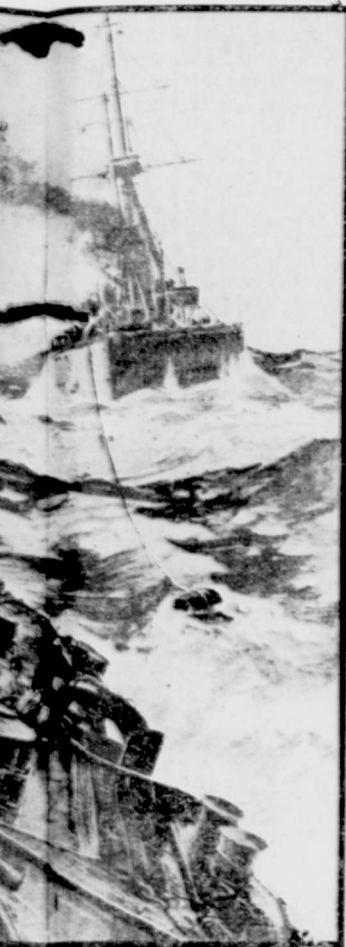


THE BRAVERY OF THE MAN BEHIND THE GUN IS OF LITTLE USE UNLESS HE BE LONG AND CAREFULLY TRAINED.



FOG BUOY.
are supposed to travel in line
ing the fog a red buoy is towed
which could separate the vessels.
—Illustrated London News.

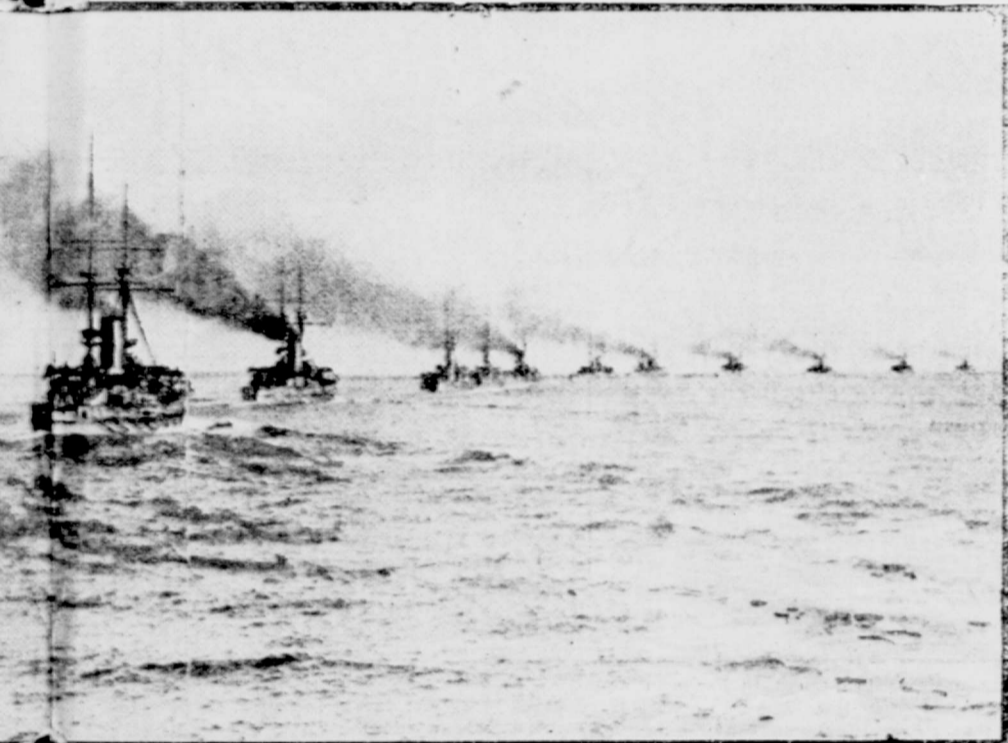
The usual ship's boats have been reduced in number and replaced by motor boats.

The visitor to a battleship who is privileged to see something of the interior of the great floating citadel is likely to discover that manipulating it is a little like playing with edged tools. Such a visit adds to the reverence for this type of fighting machine and helps one to appreciate the merit of the feat of taking a fleet of these machines around the world and returning them in as good condition as when they were dispatched. There is an atmosphere of preparedness for eventualities that helps one to realize the keenness of edge which is maintained. The whole complex mechanism is ready to respond to a single spoken word with a volley of death dealing missiles. It is an exemplification of the modern amended form of the Golden Rule, "Do unto others as you would that they should do to you, but do them first," laying emphasis on the last clause. And the perfection of the mechanism for the "doing" has involved the creation of new elements of danger to the manipulators of the fighting machine.

On a battleship compressed air has been put to service, and carries with it a fresh danger. On two or three occasions the readers of the morning papers have found the taste of their breakfasts neutralized by front page stories recounting how ten or twenty American sailors, cooped up in a turret while at target practice, suddenly met their death from a "flareback." Compressed air has been adopted to prevent such an accident in the future. The air in the turret itself is compressed in a moderate measure in order to keep the coffin shaped compartment free from smoke and gas. The gases and burning grains of powder and fragments of the powder bags sometimes remain in the breech of the great gun after its discharge, causing the deadly "flareback" when the breech plug is swung back to reload the gun. The big guns are now equipped with tubes for turning a current of air at a pressure of more than two hundred pounds to the square inch



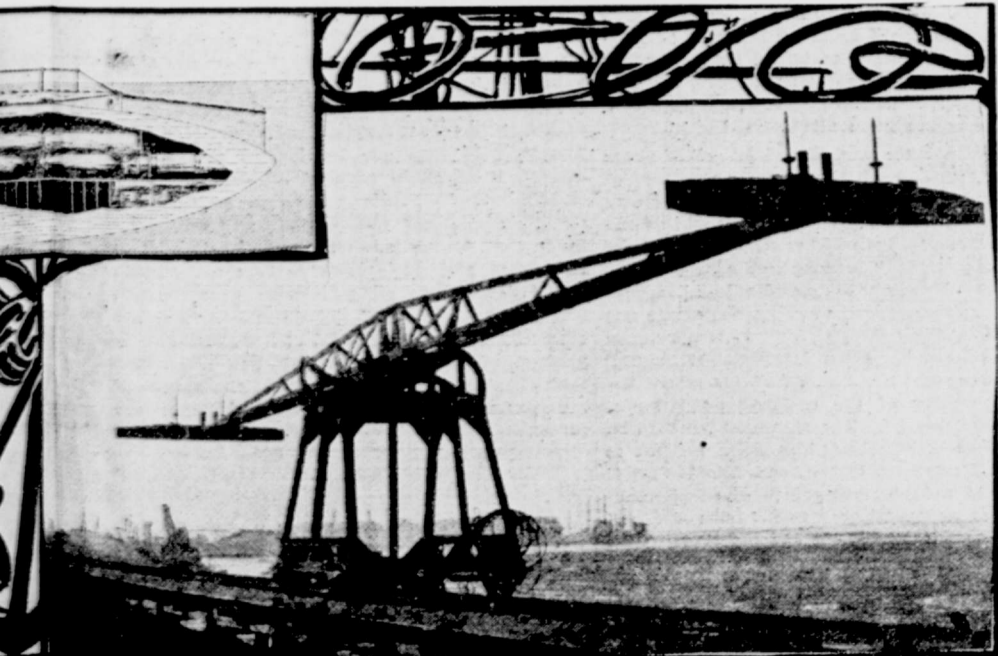
GUNFIRE IS DIRECTED FROM THE FIRE CONTROL MAST BY TELEPHONE.
The noise of the guns and machinery drowns verbal orders.



MODERN FLEETS FIGHT.
on the left at a distance of five miles.

—The Graphic.

A SUBMARINE.



AN INVENTION FOR THE TRAINING OF THE COAST ARTILLERY GUNNER.

the ends of the arms are models of battleships. These are moved up and down like a ship rolling at sea and forward and backward.

—Illustrated London News.

into the breech just after they have been fired, for the purpose of blowing these components of the death dealing "flareback" out of the muzzle. The air is stored in a battery of relatively small and innocent looking cylinders fastened against the steel wall of a corridor. If he is so fortunate as to meet some one who is willing to describe the nature and uses of the wonders of a battleship, the visitor will learn that these inconsequential looking cylinders are potential in their destructive possibilities, for they carry a pressure of two thousand pounds to the square inch. The visitor thinks of the row of cylinders as so many miniature boilers containing a gas at a pressure more than seven times that raised in a steam boiler, and, recalling the effect of an explosion of a boiler, tries to imagine what would be the result of forcible contact of a shell and one or more of these cylinders.

Playing with fire in a powder magazine is what target practice on a battleship means to a visitor to the turret while practice is in prog-

recision never attained, probably, by a football team, he feels that he is taking his life in his hands.

Target practice is a different sort of thing from what the average landsman believes it to be. It does not consist in repeated movement back and forth in front of the target while the gun crews burn up powder and distribute shots in the direction of the big canvas target floating out on the water thousands of yards away. The records are made in one journey across the range. In the course of the trip between the two buoys marking the run, the gunners are limited to a certain number of shots, divided equally between the pointer and the trainer. The number of shots for the 12-inch guns, for instance, is eight each, or four for each pointer. The firing is often done while the vessel is plunging along at a speed of ten knots.

The real work of target practice occurs before the ship passes the target. For weeks beforehand the crews daily are spending hours of time practising in handling the guns. They



SEARCHLIGHT PRACTICE ON A FLEET OF WARSHIPS.
One of the features of the manoeuvres near Provincetown, Mass., was the practice with searchlights for training the sailors to detect the approach of torpedo boats and submarines and to discover the best location for the searchlights on the new fire control masts.

ress. Visions of what might happen under various circumstances pass rapidly through his mind as he accustoms himself to the subdued light of the darkened chamber of 12-inch steel. He glances before him as he rises into the compartment by means of a small iron ladder. A narrow oval ring of daylight around the great polished gun barrel with the figures of men silhouetted against it on either side is perhaps the first thing he sees. A warning arm touches him, and he discovers that he was about to step into an abyss thirty feet deep. It is the much discussed ammunition hoist. It would be no joke to go bounding down the well-like chute leading to the magazine at the base. He edges around in order to be out of the way of the mechanism that rams the shell and bags of powder into the gun, and the man who opens and closes the breech. The turret is closed, and to all intents and purposes the vessel is about to enter battle. The ship is plunging along through the sea, and there is a slow heaving up, up, up, and then down, down, down. Pent up here with a group of men working with a

do everything that would be required in firing a gun except actually to discharge a shell. Time after time they go through the motions of sending a shell up from the magazine, loading the gun and aiming it. Rivalry among crews, prize money and reputation for officers all play their part in stimulating the crews in the preliminary work. The result is that when the vessels appear on the ranges the crews are more perfectly trained than any football team and are ready to plump shot into the target as fast as they can fire the guns. This "speeding up" has resulted in changing the rate of fire of the 12-inch turret guns from one shot every five minutes to one shot every thirty-five seconds. This is the accomplishment of America's "man behind the gun," aided by scientific machinery. The guns when installed were not expected to do better than the slow rate of fire. A battleship is a floating machine shop equipped to turn out a certain kind of goods with great rapidity, and in the United States the operation of the shop in the last few years has been highly specialized.