In Next War Torpedoes, Assassins of Warships, May Decide the Issue

TORPEDO BOATS DISCOVERED BY THE SEARCHLIGHTS OF MEN-OF-WAR, JUST AS THEY ARE ABOUT TO DISCHARGE THEIR INGENIOUS MISSILES OF DESTRUCTION AGAINST THE SIDES OF THE BIG FELLOWS.

The scene here illustrated, though in reality it represents the bloodless operations of naval manœuvres in time of peace, might well be taken for one of those tense and tragic moments in modern naval warfare when a gigantic battleship may be sent to the bottom by the discharge of one torpedo. The subject of the artist's drawing is a night attack by a flotilla of destroyers on cruisers and battleships of the enemy lying in a fortified harbor. To test the possibility of mosquito craft (that is to say, destroyers, torpedo boats, submarines, etc.) of an enemy being able, in time of actual war, to enter our ports, and especially naval ports, with the object of torpedoing any of our ships that may be anchored in them, night attacks are occasionally taking place along our coasts. The subject of this picture shows a flotilla of these craft discovered by the aid of powerful searchlights from the forts and opposing cruisers. The man sitting astride the torpedo tube is looking through the range finder, with one hand on the lever, ready to launch forth the deadly torpedo.—Illustrated London News.

Uncle Sam's Gunners Achieved Nearly 50 Per Cent of Hits with These Deadly Missiles in the Atlantic Fleet's Practice off Provincetown.

By H. I. M'Mahon.

"THE opinion of the Atlantic fleet's experts is that we have not yet nearly reached the maximum of efficiency in torpedo gunnery. Nor, for that matter, has any other nation. Yet with the rapid improvements in construction now making and with the increased efficiency due to practice the Whitehead torpedo will prove a terribly destructive factor in the next great war. Uncle Sam backed this belief the other day by sending over to England a large order for improved types of these weapons.

"Any doubt of the modern torpedo's ability to blow up battleships?" continued the speaker, who is an officer at the Brooklyn navy yard. "Why, sir, with my own eyes back in 1904 in the Russo-Japanese War I saw the great gaping holes made in three of the Czar's big ships by Jap torpedoes. The ships were not sunk outright by the explosions, but they were badly wrecked and put out of the combat. All of them were listed at such an angle that their guns could not be aimed at the enemy. It took months to repair them. In consequence the Russian fleet at Port Arthur was so weakened that the Japs took command of the seas and rushed men, guns and stores to Manchuria unmolested."

Quoting this historic instance of torpedo destructiveness and giving the results of the recent American fleet practice under war conditions off the Massachusetts coast, this officer combated the notion that torpedoes were too eccentric and uncertain to decide the issues of war. He had just come back from Provincetown. As he said, the only officers and correspondents disappointed were those who expected to see the Whiteheads hit the targets every time.

"The efficiency of the marksmanship has varied widely," continued The Tribune's informant. "One ship made 78 per cent of hits, while two or three made as low as 5 per cent. The general average of the fleet was between 40 and 50 per cent. This means, practically, that every other torpedo fired by an American war vessel went to its mark and theoretically sunk or disabled a foe. The best proof of the missile's effectiveness is that the average of hits made by the torpedo boats and torpedo destroyers was about 60 per cent. These high scores were due simply to year after year practice in the handling of torpedoes, and showed that torpedo gunnery, like every other kind, is dependent on the frequent drill of the crews."

"According to published reports," it was asked, "some of the torpedoes ran around in circles, and a few, acting like boomerangs, returned and hit the sides of the ships that fired them. What about the eccentricity and uncertainty of the torpedo?"

"Torpedoes have always gone wrong under improper handling, and they always will. A little carelessness works serious error. For example, a small quantity of metal filings that deposits itself on the surface of the inner wheels will throw the gyroscope out of true, and the mechanism that controls the rudder will gradually divert the torpedo body to the right or the left. Thus the missile may conceivably describe the arc of a circle and return to the ship that projected it. This has actually happened. In practice firing the same torpedoes are fired over and over again; in their repeated use those responsible for the launching get a little careless now and again, and project dirt clogged missiles or missiles otherwise not shipshape. But these mistakes have nothing to do with the proper efficiency of the torpedo when perfectly handled by expert crews in time of war.

"Torpedoes are a tremendous factor in modern warfare," continued the master of ordnance earnestly, "and I'm going to show you why. The limit of the effective range of the most powerful naval searchlights is about 7,000 yards. Remember, that is under the most favorable weather conditions; not a trace of haziness in the atmosphere, an absolutely clear night. But on the nights that are even slightly hazy—in other words, most of the time—the great eye that scans the sea cannot pick and distinguish such an object as a torpedo vessel at more than half the distance, i. e., 3,500 yards.

"Now the range of the torpedoes used in our navy is 4,000 yards, and their maximum rate of speed is thirty-six knots. The British assert that they have developed still more powerful torpedoes, travelling 7,000 to 10,000 yards at a speed of forty-two knots. That may be so and it may not. At any rate can't you perceive that deadly missiles of 4,000 yards range, capable of being discharged from an unseen smaller vessel against a visible greater one, and capable of travelling the intervening distance within four minutes, form a terrible menace in time of war to the great battleships?

"This does not mean that great warships are helpless or that naval construction will have to be revolutionized. But defence in alertness and ingenuity must equal attack. The big warship must be screened from the enemy by its own force of smaller allies, namely, picket boats and destroyers; its underwater hull must be protected by armor plating or by steel nets thrown around it, and its lighter armament of quick-firing must be prepared to do heavy execution against torpedo carriers that venture within their range. Thus the next war will witness not only the spectacle of battleship contending against battleship with their enormous projectiles fired out of 12-inch guns and flying through five or six miles of space at the terrific speed of 3,000 feet a second. In addition to these magnificent standup fights between giant equals, there will be the further spectacle of big ships harassed—yes, some of them disabled or destroyed—by the wasps of war, the comparatively slow-moving but nevertheless deadly torpedoes projected underneath the surface from hostile torpedo boats and destroyers, from submarine craft, and even possibly from the opposing battleships."

The assassins of the sea! What a role for these missiles to play in civilized warfare! A Dreadnought rides proudly at anchor or, under full steam, majestically ploughs the waves of the element she has conquered. Her heavily armored sides make her practically impervious to gunfire. Not a sight nor a sound is heard by way of warning. And then, sneaking far below the blue waves, travels silently toward her a fishlike adversary, eighteen or twenty feet long, less than two feet in diameter, and, to look at, no more formidable than the steel spar of a ship's rigging.

Miraculously it lays a true course to the Dreadnought. Is the thing a Frankenstein Monster that some surpassing engineer has built and endowed with devilish intelligence? It would seem so, its self-directive course is so marvellous. Its sharp nose hits with a thwack the hull of the warship.

The force of the blow explodes a dry primer just inside the head of the steel spar. The explosion communicates to a charge of wet guncotton adjacent, and with an awful roar the guncotton detonates and the kinetic energy of the gases suddenly released staves in the side of the mighty Dreadnought. Water rushes into the gaping hole. Some of the crew are killed, others are stunned or thrown into the water by the shock.

Possibly one of the Dreadnought's magazines explodes, and the badly wrecked leviathan sinks with all on board to a watery grave. Or possibly, undamaged as to the greater part of her hull, she still floats, but listed and hurt, with her starboard guns pointing meaninglessly up to the sky and her port armament directed as meaninglessly to the depths of the sea. In either event the giant has yielded to the midget. The Goliath has been prostrated by the sling of David.

Says S. Eardley-Wilmot in Brassey's "Naval Annual" for 1909: "When some one evolves a missile able to travel under water at a speed of one hundred miles an hour for a considerable distance and to carry a heavy charge of explosive, a radical change in naval construction will doubtless follow."

That simply means that in the opinion of the naval world the torpedo has not yet proved itself the annihilator of the big warship type and that the nations are still constructing Dreadnoughts, Invincibles and Indomitables. The sea assassin has its failures as well as its successes. Vigilance and counter-attack ward off many of the disasters. But think of the wonderful advance of the torpedo since the above quoted statement was penned or since the article on "Torpedoes" was written for the 1911 edition of the "Encyclopædia Britannica."

First, the range has been greatly increased. As has been said, the target practice of the United States navy is now at 4,000 yards, although a thousand yards was until recently thought the limit of effectiveness. Next, the speed (according to reports from the other side) has been raised to nearly fifty miles an hour—practically half as fast as the speed that Eardley-Wilmot thinks would relegate all the Dreadnoughts to the scrap heap. Efficiency in firing gains every year, and, lastly, the amount of the explosive carried is sufficient to cripple any warship, if not to sink her.

These improvements have been brought about by strengthening the plating of the torpedo, by increasing the pressure of compressed air in its air chambers from 1,800 to 2,200 pounds to the square inch and, best of all, by a device of heating the air on its way from the cold air chamber to the engines so that the air greatly expands and its power in driving the propellers is tremendously heightened. It remains to be seen whether these improvements are the final ones or whether, as in the case of every other invention, the torpedo will be yet further perfected and possibly some day, with its ally, the submarine, put an end to the national rivalries of costly warship building.

The modern torpedo has been likened to a Frankenstein Monster. Rather, it is under-water automobile minus a passenger, and steering its own course without the aid of a chauffeur. Transfer the scene of operations to land; conceive of a self-steering motor car, the forward end filled with explosives that detonate on percussion, and imagine its owner sending it flying across an unfenced country to strike a target two or three miles away. That is exactly how the torpedo works; and when properly geared it is no more diverted by water resistance and the cross-currents of the sea from its original path than a self-steering automobile would be diverted by the little inequalities of the way.

The torpedo is ejected from its parent ship by an explosion of cordite gas, which first thrusts a long projecting shield into the water and then entering the inner torpedo tube by means of a valve pushes out the torpedo and the surrounding water together. Its contact with the sea drops a trip or lever which starts the engines within operated by the compressed power from the air chamber and driving the propellers' actuating screws in the little water auto's stern. The torpedo leaps forward in its journey, and in the same instant another piece of mechanism, the gyroscope flywheel, starts racing.

Now, as every boy who has spun a top knows, or at least sees, the gyroscope or wheel moving around a free axis tends to preserve its plane of rotation. When deflected from its normal whirl it will slowly right itself without ceasing its motion. The axis of the flywheel is placed parallel to the vertical axis of the torpedo body encasing it.

Whenever the torpedo turns either to the right or left the axis of the gyroscope (in order to keep its balance, so to speak) makes a relative angular motion in the opposite direction. That motion is imparted by means of a crank and a servomotor to the helm of the torpedo, and thus the missile is forced back automatically to its original line of flight.

By a device equally ingenious the water auto travels steadily at a certain depth below the surface of the sea. The pressures due to different depths are made use of to actuate horizontal rudders. Thus the torpedo is directed automatically upward or downward, according as its tendency is to sink or rise. If the original aim at the target has been correct, and if the gearing is in good order, nothing can deviate the line of its true flight.

This manless boat, this under-water, self-steering locomotive, is indeed a greater marvel than even the aeroplane, the dirigible airship or the submarine, and the only reason it has not been thus regarded is its evident lack of the spectacular, together with the absence of the human thrill that is associated with craft bearing cargoes of human beings into the skies above or the waters underneath. Its evolution has been a long one.

Passing over the earlier crude attempts, it should be recorded that Robert Fulton in 1805, working for the French government, destroyed a British brig by means of torpedoes containing 180-pound charges of gunpowder, fired by a clockwork mechanism.

But it was with an old fashioned spar or outrigger torpedo—merely an explosive charge at the end of a long, projecting piece of timber—that Lieutenant Cushing, in the Civil War, performed his memorable exploit of blowing up the Confederate ironclad Albemarle. The Albemarle and the frail launch in which Cushing had approached the mighty ship sank about the same time, but the daredevil hero swam away from the scene of casualty and escaped.

Modern light armament such as the ships of to-day carry would make short work of daredevil Cushings who ventured thus near.

A Mr. Whitehead, an Englishman superintending the engineering works at Fiume, Austria, took up and developed the original idea of Captain Lupuis, of the Austrian navy. This was a plan for a small, self-propelled boat carrying an explosive charge and directed from a distance. As the idea grew in Whitehead's working out, he presently abandoned the notion of having directing wires and devoted himself to making a completely automatic locomotive craft.

It was a tiny, toylike affair, this progenitor of the deadly machine of the present day. It could do only ten knots speed and had a range of but a few hundred yards. Worst of all, its course was most uncertain. It might hit the target or it might not. No one could tell which way the tarnation thing would go, following the initial impulse.

Ludwig Obry, an Austrian engineer, solved the problem nearly thirty years later with his gyroscope gear for the Whitehead torpedo, though Americans recall with pride that long before that Admiral Howell, of our own navy, had demonstrated successfully that the gyroscope, if need be, could furnish both power and steering capability to the missile, as seen in his own invention, the Howell torpedo.

Obry's gear was first tried by the Italian government in 1896. It was adopted by the Whiteheads, and the combination of gyroscope automatic steering with their method of propulsion, namely, compressed air power, caused this improved type of torpedo to prevail over all other rivals, including the Howell, the Brennan, the Lay and the Sims-Edison.

Now, what has the modern torpedo accomplished in actual warfare?

Away back in the 90's, when the Japs fought the Chinese at Yalu River, defeated their fleet and blockaded the surviving vessels in Wei-Hai-Wei harbor, they brought torpedoes into play. The Japs' small craft made repeated night attacks on the blockaded squadron and managed to torpedo several of the Chinese ships. In this way the resistance of the enemy was gradually broken down and Wei-Hai-Wei was captured.

Shortly before and after the Chino-Japanese War South American troubles furnished two instances of deadly attack. The Chilian insurgent armorclad Blanco Encalada, of 3,500 tons, was sunk by the little 750-ton government torpedo boat, the Lynch, discharging Whitehead torpedoes. Just as deadly, in the Brazilian revolution of 1894, was the attack of the 500-ton torpedo vessel Sampaio on the great ironclad Aquidaban. A broadside torpedo sank the big ship, while her tiny enemy escaped injury.

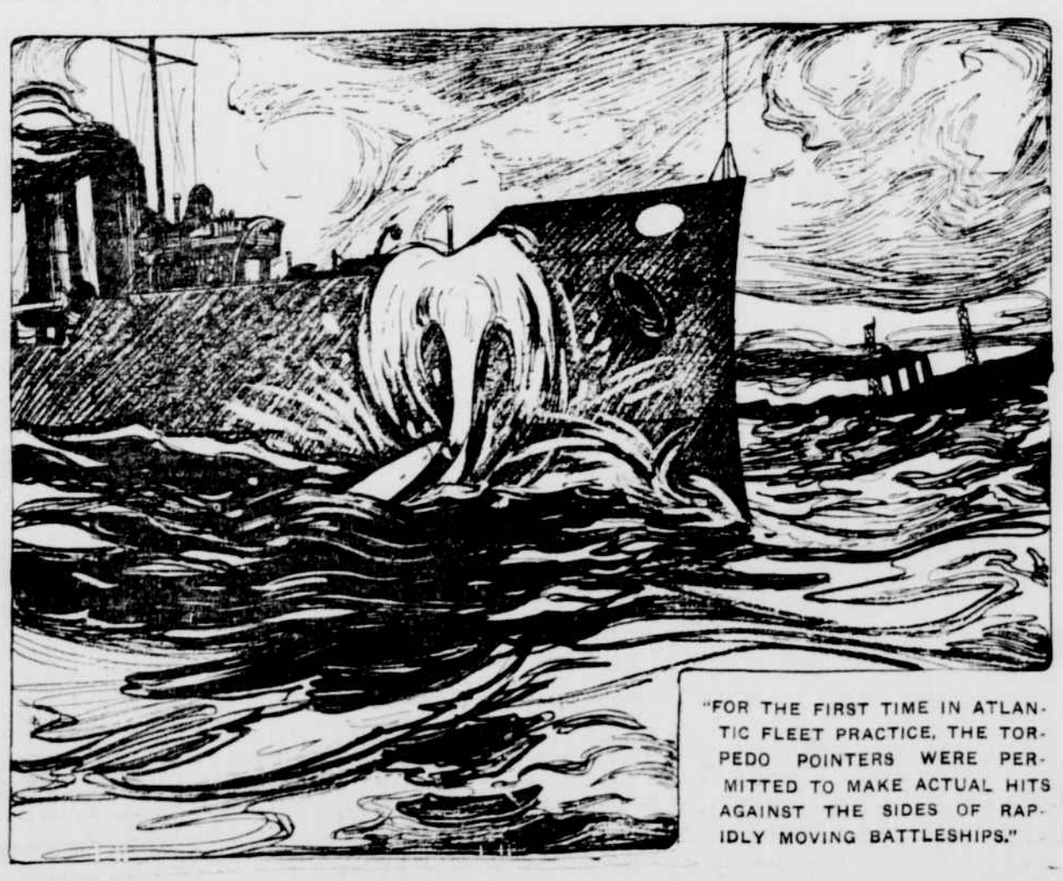
These modern missiles had little effect on the fortunes of the Spanish-American War. For some reason or other Admiral Cervera failed or was unable to use his two torpedo boats against the American fleet blockading Santiago. And it was a case of being hoist by his own petard when in the course of the final engagement an American shell struck the Almirante Oquendo's fourteen-inch torpedo squarely in its tube aboardship and caused a terrific explosion, entirely wrecking that side of the cruiser, killing many of the crew and putting the vessel out of action.

The vessels torpedoed by the Japanese at the beginning of their war with Russia in 1904 were the battleships Retvizan and Tsarevitch and the armored cruiser Pallada. The Japanese made a midnight attack on the Russian war fleet lying at anchor entirely unguarded outside the harbor of Port Arthur. The unexpectedness of the attack and the lack of means for meeting it rendered the Russians helpless. None of the ships was sunk by the torpedo explosions, but they were so badly damaged that they had to go into drydock for months, and it was not until the following June that they were ready to take to sea again.

But 'tis evident the real test betwixt the strongly armored man-o'-war and its torpedo adversary is yet to come. The past shows that most of the warships which have succumbed to torpedo blows have been ill-guarded or have lacked the modern means of defence and counter attack.

It is purely a guess which wins—the mighty-seeming Dreadnought or the insignificant but devastating torpedo.

Most Improved Types Now Travel 7,000 Yards, and When Still Further Perfected They Will Conceivably Relegate Mighty Dreadnoughts to the Scrap Heap.



"FOR THE FIRST TIME IN ATLANTIC FLEET PRACTICE, THE TORPEDO POINTERS WERE PERMITTED TO MAKE ACTUAL HITS AGAINST THE SIDES OF RAPIDLY MOVING BATTLESHIPS."