CURRENT LITERATURE

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# THE TWO MOST REMARKABLE BATTLESHIPS OF THE PRESENT TIME

KEELS have been laid in this country of two battle-ships which will take rank as the most remarkable men-of-war of the period. This estimate is not an American one. It is that of British naval experts, given in *The United Service Magazine,* among others. The ships referred to are the *Oklahoma,* which has recently been laid down by the New York Shipbuilding Company, and the *Nevada,* which is being built by the Fore River Shipbuilding Company.

They will have three fourteen-inch guns each in the forward and aft turrets, with two fourteen-inch guns in each of the other two turrets (intermediate), and all the turrets will be on the center line. The *Nevada* will have turbines of the Curtis type and the *Oklahoma* will have reciprocating engines. Both ships will use oil and oil only, instead of coal only or coal with oil as an auxiliary fuel as in later British battle-ships. Each ship will have only one funnel instead of two. The armor will be thicker than in any vessel yet laid down for any navy, and the ships will be better protected from an enemy's fire than is any man-of-war now afloat.

These are departures which, says the naval expert of the London *Telegraph,* must excite the widest interest in Europe. The reasons which led the United States Navy to adopt the three-gun turret have been set forth in *The Scientific American,* the chief of which is that by elevating, training and firing the three guns together great assistance will be rendered to the "spotter" in determining the fall of the shots. He will be able to telephone the corrections with much greater accuracy.

The armament of ten fourteen-inch guns, carried in four turrets, is also thought daring by the foreign experts. On the forecastle deck will be first a three-gun turret, then a two-gun turret. On the quarter deck will be a two-gun turret and astern of that a three-gun turret. This arrangement will give a concentration of fire superior to that obtainable from the ten fourteen-inch guns of the *New York* and *Texas,* now completing, which will be mounted in five two-gun turrets.

The new fourteen-inch, forty-five caliber gun is a particularly powerful weapon, far more powerful than the forty-five caliber twelve-inch gun mounted on earlier American war-ships. The muzzle energy of the twelve-inch piece is about 49,000 foot-tons, whereas that of the fourteen-inch pieces is about 66,000 foot-tons. Moreover its shell, which weighs 1,400 pounds as compared with the 870 pounds weight of the twelve-inch, carries a much larger bursting charge of high explosive and therefore will be proportionately more destructive. It has been decided to retain the five-inch gun as an anti-torpedo weapon, altho most other powers are adopting a six-inch gun. Of the heavy armor protection the naval expert of the British authority adds:

"Interest in the new ships, however, centers largely in their defensive arrangements. Not only will they carry a much greater weight of armor than has been carried, or is to be carried, by any ship built or building, but the armor, it is claimed, will be dispozed to greater advantage. A war-ship must not only carry her guns into the fight, but she must nurse them through all its savage hammering so effectually that they shall be able to pour shell into the enemy until they have silenced or sent him to the bottom. How have the American designers met these conditions in the new ships? In the *North Dakota* the armor protection was entirely removed from the battery of five-inch guns, on the ground that the five, six or seven inches of armor with which the anti-torpedo weapons of war-ships of to-day are protected will simply serve as a shell-burster, delaying the high explosive fourteen-inch shells long enough to cause the little firing-hammer within the shells to leap forward and detonate the high explosive, the burst taking place after the shell has passed through the armor and is well within the body of the ship. So the torpedo-defence guns in the *Nevada* and *Oklahoma* will have nothing in front of them except the ordinary half-inch or five-eighths-inch plating of the ship's side, which, it is thought, will allow the shells to pass through without bursting among the gun crews.

"The most important armor on a ship is undoubtedly the belt armor upon the hull itself, for to this is committed the duty of keeping the ship afloat and preventing projectiles from striking a vital blow in the magazine, boiler rooms, or engine-rooms or other vital parts. In the new ships the belt will be seventeen and one-half feet in width and, at mean draught, it will extend from nine feet above to eight feet six inches below the water. It will have the unprecedented thickness of thirteen and one-half inches, which it will maintain from its upper edge down to within a few feet of its

bottom, where it will begin to taper to a minimum width at the bottom of eight inches. The expert conclusion is that very rarely, if ever, will the bottom edge of this deep belt be rolled out of water, expozing the thin plating below. This belt will extend for over 400 feet along each side of the ship. It will terminate well forward of No. 1 barbette, where it will be carried, with the same depth and thickness, entirely across the ship. At its after end the belt armor will be carried at its full depth of seventeen and one-half feet to a point about thirty feet aft of No. 4 barbette. Here there will be a 'jog,' the depth of the belt decreasing from seventeen and one-half feet to eight and one-half feet, at which depth it will be continued aft for another sixty feet. Transverse bulkheads of the same thickness as the belt will at this point be carried across the ship."

An important feature of the side armor in these new American warships is the manner in which the plating will be laid on. Hitherto the armor has been placed horizontally, in two strips, with a continuous horizontal joint, located slightly above the water line, between the upper and lower strip. This had the disadvantage that it presented a continuous line of cleavage near the water line, and therefore at a most vulnerable point. In the new ships the armor plates are to be laid vertically, the joints being vertical and the plates extending the whole depth of the belt without any continuous joint at the water line. This is an improvement which the United States constructors urge will add greatly to the protective power of the side armor.

Exceptionally massive is the armor protection for the main gun positions. The barbette armor extends, with a thickness of thirteen inches, from the turret down to the upper protective deck, and from the upper to the lower protective deck the thickness is reduced to four and a half inches—an economy which has been thought justifiable because of the thirteen-inch protection afforded by the side armor. The turret armor is equally massive. No war-ship hitherto designed has been as heavily armored as these two American battle-ships and it will be interesting to watch the effect of these leviathans upon the designs of foreign powers.

The fact that these war-ships are to be oil-driven exclusively has created something of a sensation abroad. Thereby hangs a tale which *The Scientific American* relates. The fact that the ships are oil-driven enabled the engineer to dispense entirely with coal bunkers—the oil being

carried chiefly in the double bottom of the ship. The omission of bunkers sets free a large amount of space below decks, which has facilitated the concentration of all six boiler compartments at the center of the ship, where they occupy only sixty-five feet of the length. Hence it became possible to use a single smokestack placed immediately above the boiler rooms and hence again—and this is the most important point—it was found possible to place around the whole of the "uptakes" a massive redoubt of inclined armor with walls everywhere thirteen inches thick. Says the London *Telegraph*:

"These ships, it will be seen, are, in fact, what the Americans claim, the most remarkable of the period. They are to be heavily armed, and in armor protection they are unique. They will be able to give 'knock-out' blows, and receive the fire of an enemy with comparative impunity. In an action they should be able to remain in the line of battle long after less massively defended ships have been so seriously injured as to be useless.

"Particulars of the latest British ships have not been published officially, but so far as is known no vessel has been laid down as heavily armored as the *Nevada* and *Oklahoma*. The *Orion* and her sisters, for instance, have belts with a maximum of only twelve inches, with eleven inches of armor on their turrets, and in other respects their protection is less complete. German ships are believed to be rather less fully protected. In the circumstances, there will be considerable controversy as to the next step in design in Europe—whether in the direction of lighter armor and heavier armament, or, as in the American battleships, in the direction of economy in armament—by the adoption of the three-gun turret and light anti-torpedo guns—and a further development in armor."

It is fortunate for the United States, concludes this expert, that it enjoys the services of a corps of naval constructors of such striking ability blended with wise boldness. Such qualities will prove the salvation of the nation.

U.S.S. Oklahoma