

# Launching of Aircraft Carrier U.S.S. "Forrestal"

THE aircraft carrier U.S.S. "Forrestal" was launched at the yard of the Newport News Shipbuilding and Drydock Company at Newport News, Virginia, on December 11th. The 59,900-ton vessel, which has an overall length of 1036ft and an extreme width across her flight deck of 252ft, is believed to be the largest warship in the world, and its maximum displacement approaches that of the "Queen Elizabeth." The sponsor of the carrier was Mrs. James V. Forrestal, the widow of the first Secretary of Defence of the United States, for whom the vessel was named. The ceremony took place in the shipyard's No. 11 building dock, which was the only one large enough to accommodate such a gigantic vessel. The launching was accomplished by a flotation procedure in which the graving dock was flooded and the vessel made water-borne prior to the actual christening. This was the same procedure followed by the yard in the launching of the S.S. "United States" in 1951.

The large carrier is the first of a series of ten such vessels sought by the U.S. Navy to accommodate the fast new jet fighter and light bomber aircraft, some of which will be capable of delivering atomic bombs to any part of the world. Three other vessels of the "CVA" class already have been ordered and a fifth is being requested in the U.S. Navy's new budget. Of the four ordered, the Newport News yard is building two, and the New York Naval Shipyard the remainder. The "Forrestal," which is scheduled for commissioning this autumn, incorporates many points of advanced design. It has a canted deck area of nearly 4 acres which enables aircraft to land at a slightly oblique angle to the fore and aft centre line of the ship. Thus, a pilot who has made a bad approach can "gun" his aircraft for another try without endangering aircraft and personnel on the forward flight deck. Because of the additional landing area, a fixed island structure was used, instead of the retractable unit originally called for. The canted deck arrangement is such that take-off and landing operations can be handled simultaneously.

The keel for the "Forrestal" was laid on July 14, 1952, and since that time thousands of workmen have fabricated, assembled and constructed some 50,000 tons of steel to form this great vessel. The vessel has a number of structural innovations which make her different from other large carriers. One of these is that her flight deck is the strength deck. Normally, the flight deck is built with expansion joints so that it is not a part of the ship's overall strength girder. By contrast, the flight deck on the "Forrestal" is a continuous fore-and-aft strength deck. The deck is  $1\frac{1}{2}$  in steel plate which will have no difficulty in withstanding the heat of jet blasts.

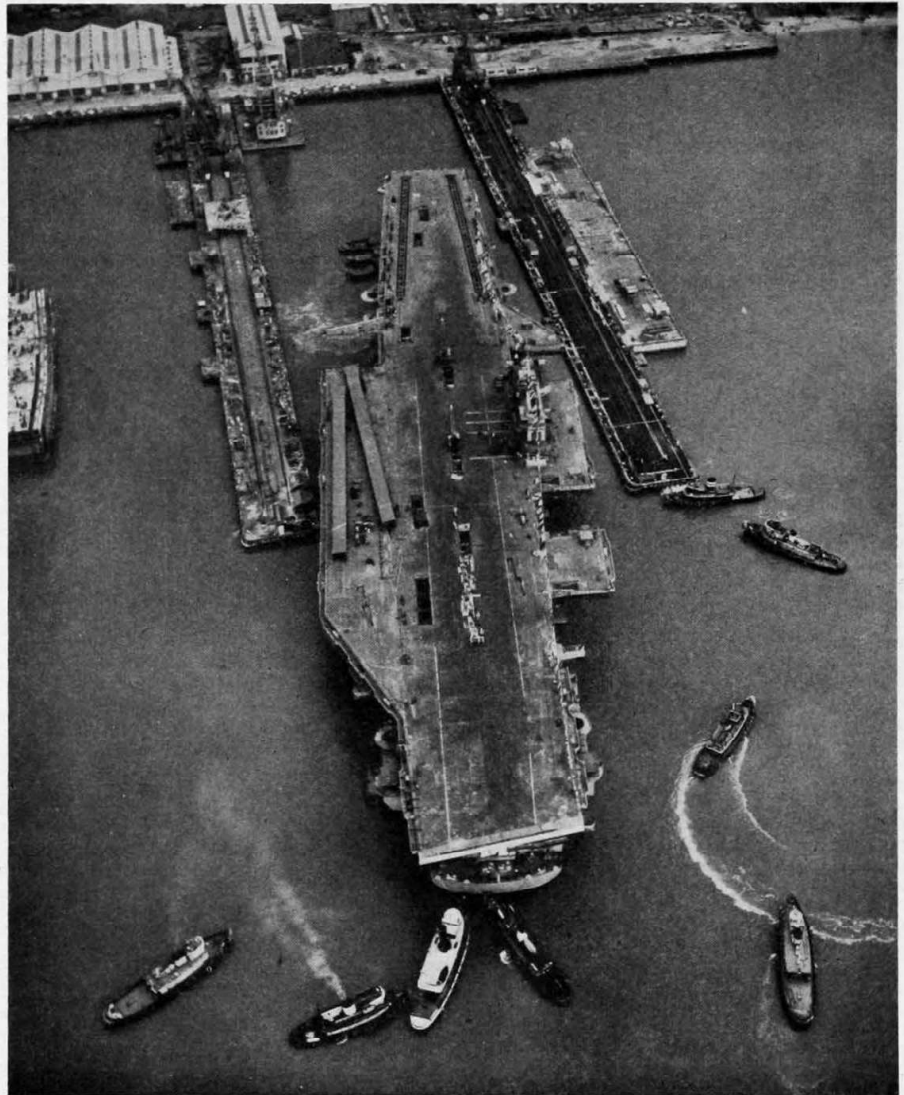
While the "Forrestal" was being built the U.S. Navy was experimenting with the canted flight deck, following earlier work by the Royal Navy. These tests were carried out aboard the carrier "Antietam" and proved so successful that the principle was adopted for the "Forrestal." Instead of landing straight in, aircraft will fly in at a 10.5 deg. angle from the starboard quarter of the ship's cruiser stern. This cant or angle on the flight deck is one of the reasons for the extreme width of the present vessel. The other advantage is that on the starboard side of the ship outboard of the island aircraft can be brought up from below without interfering with operations on the centre line of the deck. From the air the "Forrestal" does not appear to be a large ship because of the fact that her length of 1036ft is only slightly more than four times that of her extreme width of 252ft. Her island, which is the height of a ten-storey building is almost lost on her enormous flight deck. Another unusual aspect of the ship will be her folding masts. The tallest

of the masts extends up to a height of 187ft from the ship's water line. This is about 60ft too high to clear the Brooklyn Bridge in New York. Thus, both her masts will be installed to fold, mainly to facilitate travel to and from the Brooklyn Naval Shipyard.

The "Forrestal" has four steam catapults that will enable her to launch aircraft faster than any other American carrier afloat. Her heavy-duty hydraulic arresters will stop one of to-day's 70,000 lb jet aircraft within 150ft after it hits the deck at a speed of 100 m.p.h.

provided by the boilers is 550 lb per square inch and the energy developed from the catapult is 33,200,000ft-lb. The catapult consists of two long slotted cylinders lying side by side directly under the flight deck. It has no rams or purchase cables. Two pistons in the cylinders are solidly interconnected by a cross piece which passes through the slots in the cylinders. The launching hook, which connects to the aircraft towing bridge, is situated at the mid-point of the piston and extends up through a slit in the flight deck. Steam to operate the catapult is collected in a steam accumulator from the ship's boilers. A launching valve is the means used to control the steam for each individual shot.

A Westinghouse steam turbine installation rated in excess of 200,000 s.h.p. will be geared to four 22ft diameter five-bladed propellers and is expected to enable the vessel to reach speeds



Aircraft carrier U.S.S. "Forrestal" being moved to fitting out basin after launching.

The steam catapults employed were commissioned at the U.S. Naval Air Material Centre in Philadelphia in December, 1953, and are similar to those originally developed by the Royal Navy. With an increased launching power estimated at between five and six times greater than current hydraulic models, these new catapults can launch high-performance jet aircraft even when a carrier is headed down wind or is in a dead calm. Operating steam for the catapults is provided by the conventional ship's boilers which eliminates the necessity for special petrol, oil, powder or compressed air facilities. The maximum operating pressure

of "over" 30 knots. The ship will accommodate up to 100 aircraft, including both jet-powered and propeller-driven machines.

AWARD OF THE WRIGHT BROTHERS MEMORIAL TROPHY.—Dr. Theodore von Karman has been awarded the Wright Brothers Memorial Trophy for 1954. According to Thomas G. Lamphier, Jr., the president of the National Aeronautic Association, Dr. von Karman was selected because of his "significant public service as a civilian of enduring value to aviation in the United States." In particular, Dr. von Karman was cited by the Association for his basic contribution to the development of the first supersonic wind tunnel project in the United States in 1938, and for initiating the first jet propulsion and rocket motor project for the U.S. Air Force at the California Institute of Technology the same year.