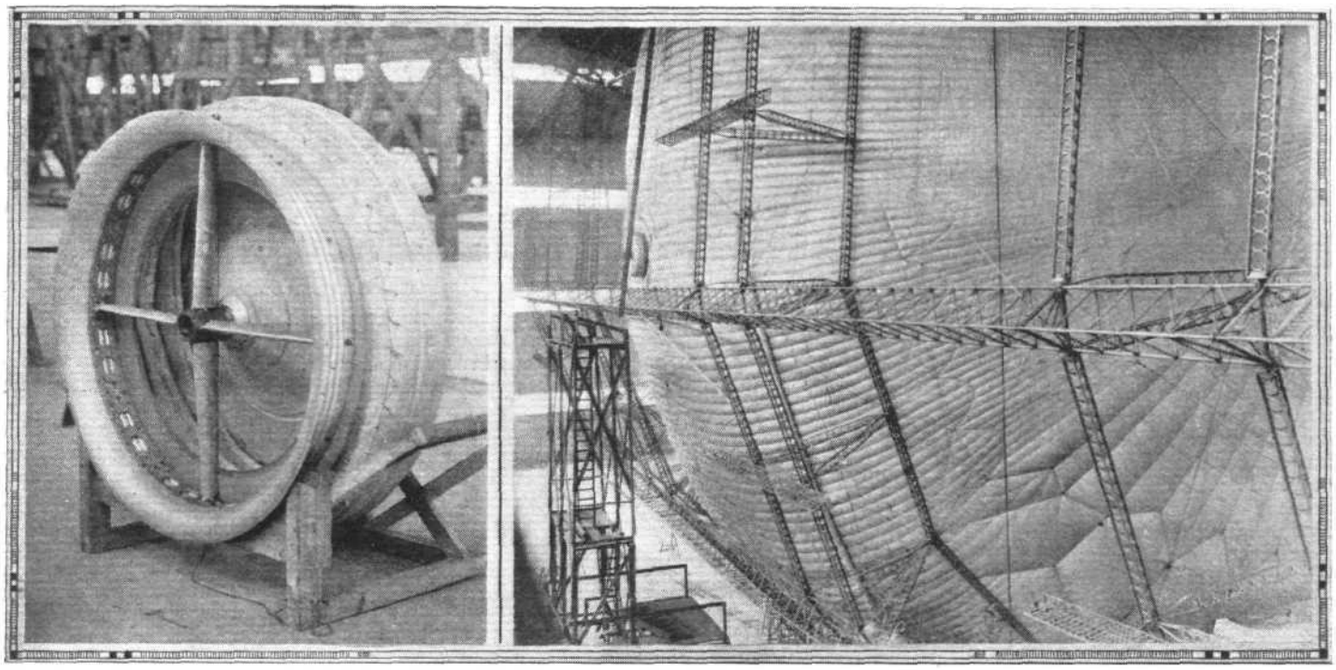

SOME R.101 DETAILS : On the left one of the gas valves, and on the right a portion of the structure. The main longitudinals are seen in place, but of the intermediate longitudinals short lengths only were attached when this photograph was taken last year.
("FLIGHT" *Photos.*)

auxiliary engine is so arranged that in case of a serious fire it can be dropped by the pulling of a lever, and thus any slight risk there might be, due to the carrying of small quantities of petrol, should be reduced to very small proportions indeed. The auxiliary engines start the main engines through a Bendix gear with a 20 to 1 reduction ratio. In two of the engine cars the auxiliary engine drives the air compressor used for transferring fuel from one part of the airship to another. In the other three engine cars electric generators are fitted instead of the air compressors. These generators are driven by the auxiliary engines when the airship is at rest, or cuising very slowly. When, however, the airspeed is sufficient, the auxiliary engines are stopped, and the generators are driven by constant-speed variable pitch windmills mounted in the nose of the three engine cars.

Although the engine cars are quite small, and of low drag there is sufficient room for the engineer to move about and attend to his engines. It would not, however, be practicable to hoist the engine out of its car and instal another. Instead provision has been made in the design for changing a complete car, and this operation, it is thought, will be quite feasible while the airship is on the mooring mast.

Steam cooling is employed, and the condenser serving two of the engines is retractably mounted in the bottom of the airship. When drawn into the hull this condenser serves to heat the passenger accommodation. The other engines are cooled by triangular condensers projecting from the sides of the hull.

Passenger Accommodation

The various difficulties encountered, and to which reference has been made above, have resulted in the passenger-carrying capacity of R.101 being somewhat reduced, and at present it is only intended to provide accommodation for about 50 passengers. The accommodation is located on two decks in the bottom portions of bays 6-7 and 7-8. The upper deck has an area (exclusive of the promenades) of 5,550 sq. ft. The lower deck has an area of 1,730 sq. ft., which can be increased later, if found necessary, to some 4,000 sq. ft. by means of side wing decks.

The upper deck carries a large lounge with promenades on each side. These promenades have glass windows in the outer cover. On this deck, also, there is a dining room with accommodation for up to 50 passengers, and a number of two-berth cabins.

The lower deck carries the captain's control room, below which is the control car. There is open communication between the control room and the control car. A separate wireless cabin adjoins the control room. Also on the lower deck is the electric kitchen, and a small lift operates between the kitchen and the dining room on the upper deck.

Passengers will enter the airship through a hinged gangway near the extreme nose, which will communicate with the gallery of the mooring mast. As the gangway is covered with fabric on the sides, the passengers will not obtain a view of the ground while going on board, and thus there should be no risk of attacks of giddiness. From the gangway a corridor runs the whole length of the airship, along one of the bottom longitudinals. This corridor has a plywood floor, and its sides are covered with fabric, so that only here and there does one get a glimpse of the interior of the hull framework, gas bags, etc.

In transverse frame No. 5 there is access, by means of ladders and stairways, to a cockpit in the top of the airship. In several of the transverse frames ladders and stairways are provided up to the mid-height longitudinal. Along this longitudinal, on each side of the ship, members of the crew can walk, between the outer cover and the gas bags, for the purpose of inspecting the gas valves, which are situated at mid-height.

Ventilation of the air space between the outer cover and gas bags is obtained by having circular holes around the nose and stern, and with a laced joint around the circumference approximately at the maximum cross-section. The nose and tail holes are air pressure inlets, while the laced joint amidships is the air outlet. In addition to providing ventilation, this air pressure system is also designed to equalise the internal and external air pressure on the envelope. Along the ridge of the airship is a line of gas and air exhaust hoods.

Main Data of R.101

Full particulars of R.101 are not yet available. For example, the tare weight of the airship is not known, and thus it is difficult to estimate with any degree of accuracy the useful load, range, etc. In any case, these figures will depend very largely upon the fuel consumption of the engines, which cannot be definitely known until actual flying tests with consumption measurements have been made. Bench tests indicate a specific fuel consumption, at continuous full power speed, of 0·385 lb./h.p./hour.

The overall length of R.101 is 732 ft., and the maximum diameter is 132 ft. The height, including the control car, is 140 ft. The gas capacity is approximately 5,000,000 cub. ft., and assuming a lift of 67·25 lb./cub. ft., this should give a gross lift of approximately 150 tons.

The normal fuel capacity is about 29 tons. If the weight-compensating tanks on the passenger decks are taken into use as fuel tanks, this figure is increased to more than 37 tons, and, finally, if the water ballast tanks are found not to be required for ballast, but are taken into use as fuel tanks, the capacity rises to a total of 44 tons.