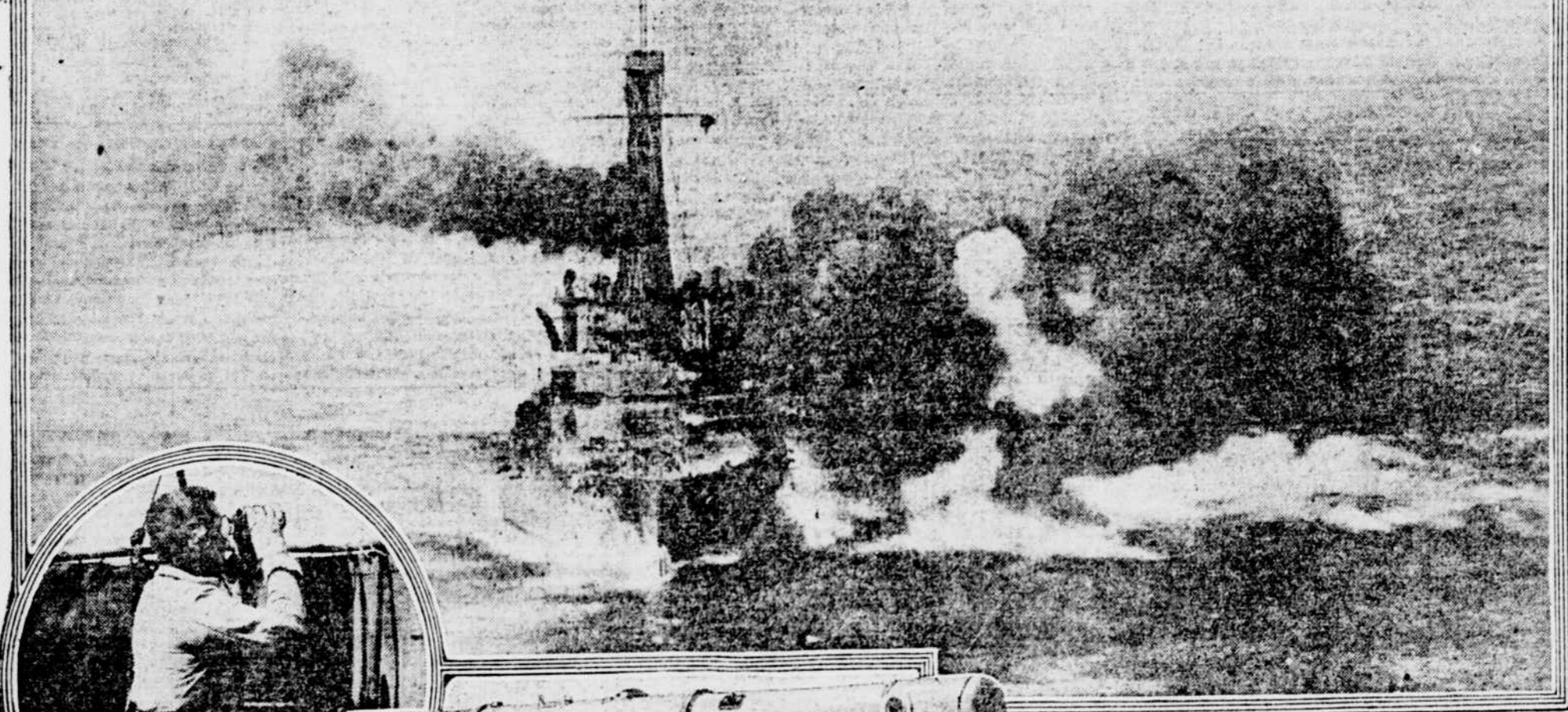
IN April and September the various fleets comprising the United States navy spend the \$1,000,000—more or less—appropriated annually by Congress for target practice. The Atlantic fleet performed its duty in this respect between April 1 and 10, while at sea about fifteen miles off the entrance to Chesapeake Bay. Twenty of our greatest battleships, headed by the Connecticut, Admiral Osterhaus's flagship, including in the number the latest additions to the navy, the dreadnoughts Florida and Utah and other of our big ships, such as the North Dakota, the Delaware and the Michigan, participated in the powder burning contest for supremacy in planting heavy weights where they would do the most damage in time of war. The officers are not discussing the records for publication, but there are rumors that some very gratifying ones were made. It is reported, for instance, that a target about thirty by sixty feet was destroyed by one battleship at a distance of eleven thousand yards, or more than six land miles. A target at that distance is a mere speck on the horizon. Had it been an enemy's battleship, the vessel would have been badly disabled before she came within the fighting range adopted by some powers.

In target practice all the rules aim at the reproduction of the conditions of actual battle, and every effort is put forth to accomplish this end. Some time before the practice is to be held, each officer whose post requires an advance knowledge of the work to be done receives a book of rules for that particular practice. This book is considered to be a confidential document, the contents of which are not to be revealed to persons outside the service. The first page is perforated and bears a number corresponding to that on the book itself. The recipient signs a receipt on this page, and it is torn out and retained by the Navy Department. This book, therefore, is held under a signed agreement not to reveal what its pages contain.

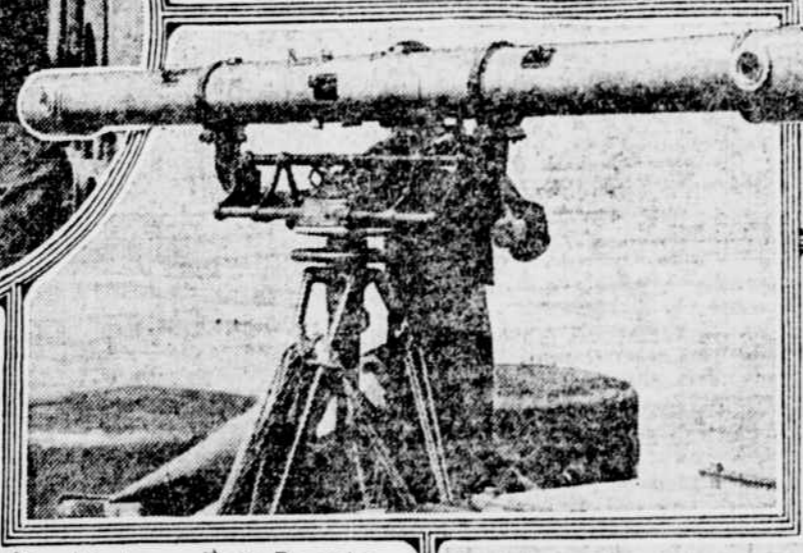
The practice this year included a spotters' test, target shooting by individual ships and by divisions, torpedo firing by battleships and by torpedo boats. The sunken battleship San Marcos, formerly the Texas, which is being used as a naval marker, was the target in the case of the spotters' test. It is reported that later her lattice fire-control masts are to serve as targets, in order to learn how long that type of mast will stand when under fire. Each battleship has one or more spotters. These are the men who occupy the fire control masts on the lattice. They are expected to be able to tell almost instantly how far over or under the mark the shells struck and telephone it to the plotting room, down in the bowels of the vessel. They supplement the mechanical range finder, and assist the plotters below working out the ranges to correct any differences thus indicated. The spotters are also expected to indicate the strength of the powder charge and the supply of power is varied accordingly.

In the spotters' test the range was known to the umpires, and the guns were fired at prearranged elevations, or ranges. The spotters were expected to tell what the errors, or discrepancies, were. Their estimates were then compared with the known ranges.

In individual practice each ship is limited to a certain number of shots, and it has its own target. The scoring is based on the number of hits per minute per gun. It has been found that the gunners in a land fortification may be expected to average one hit in three shots at a moving target. It is, therefore, considered that a ship that can make 30 per cent of hits has made a perfect score, for the floating gun platform is not only unstable but is moving, while the fortification not only has a fixed platform, but there are opportunities for increasing the length of the base of the range finder.



The Spotter at the Fire Control Top.



The Sixteen Foot Range Finder on the Forward Turret.

ject when fired, but it is believed that their life is somewhere between 100 and 200 shots. No one wishes to find out by experience what their longevity is. Therefore, no practice except at the prescribed times may be done with the big guns. Even at target practice they may be fired only eighteen times through the entire practice period. At the end of a couple of years they are relined and in this way get a new lease of life.

"Ping-pong" practice, as it is called, and sub-calibre practice have solved this difficulty. Very small guns shooting tiny bullets are attached to the big guns. In front of these small guns swing targets whose distance and motion can be regulated to correspond to the conditions under which the turret's guns are fired. The aiming is done by the movement of the large guns, but the firing is done with the tiny, pistol-like firearms. In this way the manipulation of the guns in every respect is like that in target practice, except the actual discharge of heavy shells.

The "ping-pong" practice, at first, was as dangerous to the crews of the battleships as were the Spanish war vessels at Santiago, for stray bullets would "pink" the men now and then as they walked about the decks. In order to prevent any unnecessary blood-letting (it is stated that no one has been killed in these accidents) small metal shields shaped like muscle racks were devised and attached to the barrels of the 12-inch guns in front of the muzzles of the "ping-pong" guns in such a way as to catch the bullets. Sub-calibre practice follows the acquisition of proficiency in "ping-pong."

Inasmuch as it has been found possible in practice to load and fire the 12-inch guns three times a minute and to make almost the same proportion of hits which the artilleryman in the coast defence does, the value of the various forms of preliminary practice in preparation for the winning of the trophy has been clearly proved.

"We couldn't do what we do without the 'ping-pong' practice," said one officer recently. The record of a hit from each gun on a battleship, or ten hits altogether, in one minute has been made by at least one American battleship.

It may be supposed that the time for the spring battle practice has arrived. It is early April, and the battleships, with their attending craft, are at the ranges. The Atlantic has a long, easy roll that does not seriously disturb the equilibrium of the ponderous fighting machines forcing their masterful way across the waves. Rainbows form in the spray thrown up sparkling from the bows into the sunlight and lacy foam on a blue ground flows backward in a spreading wake.

Below, in the plotting room, the brains of the vessel in battle, the nerve centre, come to busy recording the messages that come to them over the electric nerves of the great apparatus and co-ordinating the information. Protected by armor plate and out of sight of friend or foe, this bureau of information, this multiple motor centre, directs the fighting forces of the great machine, undisturbed by accidental sights and sounds. Messages are received at regular intervals from the range finders. The rate of change in range is noted and a piece of clockwork, invented for the purpose, is set going. It will plot and indicate the changes of the distance of the target at regular intervals of time. Everything is in readiness to begin firing.

is focusing the two images reflected to him at the centre of the tube. The two coincide, and he reads off the figures shown on the scales. The range of the distant object, thus obtained, is telephoned down to the plotting room. This operation the range finder performs from time to time, noting the changes in the distances thus recorded.

and a flash of flame and yellowish gas tells that the great shell is on its way toward the horizon. The spotter in the towering mast watches the projectile's course with his glass and notes the distant reverberation marks the watery grave of the shot. Instantaneously he estimates how far short of the target it struck, for it was many hundreds of yards from its goal. He tele-

phones his guess to the plotting room. The range is plotted accordingly, and another shot is fired. The white fountain in the distance to the target informs the spotter that his guess was a good one, and he telephones his latest opinion as to the correction required. The new range is instantly communicated to the gunners and the ship, plunging along through the sea, shifts as the salvo of shots leaps from her side and speeds on its way toward the canvas covered framework far distant, representing the vitals of a battleship. The spotter notes the guesses and the fact that there is little left of the target except the posts between which the canvas was spread.

The destruction of the major part of the target does not stop the firing, however. The range and the rate of its change is known. The gunners fire their giant pieces accordingly and the shots their way between the posts of the distant mark, or drop around it, where their descent is photographed by two cameras so placed on the stern of the vessel towing the target that their lenses sweep the sea in front and in rear of the target. They tell the story of the success or failure, and the practice continues until the ship's allotment of shots has been discharged.

This does not constitute all of the firing of the big guns which will take place. On another day there will be division battle practice. In this the fleet forms in line of battle by divisions and attacks a string of targets moving along the horizon several miles away in a formation intended to represent a corresponding fleet of the enemy.

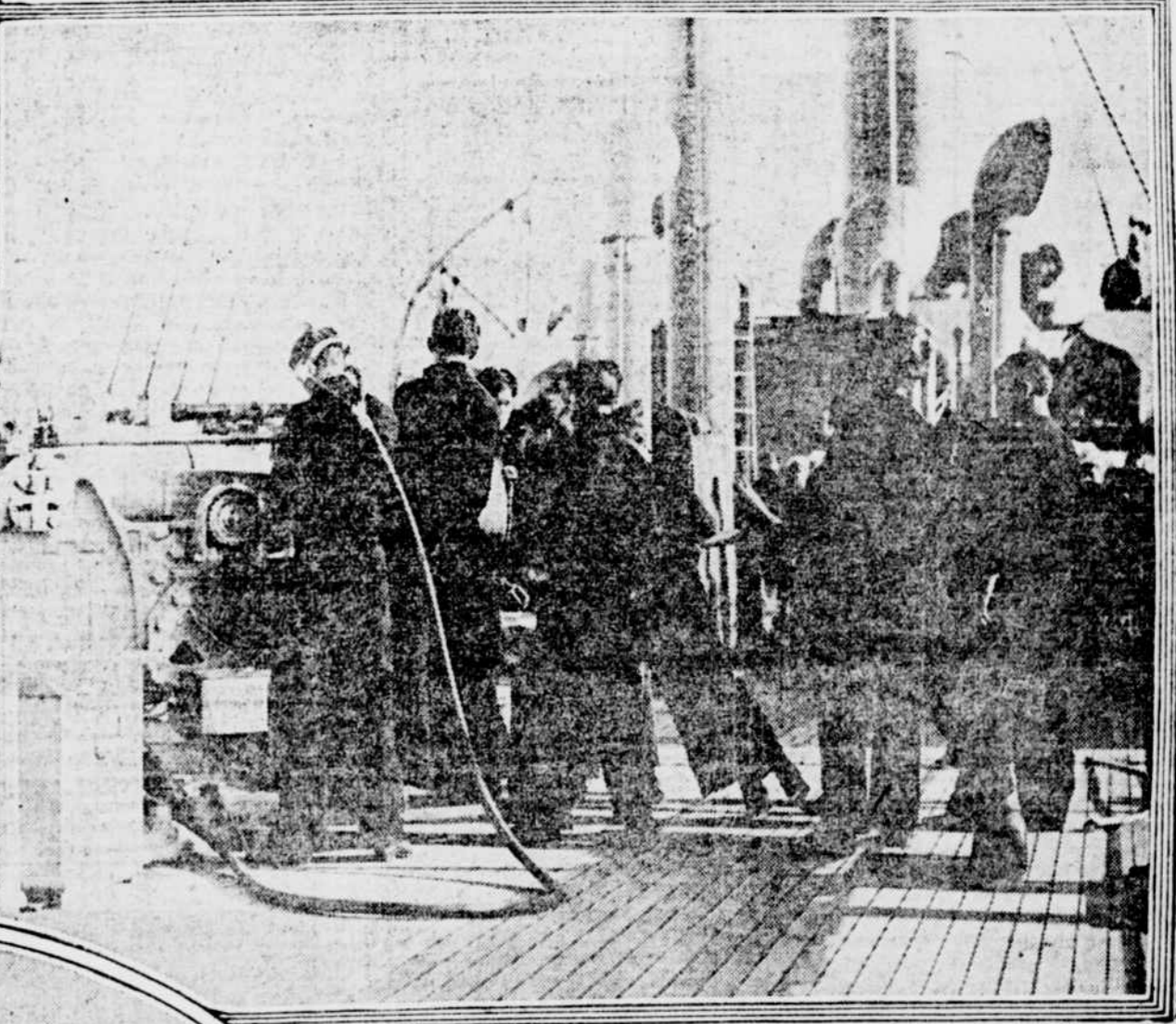
torpedo boats. By the use of their searchlights, or in other ways, they are expected to discover these marks in the darkness and attack them. Torpedoes are employed for defensive purposes on battleships themselves. Should their guns become disabled in the course of a conflict and the enemy's vessels approach too close for comfort, say within two miles, the battleship would wish to terminate the career of the intruder. As a battleship would be required to do this only in the daytime, the torpedo practice of the crews takes place in the daylight hours. These engines of war are curious and remarkable inventions. They may be launched in a direction at right angles to that which they are expected to take and yet find their goal, sweeping around in a curve like that of a large silver fish and pushing off in the desired direction at a twenty-five or thirty-knot clip. They are most persistent in their determination to perform their task. The motions of a torpedo are governed by a gyroscopic wheel, set going in one plane, persists in maintaining that position. Attached to the vertical rudder by means of an arm, it resists any chance deflection from the appointed course and conducts its charge undeviatingly toward the goal. If the records made at the recent target practice were to be published, judging from some of the reports, the people of the United States would be satisfied that the floating bulwarks of the country were amply able to take care of themselves and their charges in the face of any navy on the globe.

The Battle Ship Delaware firing a Salvo, or Broadside, from her 12-inch Guns. The Yellow Gases of the Smokeless Powder Photographed Black. © ENRIQUE MULLER.

## Our Warships Are Reported to Have Done Unexampled Execution at Ranges Exceeding Six Miles.

In this drill each battleship is to confine its firing to the period of time within which the particular target, or opposing battleship, which has been assigned to it for destruction lies between certain prearranged bearings forward and aft of the beam. In this the firing will be controlled in some measure by the flag officer of each division. Problems are assigned to each division, and each ship is directed by signals from the flagship of the division, usually by wireless, as to the part it is to perform. It may be, for instance, that in the course of the action it will be deemed necessary to concentrate the fire of more than one ship upon a given vessel of the enemy. This will be signalled and the ships will aim their guns and fire accordingly. Or it may be that to each vessel will be assigned a different mark.

Battleships, in war, have much to fear from attacks of torpedo boats at night, so the practice drills include the seeking out after nightfall of torpedo flotillas and their demolition. The battleships are armed with 12-inch guns for the very purpose of protecting themselves from these wasps of the sea, whose sting is so destructive. Of course, Uncle Sam does not provide torpedo boats for the sole purpose of destruction by battleship crews seeking to improve their efficiency. He does furnish funds, however, for the construction of targets to represent such types of craft. These are stationed at a point unknown to the vessel or vessels engaged in the drill. The latter are directed to steer a certain course which will take them past the representation of the



The Telephone, Cable Connecting the Gunner with the Fire Control Top and the Plotting Room.

## Aboard U.S.S. Delaware Watching a Salvo from another Ship

In the turrets the trainers and pointers are on edge, awaiting the word to fire. In each is the trainer, with his hands on levers guiding its movement and the guns within, his eye glued to the evepiece of the sighting telescope. He constantly strives to keep his guns upon the target horizontally. At the side of the breeches of the guns are the pointers, their eyes also fixed upon the target by means of telescopes. They try to keep the crossing of the hair sights upon the distance speck representing the mark while the ship sags away or slowly rises on the sinking and swelling seas. The men at the ammunition hoists and breechlocks and in the magazines each await the signal. Every man is on the qui vive. A signal is received at one of the guns