will remain almost identical with the present W.8. The large cabin will have accommodation for 12 passengers, and light racks will be provided for light luggage. For heavier luggage there will be two special compartments, one between the pilot's cockpit and the cabin, of 80 cu. ft. capacity, and one aft of the cabin, of 70 cu. ft. capacity. A tip-up seat is placed at the side of that of the pilot so that, if desired, a mechanic can be carried here.

Needless to say, the machines will be constructed in accordance with all the usual requirements of the Air Ministry, and including a good degree of positive stability in all directions. A trimming tail is fitted so that the pilot may adjust the machine for any given conditions of load and speed in order that the machine may fly horizontally with little attention from the pilot except for corrections of course.

As regards equipment, the machine will be provided with the following instruments: Wireless telegraphy apparatus, 2 air-speed indicators, 2 altimeters, clinometers, 2 revs. indicators, 2 radiator thermometers, 2 oil pressure gauges, 2 petrol level indicators, 2 oil thermometers, and 2 Pyrene fire extinguishers (one in cabin).

The weight of the machine, and the loads carried are as follows:—Weight empty (with water): 7,700 lbs. Pilot, 160 lbs. Petrol for 3¼ hours (this is not the full capacity of the tanks), 1,000 lbs., 10 gallons of oil 100 lbs. 12 passengers (at 180 lbs.), 2,160 lbs. Cargo, 880 lbs. Total loaded weight, 12,000 lbs.

The performance with full load will be approximately as follows:—Maximum speed near ground, 104 m.p.h.; maximum speed at 5,000 ft., 101 m.p.h.; ground rate of climb, 550 ft. per minute; service ceiling, 10,000 ft.; landing speed, 54 m.p.h.

Several of the W.8 B type of machines are now being built, and will be put on the London-Paris service in the spring.

THE LOSS OF "R.38."

The Report of the Admiralty.

AT the time of the disaster which overtook the rigid airship "R.38" it was announced that the Admiralty would investigate the history of the design and earlier stages of construction, and that when these investigations had been completed, a report would be issued. This has now been done and the following statement issued by the Secretary of the Admiralty: "A full investigation has, in accordance with the decision of the Board of Admiralty at the time of the loss of the airship, been held into the history of the design and of the initial stages of her construction up to October, 1919, when responsibility for the design and construction of airships was transferred to the Air Ministry. The investigation was presided over by the Controller of the Navy (Rear-Admiral F. L. Field, C.B., C.M.G.), who was assisted by Sir Eustace d'Eyncourt, K.C.B., F.R.S., Director of Naval Construction, and Sir Charles Walker, K.C.B., Deputy Secretary of the Admiralty. The Committee, after careful consideration of all official records dealing with the design and construction of "R.38" up to the date mentioned, and after taking verbal evidence in amplification of them, have reported to the following effect":—

"During the period when the design of this airship was in preparation the Director of Airship Production was responsible for the design and manufacture of airships. His department comprised, *inter alia*, sections dealing with airship design, machinery design, hydrogen, chemical laboratory work, and experimental work. His instructions required him to keep in close touch on design matters with the Superintendent of Airships. The latter was responsible for the formulation of general requirements in respect of the equipment and fittings of airships and for the final trial and acceptance of airships from the point of view of utility and fighting efficiency. The general requirements for new airships, *i.e.*, the performances of which they were to be capable, were laid down by the Naval Staff, the Air Division of which acted as liaison with the Air Ministry.

"During the summer of 1918 the design and performances of British rigid airships received much consideration. Nos. 'R.33-37' were then the latest types in hand, and of these 'R.33-34' followed the German 'L.33' design and 'R.35-37' that of 'L.48.' It was thought that the stage had been reached when instead of copying German practice, with the consequent lag of many months, a design could be produced to meet specific British requirements. The requirements for such a vessel, to be ready for service about the end of 1919, were accordingly drawn up by the Naval Staff. These were for war operations in particular areas demanding a wide radius of action with high speed. It was found, however, that to meet these requirements it would be necessary to design a very large ship of 750 ft. in length, which moreover, could not be built in the existing constructional sheds. It was then decided that the requirements of the Naval Staff should be revised so as to fall within the limitations imposed by the existing constructional sheds. These requirements were reconsidered at a conference of the Director of Air Division, Director of Plans, Superintendent of Airships, and Director of Airship Production, and the conference recommended that a design known as Design A, which would meet the revised requirements and the constructional limitations, should be proceeded with. The Board of Admiralty approved on September 30, 1918, that the new airships 'R.38-41' should be built to this design.

"By January 20, 1919, about 100 girders for 'R.38' were made, and steady progress was made with this work until towards the end of August, 1919, when practically all the girders for the main structure were completed, except those required for the extreme fore and aft portions of the ship. The erection of the frames was started about this time, and the first two frames were completed on October 21, *i.e.*, a day before the transfer was made to the Air Ministry. The remaining frames were completed after the transfer to the Air Ministry, at various dates up to November, 1920. There had been a continual progressive increase in the dimensions of rigid airships previously designed. Design 'A' was in the same way an advance on its predecessor, and necessitated fresh calculations. The new requirements did not, however, involve the introduction of any new principle, and on that account the design cannot be considered a novel one. In its preparation the Airship Production Department made use of existing information obtained from British experience and the experience and information of our French and Italian allies, and of such information in regard to German designs as could be obtained by the examination of those which fell into our hands, and, in fact, from all available sources of information. From the structural point of view the design followed closely that of 'R.33' and 'R.36,' with minor alterations introduced as a result of experience and later information. No undue risk was taken in the design, and there was no change from previous practice as regards safety which experience or a comparison with German airships did not make permissible.

"The evidence furnished to the Committee shows that no modifications were made in the main structure of 'R.38' during the period the Admiralty were responsible for its construction, and that although additions were made in weight, there was nothing in these which would affect the structural strength of the ship. Evidence was furnished also that no important alterations were made in design after 'R.38' was turned over to the Air Ministry, but some modifications were made as a result of experiments to the fins and cars and in other parts of the vessel for lightness, which would not, however, affect the strength of the structure. With regard to the suggestion made by the Court of Inquiry into the circumstances of the loss of the airship that the 'R.38' design should have been discussed by an official and competent committee before actual construction was commenced, there was at the time no body in existence which could have been called in to advise on the structural design of 'R.38.' Practically all the expert opinion which could have been of any assistance was already engaged upon the work. Had therefore any special committee been formed before the construction of 'R.38' was commenced it would necessarily have been composed mainly of these Admiralty and Air Force expert officers.

"The Director of Airship Production was a member of the Advisory Committee for Aeronautics, and other Admiralty officers were associated with the sub-committees appointed by the Advisory Committee. The Airship Production Department was in constant touch with the National Physical Laboratory, and received much information from the experiments carried out there, and, as already stated, it had available the results of French and Italian experience and such information as was available regarding German ships. The actual flying officers responsible for taking over the ship were located in the same offices as the design staff, so as to facilitate the closest co-operation between the designer and user of the ship."