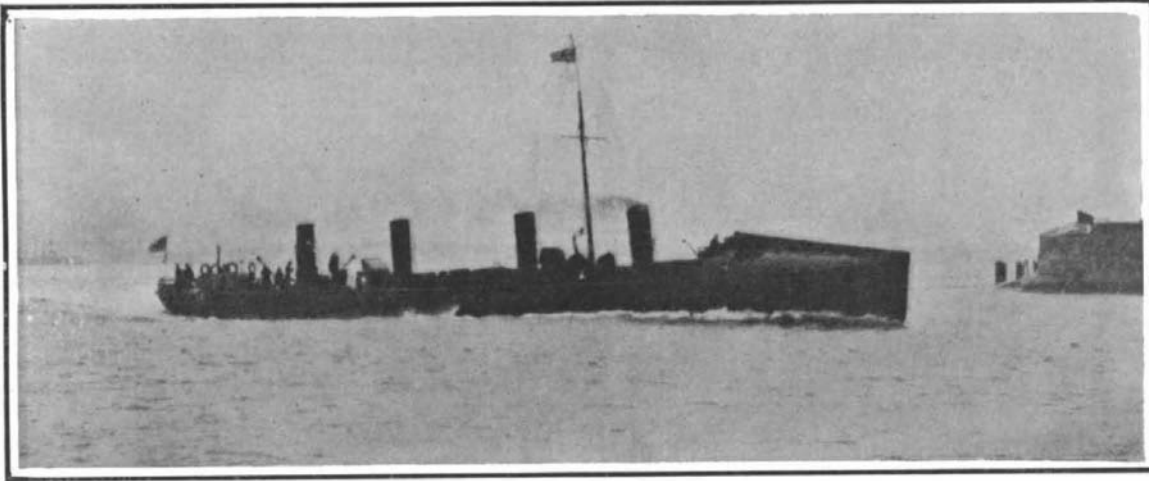


## TESTING A TORPEDO-BOAT DEFENSE.

BY AN EYEWITNESS.

A most realistic test of the value of a boom for the defense of harbors against the attack of torpedo craft has just been made by the British Admiralty. In 1904 the submarine mine fields which up to that date had been maintained at the entrance to the principal British naval ports were abolished, and at the same time the Brennan torpedo—a weapon operated and directed from the shore by means of endless steel wires—was also discarded. These changes were followed by the organization of submarine and torpedo flotillas for the local defense of the ports, and simultaneously a great deal of attention began to be paid to the question of boom defense.

The latest pattern in these obstructions adopted by the British Admiralty consists of a number—generally from 100 to 150—of balks of timber, each about ten feet long, tied together by four lines of strong steel hawsers. At intervals along its length, the boom is attached to pontoons which are themselves an-



Destroyer "Ferret" as she appeared when approaching the boom at 15 knots speed.

chored to the bottom of the channel by heavy mooring chains. Each balk of timber is about a foot square in section, and is studded with a number of stout, curved steel spikes, four projecting from either end, and others being placed along the length of the balk at intervals of about three feet. The object of these spikes is to prevent the "jumping" of the boom—an incident which has occurred more than once in maneuvers. It is achieved by all movable weights—including the crew—being taken aft, thus lifting the bow of the vessel well out of water. Then, running at the boom at full speed, the nose would be pushed well over the edge of the boom, and the impetus of the vessel and the sudden rushing of the men forward again would in most cases prove sufficient to carry the ship safely across. A few years ago, however, a British torpedo vessel broke her back while trying to jump a boom.

It was, of course, well understood that any vessel larger than a destroyer could easily break any boom yet devised. The British Admiralty, however, after much discussion, came to the conclusion that the only vessels likely to penetrate the outer line of British port defenses were destroyers and torpedo boats (including, of course, submarines), and it was therefore decided to put to a practical test the problem whether a vessel of one of these types could burst through a boom of the latest pattern.

A section of a boom of the latest design was therefore erected across a small creek in the upper reaches of Portsmouth harbor. In addition to the spikes already described, the boom was furnished with a three-inch wire hawser stretched about three feet above the balks, with the object of shearing the masts and funnels from any destroyer which might have the audacity to charge the boom, and to force it down on to the steel spikes. Five feet below the surface there was another hawser, designed to impede the progress of the ship and to foul its propellers.

The attack was intrusted to the torpedo-boat destroyer "Ferret," an obsolescent vessel of 280 tons, launched in 1893. Her engines are of 4,810 horsepower, the designed speed being 27 knots. For the purpose of the test she was strengthened by means of steel plates fixed to either side of the bow, but this was only done to give her a greater resemblance to the latest vessels of the destroyer class. Nominally her crew consisted of seventy men, but for the purpose of the trials a volunteer crew of ten was selected, Lieut. J. C. Hodgson being in command and Artificer Engineer J. Hawkesworth in charge of the engines. Before starting, the whole of the crew were directed to come on deck as soon as the vessel got within one hundred yards of the boom and to be ready to jump overboard, while a large number of tugs and launches were in the vicinity to pick up the expected pieces. These facts alone are sufficient evidence that the Admiralty officials did not expect the "Ferret" to get

through, at any rate without considerable damage to herself.

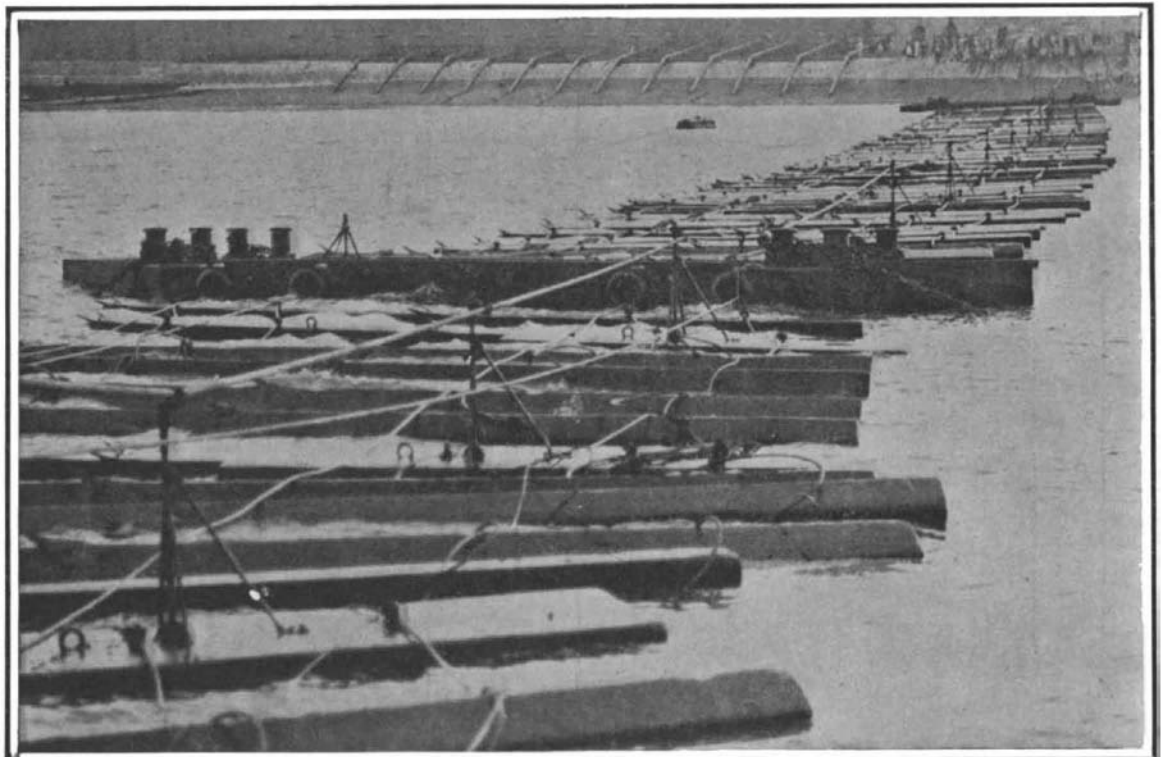
Of the trial itself there is little to say. It took place at five o'clock in the morning of July 28th. The "Ferret" left Portsmouth harbor, and, turning round, steamed toward the boom at about fifteen knots. The lieutenant and quartermaster stood on the bridge and at the wheel respectively, and steered a course direct for the center of the obstruction. When a hundred yards distant steam was shut off. The surrounding pinnaces and tugs closed in, the "Ferret" caught the boom between two balks—and went through it as easily as if it had been packthread. No shock whatever was felt on board, and everyone—engine-room staff and stokers included—remained at their posts, and were, in fact, unaware of the fact that the obstruction had been cleared. A glass of water left standing on the wardroom table was not even spilled.

The hawsers were cleanly cut, and the two halves of the boom swung round with the tide toward the shore.

The "Ferret" could easily have proceeded into the dockyard under her own steam, but two tugs took charge of her, and later in the day she was docked. An examination showed that she was quite undamaged. The hawsers had made a dent in her bows, but no plates were started, and she was making no water. It is not believed that she was strained in the slightest degree, but this will not be definitely known until a thorough examination has been made.

The experience was practically a repetition of what occurred in 1885, when the torpedo-ram "Polyphemus" charged and broke a strong boom at Berehaven in Ireland. In that case, however, the attacking vessel was a craft of over 2,000 tons, and the boom was not so scientifically constructed as that tested at Portsmouth.

It is understood that the Admiralty intend to carry out a series of tests, with the object of discovering a really efficient obstruction for harbor mouths. It is suggested that a series of wire entanglements, placed one behind the other, will next be tried. As was to be expected, the result of the Portsmouth trial has



The boom consisted of 12-inch by 12-inch logs, tied together with four lines of heavy steel cable. Three feet above and five feet below the boom were stretched two 3-inch steel cables. At the front end and along the sides of each log were sharp, forwardly-projecting steel spikes. The torpedo-boat destroyer struck the boom between two logs, cut the cables, and passed through unharmed.

Torpedo defense boom before the attack in Portsmouth harbor.

TORPEDO BOOM EXPERIMENT.

already led to a demand for the reinstatement of the submarine mine defenses of British harbors.

## THE FIRST CROSS-COUNTRY FLIGHT OF THE AERONAUTIC SOCIETY'S BIPLANE.

As mentioned in our last issue, Mr. Charles F. Willard has been learning to fly the Curtiss biplane acquired recently by the Aeronautic Society. Last week, in the vicinity of Mineola, L. I., Mr. Willard made practice flights early in the morning almost daily. On the 14th instant he made a flight in the shape of the letter S of nearly five minutes' duration, in the course of which he traveled about three miles. The following morning, at 5:26 A. M., he started off as usual near the fair grounds at Mineola; but, instead of circling over the plain, he drove the machine above the fair grounds some three miles across country to Garden City. At this point he turned to the left and headed for the grounds of the Meadowbrook Hunt Club, passing over a group of men on their way to work, who waved their caps and cheered. From this point he flew toward Westbury, swerved to the south, and crossed the Motor Parkway, making several turns. He traveled to the outskirts of Hicksville, whence he directed his machine straight back to Mineola. Before reaching the starting point, however, something about the motor gave out, and the machine was forced to descend upon rather rough ground. The landing was made without damage, however. The machine was in the air over nineteen minutes, and covered a distance of about twelve miles. The height attained was about 150 feet. This is the second cross-country flight made in the United States by any aeroplane, the first one being that made by the Wright machine in its government test on the 30th ultimo. Mr. Willard traveled somewhat farther than did Orville Wright and Lieut. Foulois, though the ground over which he flew was much smoother and less dangerous in case the machine was obliged to alight. This flight surpasses any ever made by Mr. Curtiss himself, or by Messrs. McCurdy or Baldwin. In addition to being a cross-country flight, it is the longest flight yet made in the United States by any machine other than the Wright. It is probable that further exhibition flights will be made with this machine by Mr. Willard in the near future.

MR. CURTISS AT RHEIMS.

Mr. Glenn H. Curtiss arrived in France on the 12th instant with his aeroplane, which was packed in boxes. The machine was taken as personal baggage directly from Havre to Rheims, and after busying himself the following day with its erection, Mr. Curtiss announced that it was almost ready for trial. This will give him a full week in which to tune up the machine and prepare for the races, which start on August 22nd. There seems little doubt that Mr. Curtiss's new biplane will make an excellent showing against the two score machines with which he will have to compete.

THE TRIAL FLIGHT OF THE "BADDECK NO. 1."

"Baddeck No. 1," the new biplane with which Messrs. McCurdy and Baldwin are experimenting at Petewawa military camp in Canada, met with an accident when the first flight was attempted on August 13th. The machine reared suddenly in the air and

(Concluded on page 127.)