

partment, fitted with dual controls, is installed directly aft of the captain's room and the radio compartment and mechanics' quarters behind it. A gangway, giving access to the engine nacelles, is located in the centre of the upper structure, and the rest of the space toward the stern is devoted to a cabin fitted with accommodation for the forty-two second-class passengers. A flight of stairs connects the cabins situated in the main hull and superstructure.

The framework of the wings, of which the centre section is anchored to the top of the upper hull structure, is composed of two box spars which, together with the ribs and the interior bracing, are of duralumin. The surface of the centre section is covered with duralumin sheet metal, while the outboard wing panels are fabric covered. The wing profile is of medium thickness with a chord of approximately twenty-five feet. This wing unit is braced by four streamline struts, mounted in Vee form, to the two stub wings which serve as planing fins. The ailerons are aerodynamically compensated.

### Large Sponsons

A large sponson is attached to each side of the lower portion of the hull. These sponsons are made with numerous stiffeners which transmit the stresses to the frames and the longerons of the hull. Each is also braced by two pairs of streamlined struts mounted in Vee form to the wing above it. In order to augment lateral stability on the water and to damp out shocks, the ends of the sponsons are built so as to bulge underneath, thus forming wing tip floats. The petrol tanks, containing 528 gall. (2 400 l) are located in the sponsons, each containing three separate compartments, so that the engines can be fuelled separately. Two intermediate fuel tanks of 111 gall. (500 l) each are located in the wings.

The framework of the tail is constructed of duralumin and fabric covered. The tail plane is braced by struts to the lower part of the hull. The elevators and rudder are aerodynamically balanced.

Each of the six twelve-cylinder Hispano-Suiza liquid-cooled and geared engines is rated at 860 h.p. and supercharged to establish this power at 13,123 ft. (4 000 m). These engines are mounted in four groups: two engines at the leading edge and one at the trailing edge of the centre section of the wings on either side of the superstructure. The engine mountings are accessible through a gangway in the wing. Radiators are mounted in the rear of the engine nacelles under the lower side of the wing.



This view of the tail unit during assembly gives an idea of the Latécoère's size—note the man standing by the rudder.

The following are the general characteristics:—

Wing span, 160 ft. (49.30 m); length, 103 ft. (31.62 m); height, 29.5 ft. (9.07 m); wing surface, 3,554 sq. ft. (330 sq m) Total horse-power, 5,160.

R. C. W.

## FOR LONG-RANGE PATROL

*The American Hall XP2H1 Flying Boat, Built Almost Entirely of Aluminium Alloy :  
Range of 4,560 miles*

**E**NDEAVOURING to improve the efficiency of its long-range "patrol"-type flying boats, the U.S. Navy has been experimenting during the past year with the Hall XP2H1, constructed by the Hall Aluminium Aircraft Corporation, of Buffalo. This concern has already supplied several "patrol" aircraft for service with the U.S. Navy, in the main of biplane type with air-cooled engines.

Structurally, the XP2H1 is, like its forerunners, built almost entirely of aluminium alloys. Indeed, except for the bracing wires, engine mountings and the fabric covering of the wings, no other materials are employed. Four geared Curtiss "Conqueror" twelve-cylinder liquid-cooled Vee-type engines rated at 650 h.p. are fitted, two driving tractor airscrews and two working as "pushers." These are mounted in pairs on streamlined structures containing the radiators and drive three-bladed metal airscrews. The boat can be flown on any two of its engines, the perform-

ance with the two tractor engines working being little different from that with the two "pushers."

This selectivity of power plants offers a considerable extension of the cruising range. Taking off at a weight of 42,500 lb., with 3,400 gallons of fuel, and cruising at 120 m.p.h. on four engines, the calculated range is 3,603 miles. If use is made of four, three or two engines, as required, flying at economical speed, the range becomes 4,560 miles. With all four engines working at economical speed the range is 4,250 miles.

Despite the fact that the machine is a biplane, it has a span of 112ft. Its empty weight is 20,417 lb., and, equipped for "patrol" work, the gross weight is 34,800 lb., which figure is increased by 180 lb. when bombing duties are undertaken. On at least one occasion the XP2H1 has taken off at a gross weight of 43,000 lb.—more than 21 tons. Its top speed, 140 m.p.h., must also be considered good for a boat of its class.