The Fleet's In — But What Is in a Fleet?

America's First Line of Defense Dissected for Landlubbers

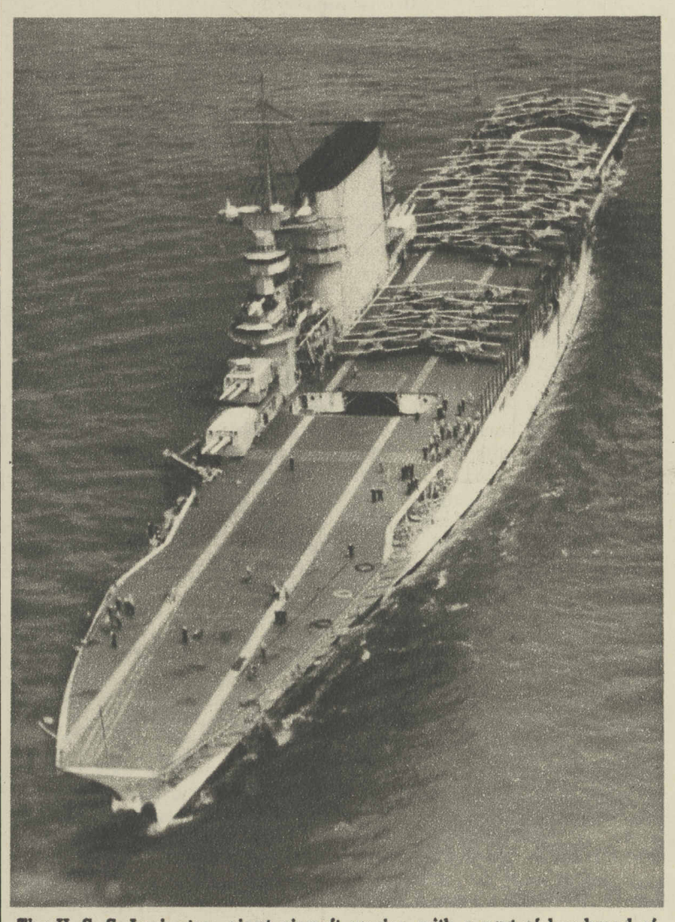
By JOHN A. MENAUGH

THE NAVY is prominently in the news today.

With the administration's proposal to institute an 800-million-dollar program of naval expansion calling for an increase in the size of our navy by about 40 vessels, including 3 capital ships, and with 68 vessels, including 2 capital ships, now under construction, the public at large rapidly is becoming navy conscious. It is learning, as the result of the foreign navy-building race now under way, of the threats to our own national security and the importance of naval preparedness.

In all discussions of new naval construction occur various terms that designate different types of vessels. The uninformed layman as a result may be considerably perplexed by this terminology; may wonder, for example, what constitutes a capital ship, what is the difference between a heavy cruiser and a light cruiser, why America has no battle cruisers, and so on.

To one unfamiliar with naval subjects all craft may be battleships. To those who know, however, battleships never are confused with other types of vessels. America, which at the present is



The U. S. S. Lexington, giant aircraft carrier, with a part of her brood of planes on the landing and takeoff deck.

rated as a 15-battleship nation, will have, when and if the new program is completed, 18 vessels such as these. This expansion is separate and apart from the regular replacement plan, which calls for four new battleships to take the places of four that are obsolete or soon will become obsolete (over age is the term used in the navy). At the present two of these replacement battleships are under construction, the North Carolina and the Washington, which are to carry nine 16-inch guns each as their main batteries.

Capital ships are the backbone of a powerful navy. They are the so-called big-gun ships, the most destructive of vessels afloat, and they include not only battleships but battle cruisers, the last named of which America has none.

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The battleship represents the naval engineer's effort to construct a vessel equipped with the maximum of destructive weapons plus the maximum of protective armor. The result is a colossal craft, carrying as its main battery from eight to a dozen rifled guns of the largest caliber practical upon the ship in question, a secondary battery of smaller guns, and various other weapons, including those classed as anti-aircraft, and specially hardened steel armor intended to stop shells of enemy ships.

As a typical example of a battleship let us consider the U.S.S. Colorado, which was completed in August, 1923, at a cost in excess of 27 million dollars. The displacement of this ship is 32,500 tons (that is, when it is afloat its hull occupies space normally taken by 32,500 tons of water). It may be noted that this is slightly less than the 35,000 ton limitation specified under the terms of the Washington arms limitation treaty that now has expired—the same limitation specified in the 1936 three-cornered agreement of America, Great Britain, and France, which has not expired but which may be modified under certain conditions.

By virtue of the so-called escalator clause of the 1936 agreement the signatories to this document are permitted to build war craft of greater than 35,000 tonnage in the event that other nations, which are not bound by the compact, construct these larger vessels. It was because of the existence of this clause that the recent ultimatum was dispatched to Japan calling upon that nation to affirm or deny the report that it was constructing or planning to construct battleships of more than 40,000 tons displacement.

The Colorado is 600 feet long on the water line and 624 feet long over all. Its beam is 97½ feet, its mean draught 30½ feet, and its maximum draught 35 feet. In other words the bottom of its keel is 35 feet below the surface when the vessel is carrying its maximum load.

Fourteen hundred seven officers and seamen are required to man this mighty ship, the armament of which consists of:

Eight 16-inch guns mounted in four turrets (armored gun houses), two fore and two aft. These guns at a 30 degree elevation fire shells weighing somewhat more than a ton a distance of approximately 33,300 yards (nearly 19 miles). The guns themselves weigh more than 100 tons apiece. The powder charge used in propelling a shell from the weapon is contained in silk bags and weighs upward to 650 pounds.

Twelve five-inch guns, constituting the secondary battery. These weapons, which range up to 20,000 yards, are primarily mounted to protect the ship against destroyers.

Eight five-inch anti-aircraft guns.

Four six-pound guns, employed for saluting purposes.

Two one-pounders.

Two machine guns.

Eleven .50-caliber anti-aircraft guns.

The Colorado's two submerged 21-inch torpedo tubes have been removed. Some modern battleships have these torpedo tubes, others do not. Japanese battleships, for example, have from two to six torpedo tubes each.

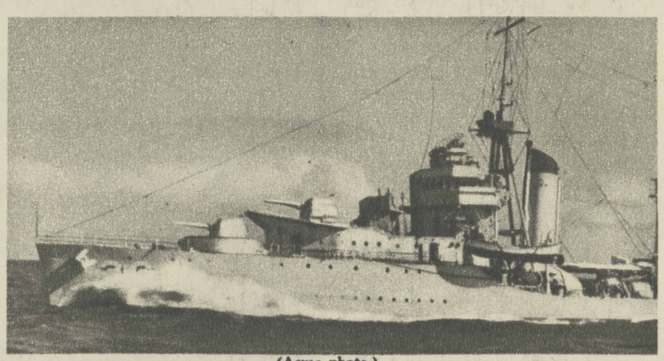
The greatest expanse of armor on this ship, as on all battleships, is that which protects its vital parts, extending along the water lines at the sides from a point back of the rearmost turret to a point ahead of the foremost. This is the so-called belt armor. It is 16 inches thick at the heaviest parts. Funnel bases and conning tower and tube also are protected by this thick steel, while that upon the faces of the turrets is 18 inches thick.

A general rule is that armor will stop a shell of the same diameter as the thickness of the armor at a distance as great as the thickness in inches of the armor multiplied by 1,000 yards. In other words, 16-inch armor should stop a 16-inch shell at a range of approximately 16,000 yards, although this may vary considerably one way or another depending upon the type of shell and the type of armor.

The Colorado is propelled by turbines and electric drive, rated at 27,300 horsepower. In reality these engines develop greater horsepower than this. They drive the great vessel at a speed of about 21 knots (a speed of 21 knots is equivalent to 24.2 land miles an hour). Oil is the fuel used to generate power.

Actual cruising ranges of ships of this type are limited by their fuel supplies and as a rule are naval secrets. Newest battleships of the American fleet as well as those of the Japanese fleet are said to be capable of cruising from 15,000 to 18,000 miles at a reduced speed of about 10 knots, but are capable of steaming only about 6,000 miles at full speed. The slowest battleships of our navy are said to have a speed of about 19 knots, which naturally would be the speed of a fleet of which they would be a part, while the slowest of the Japanese battleships do 22.5 knots. Speed, however, is not all important when considering relative strengths of navies. The twelve best battleships of the American navy are stronger, gun for gun and armor for armor, than any twelve vessels of any foreign navy.

Slightly stronger in armament than the U.S.S. Colorado are the British battleships Nelson and Rodney, which carry nine 16-inch guns each. These weapons at a 40 degree elevation will hurl shells 35,000 yards (nearly 20 miles). The Nelson and the Rodney, however, have belt armor that is only 14 inches thick, and turret face armor that is only 16 inches thick. Their speeds are slightly in excess of 23 knots. They are said to be capable of doing 6,000 miles at full speed or 30,000 miles at reduced speed without refueling. This last figure is questioned, however, by some American naval authorities.



(Acme photo.)

Greyhound of the sea. The Mahan, one of America's many swift destroyers.

All strictly modern battleships, including the Colorado, the Nelson, the Rodney, and others, are protected to a degree against torpedo attacks by blisters, or false hulls, along their sides below the water lines, and by series of longitudinal and tranverse bulkheads. A ship such as these could be torpedoed a half dozen times and still keep afloat. The blister or false hull absorbs the shock of a torpedo explosion, the bulkheads keep water from penetrating the parts of the vessel not directly affected by the explosion.

The battle cruiser, a ship not found in the American navy, is a cross between a battleship and a cruiser. It rates as a capital ship from the fact that it carries big guns. As a rule, however, it does not carry quite so many of these big guns as a battleship, although H. M. S. Hood, the largest warcraft in existence today, is rated as a battle cruiser and it carries eight 15-inch guns.

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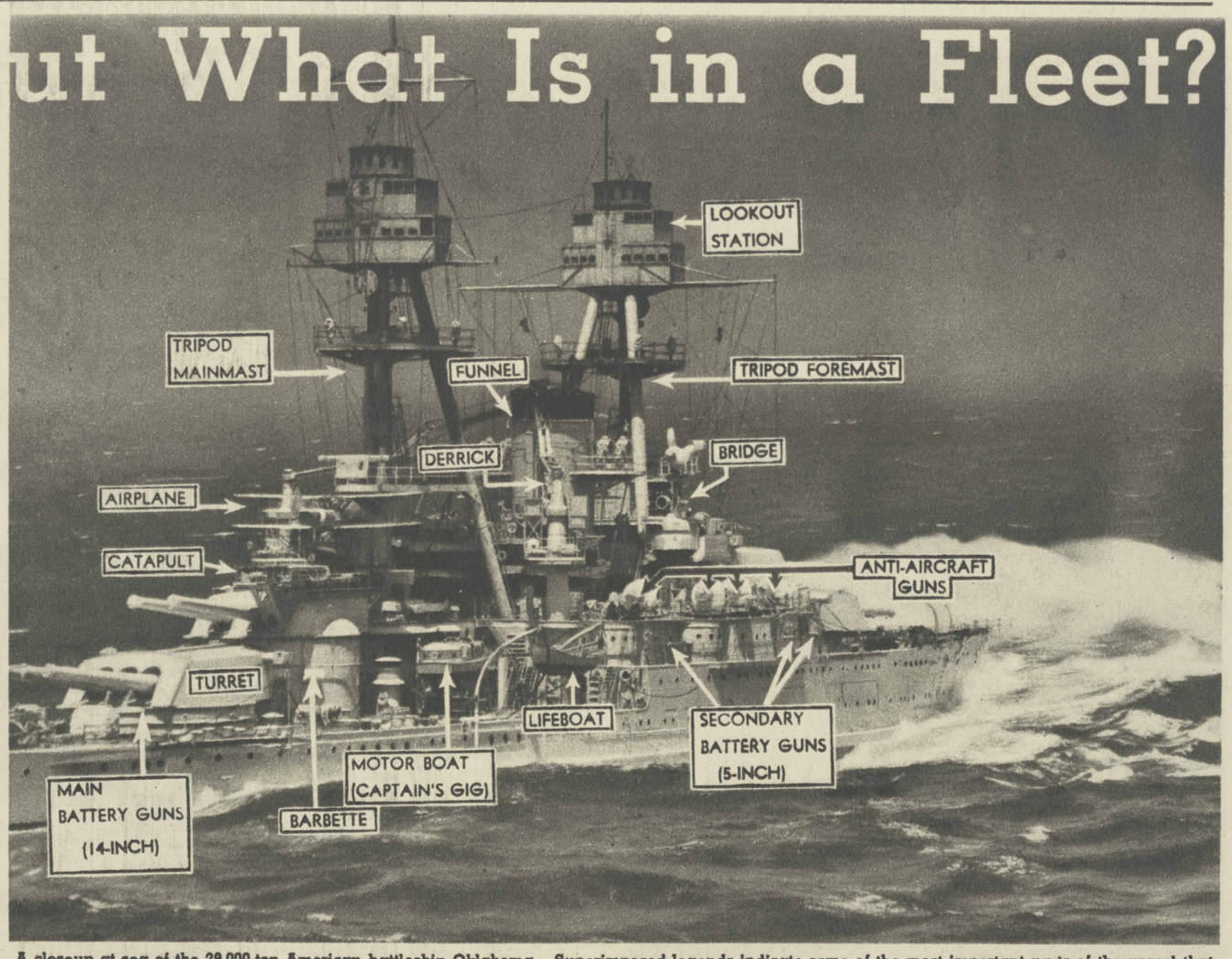
In a battle cruiser armament is sacrificed to some extent and armor to a great extent in favor of greater horsepower and increased speed. Typical battle cruisers are the British vessels Repulse and Renown. Of 32,000 tons displacement each, they are greater in dimensions than the Colorado, being more than 794 feet in length over all and more than 102 feet in beam. They carry as their main batteries six 15-inch guns each. Their engines develop approximately 120,000 horsepower, which is more than three times that of the Colorado, and they attain speeds of about 32 knots, which closely approximates the speeds of many cruisers. The heaviest belt armor on these ships is only 9 inches thick, while the steel on the face of their turrets is only 11 inches thick.

With the possible exception of the gigantic 42,100 ton battle cruiser Hood, which has 12-inch belt armor and 15-inch turret face armor, the most up-to-date battle cruisers are no match in battle for the most-up-to-date battleships. Although America was building battle cruisers in 1922, when treaty limits were imposed, and subsequently converted these unfinished vessels into the airplane carriers Saratoga and Lexington, the present day choice is for battleships in preference to battle cruisers. America holds that a fleet nucleus of battleships that move at about the same rate of speed is more easily manageable and thus more formidable than one in which there are battle cruisers, which naturally must reduce their speed when moving in a column with battleships. Battle cruisers, because of their lighter armor, cannot take as much punishment as battleships, a factor that probably more than any other has influenced American preference toward the more heavily protected vessels.



A closeup at sea of the 29,000-ton American battleship Oklahoma. Superimposed legends indicate some of the most important parts of the vessel that are visible from without. (Tribune photo by Scalf.)

Capital ships (battleships and battle cruisers) are reserved for the decisive actions at sea. They are built with the sole purpose in view of destroying other capital ships. They never operate singly, they never are employed in raids. They are the kings of the sea. When they sail out majestically to contact the enemy and engage it in battle they always are accompanied by other craft, destroyers which stick close to them to protect them from torpedo attacks, and cruisers, both heavy and light, that act as scouts for them and locate the hostile fleet for them.

Accompanying them also may be submarines that keep to the outside of the protective circle of heavy cruisers on the chance of loosing a torpedo against the hull of an enemy ship. Likewise accompanying them may be an airplane carrier or two, the planes of which will serve as eyes for the fleet and from which bombs may be dropped on the decks of enemy ships.

A fleet steaming great distances, such as across the Pacific for example, takes with it numerous auxiliary vessels, which are known as its train. These may be mine laying craft, submarine mother ships and other vessels, including oil ships, repair ships, and the like.

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Of importance equal to that of the capital ships are the cruisers, which in modern ratings are divided into two classes, the heavy and the light. Contrary to popular belief, tonnage displacement has nothing to do with this division of the craft into two general groups. A light cruiser, for example, actually could be heavier than a heavy cruiser. It is the armament (the caliber of the guns of the main battery) that distinguishes heavy from light cruisers.

All such vessels carrying main guns of 6.1-inch bore or less are classed as light cruisers. Those carrying main weapons of greater bore than this (usually they are 7.5 or 8-inch guns) are classed as heavy cruisers.

The U.S.S. Indianapolis is a typical ship of the heavy cruiser class. Her displacement is 9,950 tons (under the terms of the arms limitation treaty which has expired cruisers were limited to 10,000 tons displacement), her length on the water line is 584 feet and her length over all 610 feet. Referring to the specifications of the battleship Colorado, one will note that this cruiser is almost as long as that battleship. The Indianapolis is 66 feet in the beam and draws 17½ feet of water. Five hundred fifty-one officers and men constitute her crew.

The Indianapolis carries nine 8-inch guns as her main battery. These are located in three turrets, three guns to each turret. Two of the turrets are forward of the funnels, one is to the rear. The secondary battery consists of eight 5-inch guns. Also as a part of the armament are ten weapons of smaller caliber. There are no torpedo tubes, although the vessel is equipped with two catapults for launching airplanes, and normally carries four such aircraft.

Belt armor of this heavy cruiser ranges from three to four inches thick, although her deck armor is from five to six inches thick. Turrets are protected with steel from one and a half to three inches thick. These figures are not official.

The Indianapolis is driven by geared turbines rated at 107,000 horsepower. Her speed is in excess of 32 knots. Although this vessel's displacement is less than a third as much as that of the battleship Colorado, her horsepower is three times as great. As a result of this emphasis on power and buoyancy, the Indianapolis can speed about 11 knots faster.

Carrying up to 3,500 tons of fuel (oil, in the case of American

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