

Ships of the Navy—Their Types and Uses

Why a Battle Fleet Has a Variety of Vessels

(Continued from page three.)

vessels, oil or coal in the case of Japanese), the heavy cruiser at economical speed has a range of approximately 18,000 miles, although at full speed it eats up fuel so rapidly that its radius is limited to 3,000 or 4,000 miles.

The Italian navy possesses some amazingly speedy heavy cruisers. Take for example the 10,000-ton Bolzano, which is 627 feet long over all. She is equipped with four geared turbines of a total of 150,000 horsepower and has a maximum speed of 39 knots. On her eight-hour trial run she averaged 38 knots. The Bolzano carries eight 8-inch guns as her main battery, sixteen 3.9-inch anti-aircraft guns, eight 37-mm. anti-aircraft guns, eight 13.2-mm. anti-aircraft guns, eight 21-inch torpedo tubes, and one catapult for launching airplanes. Her weakness lies in her armor, which on the sides and turrets is only 2½ inches thick, on the conning tower only 3 inches thick, and on the deck only 2 inches thick.

The heavy cruisers are the cavalry of the fleet. They form a horseshoe around the fleet when it is in movement, the open end of the horseshoe at the rear. They also may be detached temporarily from the fleet to move as a separate curtain at some distance in advance or to the side of the bigger ships in order to contact the enemy. When they do contact a foe it is their business to put the hostile cruisers or smaller vessels out of action, to keep on the alert for enemy submarines and to fight a bang-up battle with all hostile craft except capital ships. The heavy cruiser is not equipped to stand up against a battleship, she is too vulnerable to the battleships' big guns, and her own guns are not heavy enough to penetrate the armor of a battleship. Her speed, however, permits her to give the battleship a wide berth. At that stage in a naval battle when capital ships of the two forces finally are engaged, the heavy cruiser's work is done, unless there still are left hostile cruisers to be accounted for or sideshow battles to be fought beyond the range of the big guns. A 16-inch shell from a battleship is capable of breaking even a heavy cruiser completely in two.

Heavy cruisers have duties other than those associated with a fleet containing capital ships. Their speed permits them to be used singly if necessary. They are employed in squadrons for quick thrusts at the enemy, for coastal raids, and for preying on merchant ships, although the last named duties can be performed equally as well by light cruisers. Heavy cruisers are a direct menace to every type of vessel afloat except the capital ship.

The U.S.S. Memphis, which was completed in 1925, is typical of the light cruisers, although more recently constructed vessels of this rating generally are of greater displacement and carry more guns as their main battery. Vessels of the Savannah class, for example, are of 10,000 tons displacement and are armed with 15 six-inch guns, while the Memphis is of only 7,050 tons displacement and carries

but 10 six-inch guns. The last named craft is 555½ feet long over all, with a 55-foot beam.

In addition to the Memphis' 10 main battery guns, she carries four three-inch anti-aircraft guns, and two three-pounders. She also has six 21-inch torpedo tubes in two triple deck mountings. The maximum range of her heaviest guns is 22,000 yards, the effective range 18,000 yards. The vessel's engines develop more than 90,000 horsepower, and her speed is in excess of 34 knots. Her side armor is 3 inches thick and her upper deck armor 1½ inches thick.

As a part of a fleet, the light cruiser's duty is to assist in defending the capital ships and airplane carriers from torpedo attacks by submarines and destroyers, and also to fight off hostile craft of its own class. When the fleet is in movement light cruisers generally occupy positions in a protective circle that is closer to the capital ships than that of the heavy cruisers. In this case they are performing a service similar to that of the destroyers. Light cruisers lead destroyers in torpedo attacks to aid the smaller vessels in overcoming enemy opposition. Because her guns are outranged by those of the heavy cruiser, the light cruiser is no match for the first-named vessel. In a tight place a light cruiser's best protection is her speed.

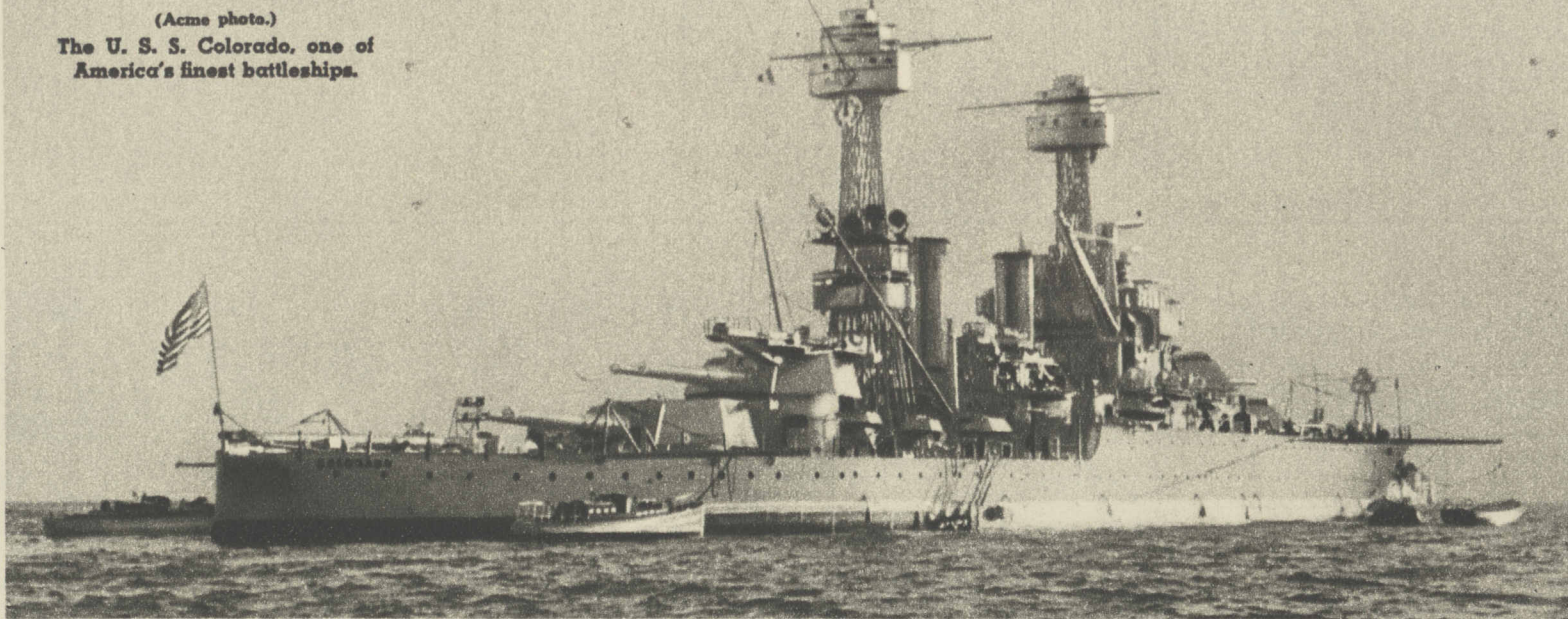
Numerous and varied are the assignments given to the light cruiser in addition to those associated with the fleet at sea. As commerce raiders light cruisers have no equal. They can stay at sea a long time, cover many miles in their cruises, inflict heavy damage on enemy shipping, and keep out of harm's way.

Being comparative newcomers to the navies of the world, airplane carriers still are in the experimental stage. Consequently there are various types of them. Here we shall consider not the newest ones of the American navy, the Enterprise, Yorktown, and Ranger, with displacements of from 14,500 to 20,000 tons, but the biggest, the Saratoga and the Lexington, which originally were laid down as battle cruisers. These two vessels are almost identical, so in giving dimensions and specifications of the Lexington we are describing both vessels.

The Lexington, originally, with its planes, costing the government more than 45 million dollars, has a displacement of 33,000 tons, is 888 feet long over all, has a beam of 106 feet, and a mean draught of 24 feet 1½ inches. Every part of this giant ship that extends above the top deck—funnel, guns, superstructure, and the like—is shoved off to one side, leaving the deck clear for the taking off and landing of planes. Approximately 1,900 officers and men, including the flying personnel, are necessary to handle the vessel at sea.

The Lexington carries ninety planes. These are stowed away below by means of elevators when they are not in use. Planes are the main defense of the ship, although it also is equipped with

(Acme photo.)
The U. S. S. Colorado, one of America's finest battleships.



guns. It has eight 8-inch guns mounted in four turrets, twelve 5-inch anti-aircraft guns, four 6-pounders, and eight 50-caliber machine guns. It is unofficially reported to possess 6-inch thick belt armor extending for 600 feet along the sides and three-inch deck armor. Its biggest guns have a range of 28,000 yards.

With eight propelling motors, each rated at 22,500 horsepower, the Lexington has a total horsepower rating of 180,000. Its motors, however, have developed 210,000 horsepower while maintaining a speed for the craft of 34.5 knots. Only one ship, the liner Queen Mary, has greater propelling power than the Lexington and the Saratoga.

Airplane carriers are extremely vulnerable craft, therefore they never would be sent to sea in time of war without other vessels to guard them. As a part of a battle fleet, their speed would permit them to keep up with the faster vessels, and their planes would be highly effective for observation and as weapons against hostile craft. Since their guns are not of the greatest caliber and their armor is relatively thin, they could be knocked about badly by battleships, battle cruisers, and heavy cruisers. And, presenting big targets to destroyers and submarines, they might be especially vulnerable to torpedoes. Also would they be vulnerable to planes of the enemy. A well placed bomb upon the top deck of an airplane carrier might rip that deck up so badly that its planes could neither take off from it nor land upon it.

Damaging though an aerial bomb might be to a battleship with an armored deck, naval authorities do not consider it nearly so effective as a well placed shell, from the fact that the bomb would lack the great penetration of the shell.

Greyhounds of the sea are the destroyers. Originally built to destroy surface torpedo boats, they now have as their main job the business of protecting all sorts of larger vessels from the dangers of submarines and other destroyers. Also important among their duties is the business of attacking and torpedoing the big ships of the enemy. No battle fleet is complete without a number of these sleek, speedy vessels.

Choosing at random any one of a number of American destroyers, we have a vessel of about 1,350 tons displacement, 334 feet long on the waterline, 34½ feet in beam, and with a

draught of 9½ feet. This craft carries a crew of 162 officers and men, has five 5-inch dual purpose guns, useful, as the term implies, against either surface craft or airplanes; four machine guns, and eight 21-inch torpedo tubes.

Supplied with geared turbines of 42,800 rated horsepower, this destroyer is capable of making more than 36 knots. Its cruising radius is about 6,000 miles. In fairly smooth waters it is a speedy vessel indeed, but in a heavy sea it bucks so badly that it can not go as fast as a cruiser that normally develops less speed.

Slightly larger than the standard destroyer is the craft known as the flotilla leader, a number of which are represented in the American navy. With virtually the same armament as the standard destroyer, this vessel is of 1,850 tons displacement, 372 feet long on the waterline, 36½ feet in the beam, and draws 10½ feet of water. Supplied with 50,000 horsepower, the flotilla leader is capable of 37 knots or more.

Ordinary destroyers today cost approximately four million dollars each, flotilla leaders are slightly more expensive.

In the navy submarines are known as the "pigs." Their

crews are unenvied. Being employed both upon the surface and submerged, submarines are equipped with dual power plants. Diesel engines propel them on the surface, power is derived from electric batteries when they operate as subsea boats. Still somewhat in the experimental stage, submarines are of various types and sizes, ranging from those of 500 tons to those of more than 2,000 tons. These figures have to do with the vessels afloat. Submerged their total displacement is considerably more. A submarine displacing 2,710 tons while afloat on the surface, for example, displaces 4,080 tons submerged.

Submarines frequently are divided into three general classes, ocean-going, sea-going, and coastal. Those constructed and equipped to operate with a fleet are known as fleet submarines. Those capable of traveling long distances without refueling are known as cruiser submarines. The chief duty of the majority of these vessels is to torpedo enemy vessels or halt and destroy commercial craft, although there are some that are designed principally for the business of mine laying.

A typical example of an American submarine is any one of the so-called Perch class. It has a surface displacement of 1,330 tons, is 290 feet long, and 25

feet in the beam. It costs the government to construct about two and a half million dollars, and carries a crew of fifty men. It is equipped with a three-inch anti-aircraft gun and six 21-inch torpedo tubes.

For lack of statistics it is impossible to reveal the speed of this craft or to tell how many torpedoes she carries, but, taking them as a group, submarines have average surface speeds ranging from 14 to 21 knots, and submerged speeds ranging up to 11 knots and carry from eight to 16 or more torpedoes, depending upon the size of the craft and the number of tubes with which she is equipped.

Submarines, as the World war revealed, are especially destructive when employed against merchant ships. They also can be used to advantage against warcraft, and quite effectively as an arm of a battle fleet. In this duty they usually travel at some distance (several miles) ahead and to the sides of the fleet, outside the protective horseshoe formed by the heavy cruisers.

On the surface a submarine is at a great disadvantage. A hit anywhere, even by a relatively small shell, will sink it. Destroyers can be employed against submarines with telling effect. Their guns can drive the submarine below the surface, in

which case the latter craft is blind and may become an easy prey to depth charges dropped from the sterns of the destroyers. Mines also are effective weapons for use against submarines.

In addition to the various types of warcraft aforedescribed, there are numerous others, such as gunboats, monitors, sloops, torpedo boats, and mine layers. There also are a number of different types of vessels that are a part of every first class navy but which are non-combatant craft, such as mine sweepers, repair ships, hospital ships, fuel ships, and the like. The so-called armored cruiser and the so-called protected cruiser were not considered in the descriptions because of the fact that they have almost disappeared from the navies of the world. Also not considered were the so-called pocket battleships of the Germans, which, though they carry six 11-inch guns each as their main batteries, are no greater in tonnage than cruisers and carry relatively light armor.

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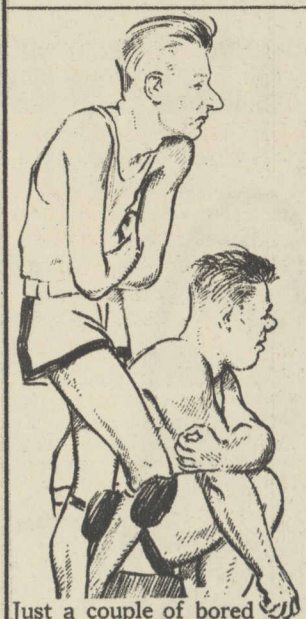
Considerable experimentation is under way in certain European navies, especially in those of Great Britain and Italy, in the development of high speed torpedo motor boats. Some of these vessels are small enough to be carried aboard a battleship or a cruiser. They have speeds of approximately 40 knots and a range of action up to 1,000 miles.

American naval opinion seems not to favor these motor torpedo boats as effective weapons, holding them to be even less destructive than the old type of steam torpedo boat that was driven off the sea by the destroyer. It is conceded, however, that these small craft, the "mosquito fleet" as they are called, might be considerably more dangerous in smooth waters such as found in the bays and the gulfs of the Mediterranean than in the great open Atlantic or Pacific. According to a naval man of long experience, one of these little motor boats would be unable to operate even in what would be considered for the Pacific a moderate sea.

SCHOOL BASKETBALL GAME

By W. E. Hill

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Just a couple of bored substitutes, scratching themselves for something to do.



Al, the right forward, shakes hands warily with his crafty opponent to show there's going to be no nasty hard feeling—for the first few minutes of play.

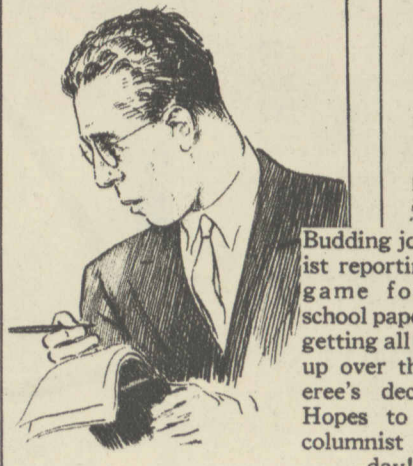


This embarrassed fraternity pledge is helping to lead the cheering, under compulsion. Has to start the singing of the school song from the middle of the court during halves and quarters. His lips move but no sound comes.

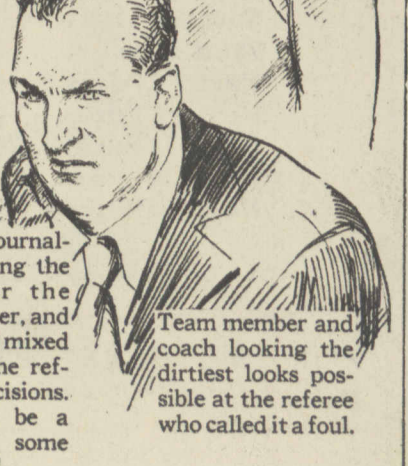
In the front row is the class plunger (he gets 95 in everything), who surprises everybody by showing up in a loud sports coat with two good looking girls. Three seniors in the row behind are shouting encouragement to the team, hoping to attract the girls' attention. But, as yet, the girls haven't even tried to look at them in their compact mirrors.



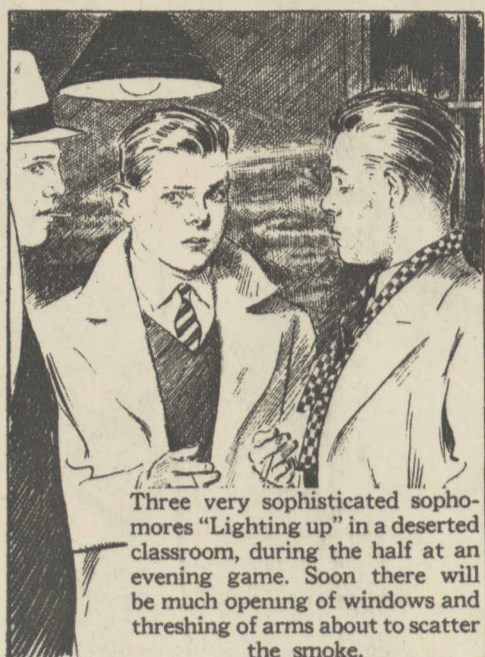
Loyal alumnus attending evening game. There is back slapping and arm pumping and much belated affection for all the pros he used to hate. (Mr. Murphy, the history prof, is being asked "How are all the little histories!")



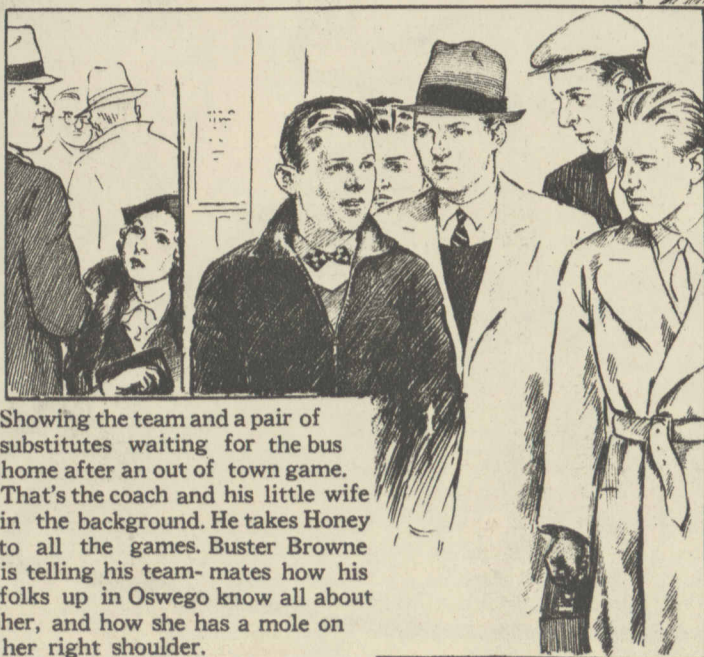
Budding journalist reporting the game for the school paper, and getting all mixed up over the referee's decisions. Hopes to be a columnist some day!



Team member and coach looking the dirtiest looks possible at the referee who called it a foul.



Three very sophisticated sophomores "Lighting up" in a deserted classroom, during the half at an evening game. Soon there will be much opening of windows and thrashing of arms about to scatter the smoke.



Showing the team and a pair of substitutes waiting for the bus home after an out of town game. That's the coach and his little wife in the background. He takes Honey to all the games. Buster Browne is telling his team-mates how his folks up in Oswego know all about her, and how she has a mole on her right shoulder.