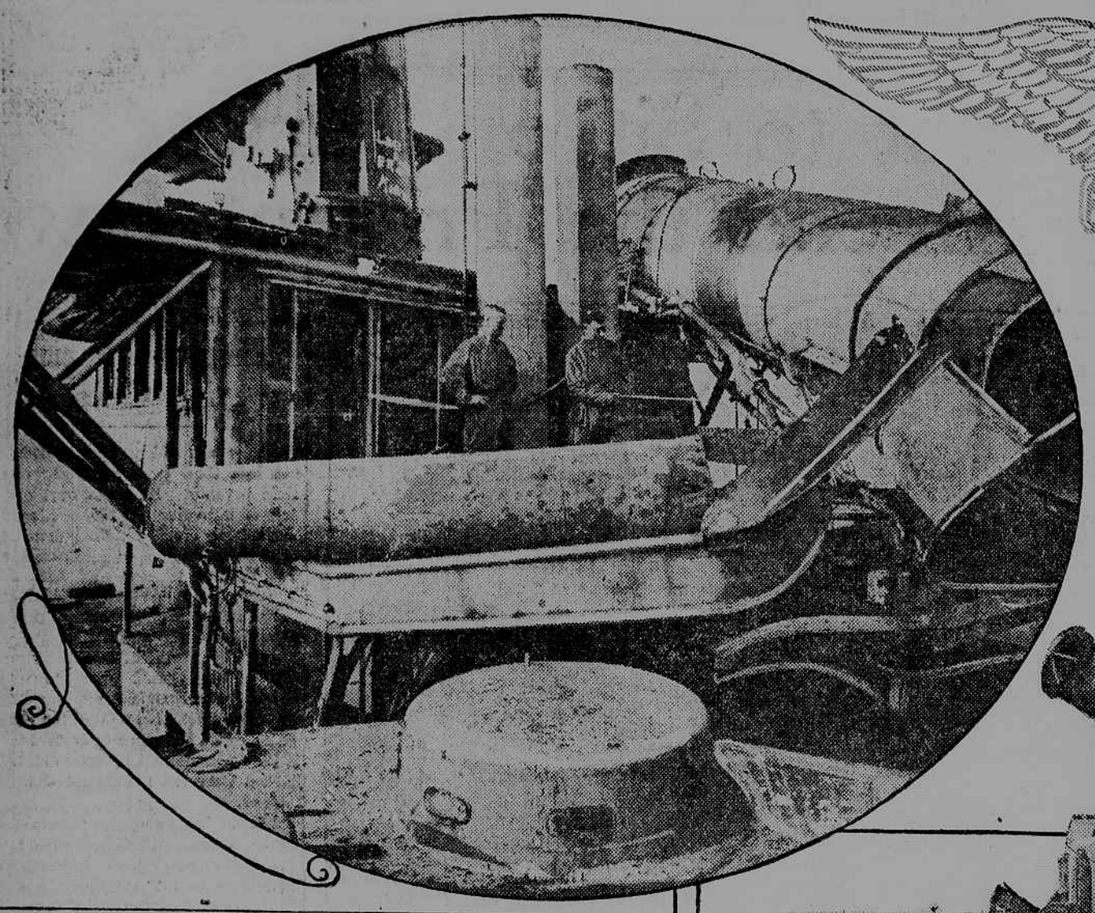
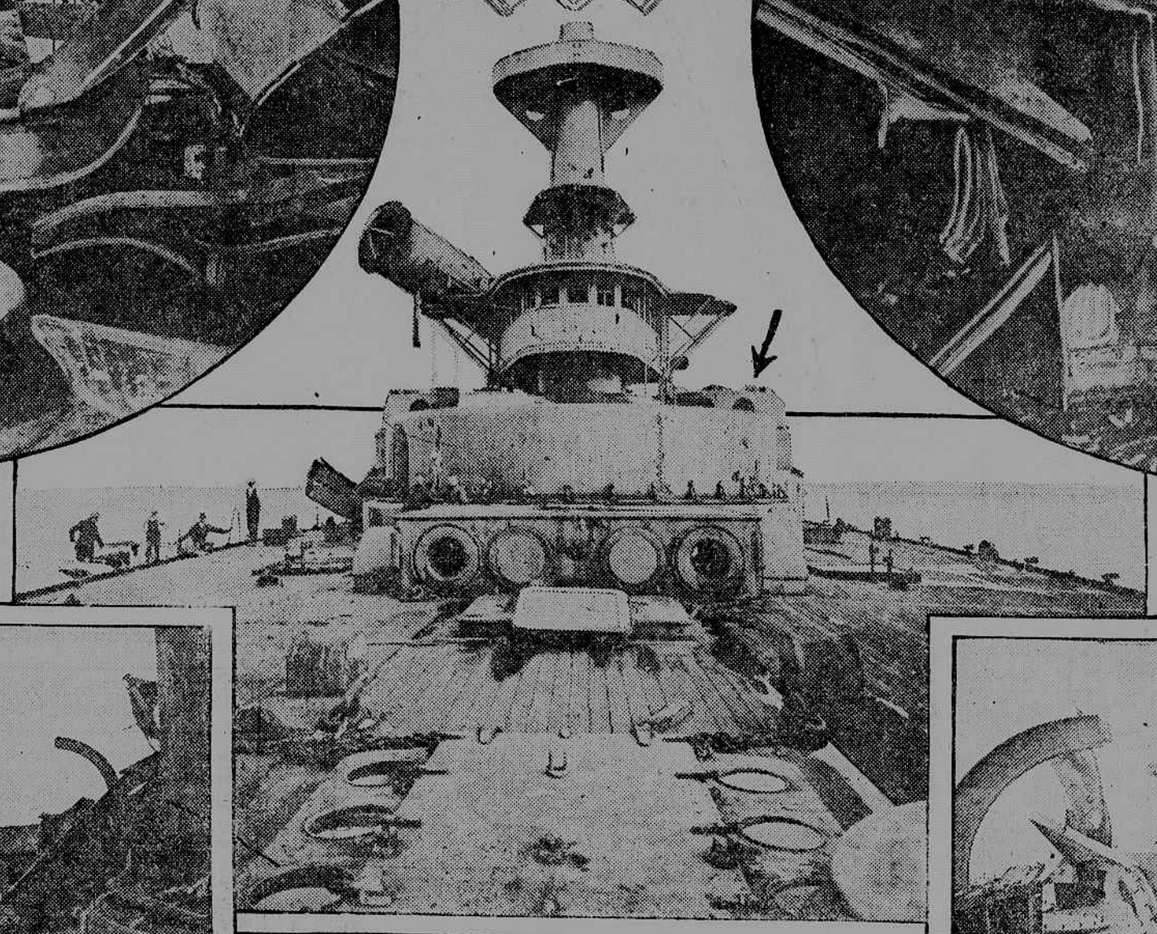
Test Proves That One Aerial Bomb May Wreck a Dreadnought



ALL that was left of the wheelhouse and the forward funnel of the battleship Indiana after the explosion of the bomb



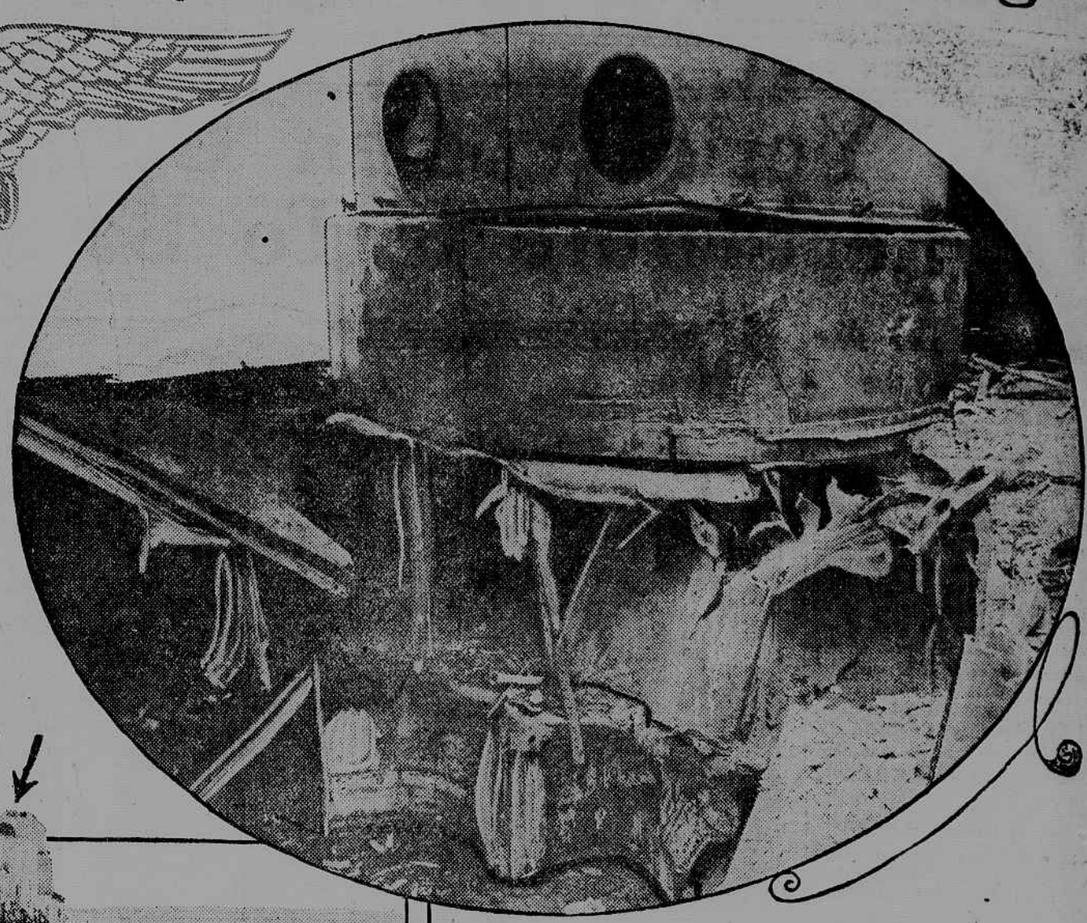
THE bomb was placed aft of the forward 8-inch turret at the point indicated by the arrow

AT the left is a view of the vessel amidships, the first deck being blown away

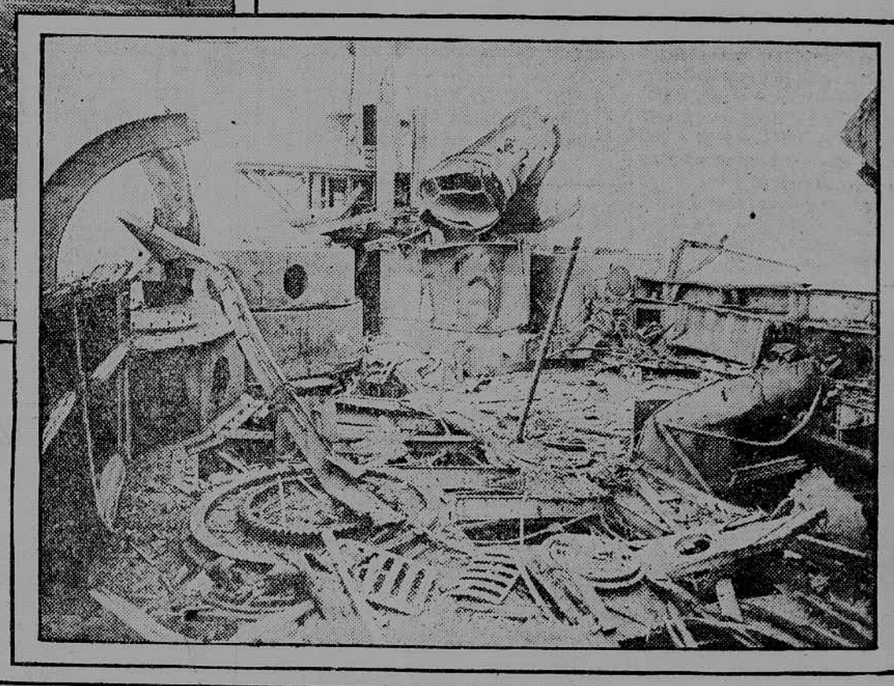
AT THE right is a view of the second deck looking forward, the X showing where the bomb exploded

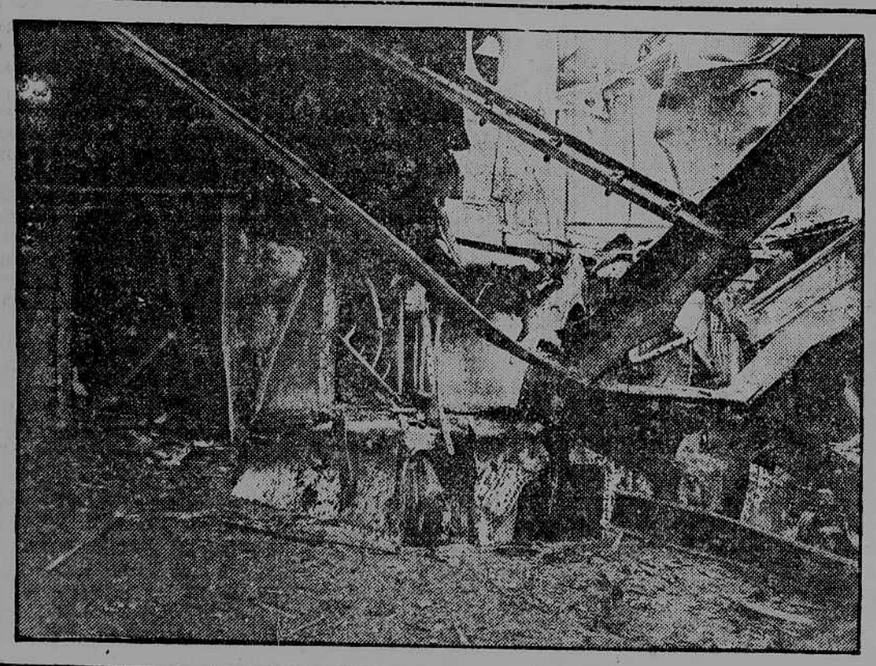
THE picture at the lower left hand shows the third deck and the ammunition hoist. Had the ship been in commission the magazine probably would have been exploded

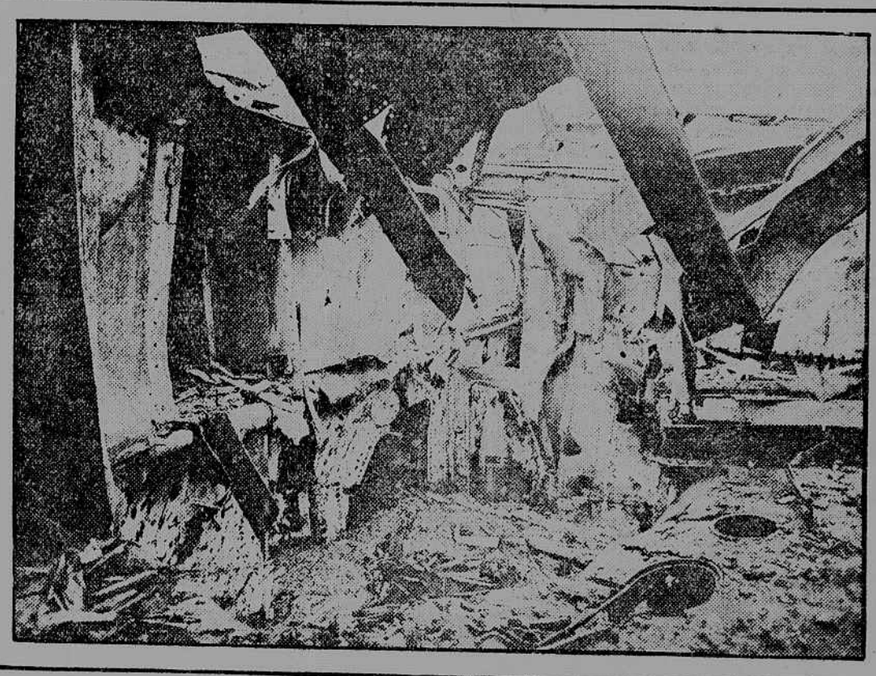
AT the lower right hand is shown the destruction wrought on the fourth deck



WRECK of the forward 8-inch turret of the Indiana, against which the 900-pound bomb was exploded







By Quarterdeck

THE seven pictures on this page suffice to show the destructive effect of a bomb not only on the upper works of a battleship, but upon the lower decks as well.

In this case the target was the old battleship Indiana, formerly commanded by Captain H. C. Taylor, U. S. N., when she fought in Sampson's fleet at the Battle of Santiago.

The bomb, containing 900 pounds of TNT, was laid on the deck near the forward eight-inch turret on the port side of the ship. The upper boat deck was blown off, the second and third decks were wrecked fore and aft and the explosion penetrated downward to the fourth deck.

There can be no doubt that the forward magazine would have blown up had the ship been in action at the time, thus completely destroying the ship. But in any event a study of these pictures will demonstrate that the personnel involved in handling the ship and in manning the forward battery of the Indiana would have been placed *hors de combat.*

Worse if Dropped From Plane

It must be remembered that this bomb was simply laid on the deck and exploded. Manifestly the downward effect of the explosive would have been much greater and the havoc more widespread had the same bomb been dropped or projected from an airplane a few hundred feet high flying at a speed of more than a hundred miles an hour. Even admitting that the falling velocity of the bomb would not have caused it to penetrate one or more decks, and, with a delayed-action fuse postponed the explosion of the charge until it reached the second or third deck, it is well known that the downward impulse of the charge would, nevertheless, have been greatly increased.

In noting the terrific effect of this explosion on the Indiana we must not jump immediately to the conclusion that all surface battleships are useless. This experiment conclusively demonstrated that such ships are lamentably weak against a heavy charge exploding on deck. But they are also vulnerable against high-angle fire from big guns whose shells, falling at long range upon unarmored decks or penetrating thin armor, may reach the magazines and destroy the ship, as at the Battle of Jutland. Before we assert that the airplane can sink a dreadnought we must be assured *that it can land its bomb on her deck;* in other words, can it reasonably expect to score a hit? The effect of this explosion might have been in great measure predicted by an expert on explosives. We can, of course, destroy our enemy if we can explode his magazine!

Chances of Hitting

It could be safely asserted that one prizefighter could kill another if he could hit him with full force. But can he hit him? That is the question.

The chance of hitting a ship with a bomb from an airplane has been discussed more or less, but experiment alone can decide. There are those who assert that a good percentage of hits may be expected. The Navy Department should have solved this problem long ago. Experiments with dummy bombs would suffice.

A Vulnerable Target

In considering this question of hitting from an airplane we must in all fairness remember that the chance of hitting a ship by gunfire at a distance of from five to ten miles was very small until Admiral Fiske's telescope sight and various range-finding and scientific gunnery control devices were invented. It is by no means improbable that similar methods will be adapted to airplane attack. In many respects the problem is easier, because, although the speed of the airplane is far less. It is evident that attacks upon a fleet by bombing planes would best succeed at night, at dusk, or just before dawn. A fleet under steam at sea, composed of battleships 600 feet long at intervals of 1,500 feet, either in single column or in several parallel columns, presents a big and vulnerable horizontal target to attack from the air.

For instance, four battleships in column—one following directly behind the others—will cover a total distance of 6,900 feet. The horizontal deck space of the four ships would cover a total length of 2,400 feet, about one-third of the total length of the column.

Suppose a flotilla of many bombing planes attacks either from ahead or from astern, flying directly over and lengthwise the column of ships. In this case the lateral error in dropping bombs would be small, and as the vulnerable deck surface would be about one-third the length of this column the chances of hitting some ship in the column, though not perhaps the one aimed at, would be very good. Would an admiral view such an air attack with indifference?

It was demonstrated on the battle front in France that a tremendous expenditure of ammunition by anti-aircraft guns was necessary to bring down an airplane. The loss of airplanes from such fire was said to have been only one-tenth of 1 per cent! And yet these anti-aircraft guns were mounted on land, not on a moving ship! The use of searchlights by a fleet betrays its position and its formation. A bombing plane flying at a speed of 150 miles an hour at night is not easily hit, even if it is seen.

A Barrage of Mines

Even if we admit that the chance of scoring a direct hit by a bomb from an airplane is very small we must not forget that ingenuity may provide a bomb which will explode upon striking the deck of a ship and which will act as a mine, or depth charge, in case it misses the ship and lands in the water. Such an invention is by no means difficult, and by such means the fleet, in addition to a rain of bombs from above, may find itself surrounded by a barrage of mines laid in several lines across its track by airplanes. In fact, some of the attacking airplanes might be assigned the duty of bombing and others to mine-laying.

The Torpedo Plane

In discussing an air attack upon a fleet we must not forget the torpedo plane. This weapon may, and in fact should, always be used in conjunction with an attack by bombing planes. Imagine a force of fifty torpedo planes swooping down well ahead and on one or both bows of a fleet and discharging as many torpedoes at the ships. Thus the fleet would be attacked from above as well as from under water by enemies that could not well be fought off by gunfire at night. And if to this were added an attack by submarines and destroyers, the admiral in command would have a very uncomfortable job on hand even if no enemy battleships were added to his troubles.

Consider the difference in effectiveness of a sixteen-inch gun mounted on shore as compared with bombing planes against a fleet. The gun costs $500,000. It fires a shell weighing a ton with a small bursting charge of high explosive. The chances of hitting a moving ship at ten to twenty miles are rather small, whereas ten bombing planes, each costing $50,000, could carry ten 1,000-pound bombs to a distance of fifty miles off shore, return for a new supply and make a second attack in about one hour! In other words, as a distinguished army officer declares, "neither coast defense guns nor a defending fleet of battleships need fire a gun in repelling the attack of a foreign fleet if we have a properly organized air force."

It is safe to declare that a battle fleet will never again approach a coast that is protected by submarines, destroyers, bombing planes and torpedo planes. Battle fleets did not attack shore defenses in the World War except at the Dardanelles. They were not successful there, and the campaign could not have been undertaken at all if the Turks had been supplied with an air force, not to speak of submarines and torpedoes.

Discussion Demanded

This article is not sensational. It is a fair statement concerning the uses of bombing and torpedo planes in naval warfare, with a brief reference to the supporting value of submarines and mines in the attack upon a fleet.

The Navy Department, for reasons best known to itself, has not published the result of the Indiana experiment, nor has it invited or encouraged a free and thorough discussion as to the effect of new weapons upon naval warfare by officers of the navy who are best qualified by their recognized ability, study and experience to give intelligent opinions on the subject.

The Navy Department is forcing to the front the building program of 1916—a plan five years old—without giving due consideration to the present and the future. *It seemingly ignores, or fails to realize, that a modern fleet must operate upon three planes instead of one—on the surface, below the surface and above the surface of the sea.*

In fact, we may say that the Navy Department does not exhibit a proper understanding of a one-plane fleet, not to say a three-plane fleet! We find our surface fleet divided—not concentrated for war. We find old and useless ships in commission and an insane proposition *to add to the number of such impediments to the fleet while scores of modern destroyers are rusting at navy yards for want of men to man them!*

Rear Admiral Goodrich, in The North American Review, has declared that *the navy is owned by the country and the people; that it is not owned by individuals and should not be controlled by them in a manner that imperils the nation.* It is time that Congress, which represents the people, should take full cognizance of present conditions in the navy and safeguard the fleet and the nation against disastrous policies that are forced upon us with no intelligent discussion or consideration.