

merged at a speed of 9.5 knots. For surface engines the M-3 carries a normal load of seventy-six tons of oil, insuring a very good cruising radius.

The M-3 will be driven, observe, by Diesel engines, and not by the once much-vaunted steam drive. During the war the steam-propelled submarine proved a failure. In speed it is superior to the Diesel-driven craft, but the British are now re-engineing the K-18, K-19, and K-20 with Diesel equipment.

To return to the M-3. Her surface armament consists of one twelve-inch gun, firing a 520-pound shell. (The normal twelve-inch gun fires an 850-pound shell.) A single three-inch anti-aircraft gun is also carried.

The vessel is 303 feet long, with a beam of 24.5 feet and a mean draft on the surface of 15 3/4 feet. She will be the first "submarine battleship" to form a part of a fleet.

Imagine the plight of a battleship that has been severely pounded and forced to draw out of action in sinking condition. Suddenly a speck appears on the surface six or seven miles away and a 520-pound shell comes tearing through her belt. This shell is followed by three or four unexpected torpedoes. Such will be the work of the submarine battleship.

In a certain way, of course, a submarine of this size would be able to take part in a real line-of-battle action. Suppose a fleet of modern battleships is peacefully steam-

ing in column when an equal number of submarine battleships, carrying four sixteen-inch guns each, suddenly appears four or five miles away. They fire three or four tremendous broadsides and then disappear quickly beneath the waves, leaving nothing for the battleships to attack, even if they are able to withstand the big gun and torpedo hits made by the submarines.

All through the ages, "battleship" has simply been the term applied to the type dominant in naval warfare. Who can say that "battleship" will not mean to naval men of the next generation a heavily armed sub-surface cruiser of which the modern submarine is but the rudimentary progenitor?

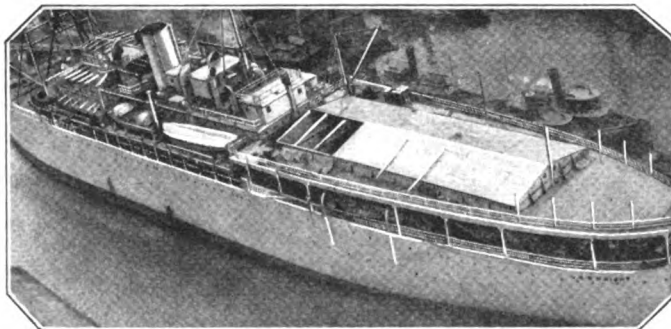
## Floating Hangars to Cruise with Fighting Fleets

### Masts Will Telescope and Elevators Will Carry Airplanes from Deck to Deck in Newest Mother Ship

THE mother ship of to-morrow will be a vast seagoing service station for aircraft—an intricate floating hangar, machine-shop, and flying-field, capable of maneuvering with any fleet of battleships. In the aircraft tender of the future spacious elevators will lift planes from deck to deck. Masts and pilot-house will telescope into the hull, transforming the top deck into a long unobstructed flying-field. Wind-breaking palisades will offer protection to the flyer from strong sea breezes.

Japan is building such a carrier, the *Hosho*, which will soon be ready to join its fleet of battleships. Other nations are constructing tenders as an essential part of their naval forces. England already has six; France and Italy have a few, while the United States is converting the former naval collier *Jupiter* into an airplane service ship.

The *Hosho* represents the latest advance in this type of naval construction, and is an indication of what may be expected in future development. Ever since the aircraft carrier was conceived, the tremendous advantage of the landplane over the seaplane has forced improvements to permit the landplane to alight on the tender's decks. In the mother ships *Hosho*, *Argus*, and *Hermes* this advantage has been achieved.



The United States balloon-tender "Wright," which will contain space for six kite balloons and complete apparatus for the generation and storage of hydrogen. Machine-shops for the repair of both airplanes and lighter-than-air craft will be included in her equipment. The "Wright's" armament will consist of four 5-inch guns and two machine guns, and the vessel will be manned with a complement of 49 officers and 522 men

The top deck of the *Hosho* is flush from bow to stern. Masts and chart-house telescope into the hull, and the funnels are back of the stern, leaving a flying-deck clear of obstructions.

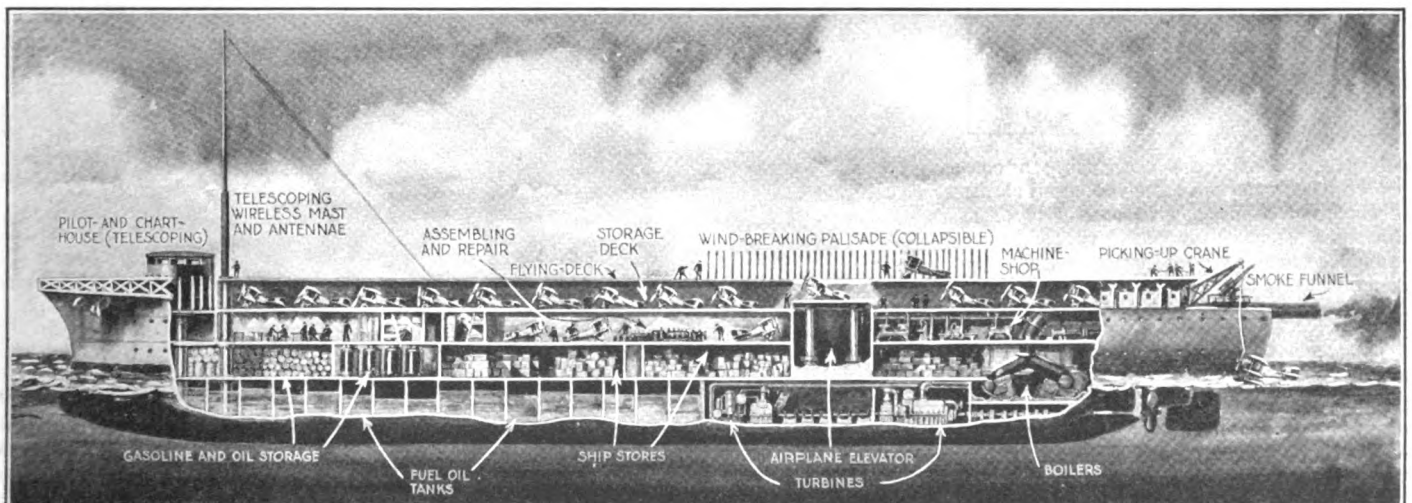
A large elevator, capable of carrying a fully assembled plane, connects the three decks on which the planes are handled. A plane can be rolled into the elevator, which rises flush with each deck, as easily as if it were being rolled from a hangar into a field. When the elevator reaches the top deck, the plane can start straight on its flight as smoothly as from the ground.

To keep the planes stationary on deck when the vessel is moving into a stiff breeze, blast screens have been provided. Without these screens, ready for instant use, a strong breeze or the sudden turn of the ship into the wind might force a plane up kite fashion.

The pilot-house is really a single-story elevator of great size, maneuvered hydraulically.

Planes of at least three types will be carried aboard the *Hosho*—fighting planes to drive off enemy aircraft, spotting planes to spot the big-gun fire of the large war-ships, and a squadron of torpedo planes to attack the enemy's capital ships.

The *Hosho* displaces 10,000 tons with her normal load aboard, and about 13,000 tons with her full load. She will be about 500 feet long, with a beam of fifty-five feet and a normal draft of eighteen feet. Her engines will be turbines and the steam will be supplied by oil-fired boilers. The speed will be around twenty-two knots. Her battery will consist of four 5.5-inch, 50-caliber 82-pounders; two 3-inch, 50-caliber anti-aircraft guns and possibly some deck torpedo tubes. She will be protected with the special anti-torpedo blisters on her hull and by covering armor enough to withstand the fire of smaller cruiser and destroyer guns.



An elevator to carry airplanes from deck to deck, and telescoping masts and pilot-house to permit an unobstructed top-deck flying-field, are part of the equipment of the newest aircraft tender, "Hosho"

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