

strut in a common casing, thus leaving an opening between the sloping strut and vertical rear strut through which the pilot can look. If the entire structure were covered-in, the view would be rather severely restricted.

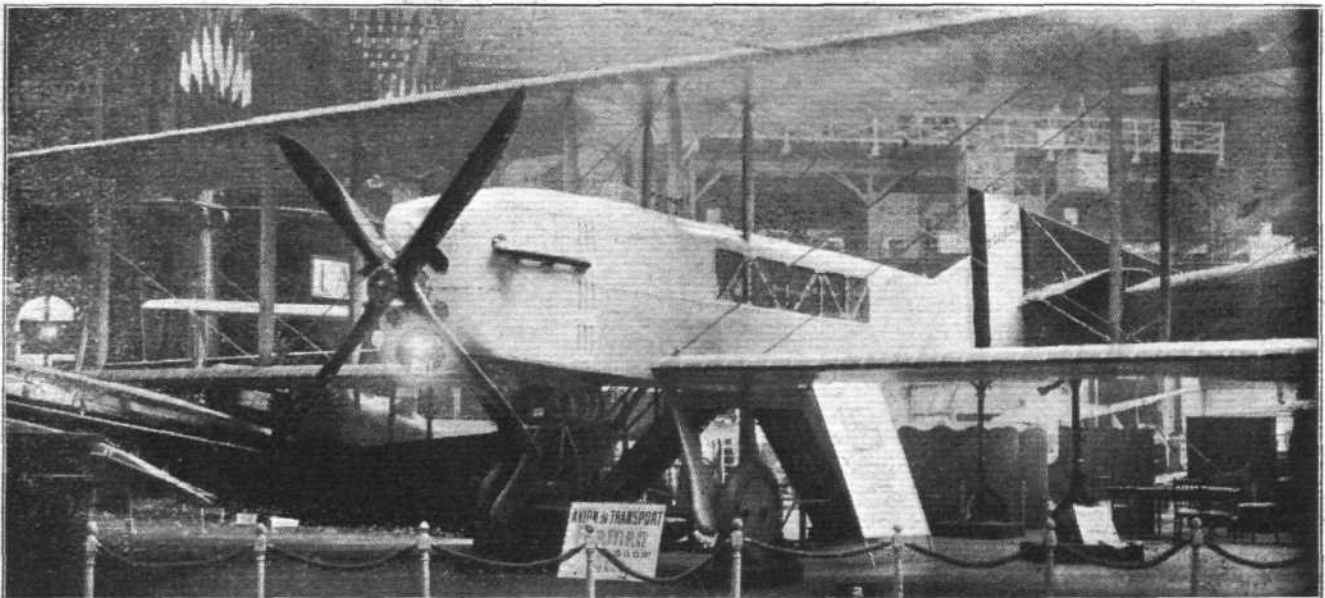
Constructionally, the wing is of Duralumin, with built-up box spars and ribs, the latter being made from metal varying from $\frac{1}{2}$ mm. to 1 mm. in thickness. A specimen rib was shown, which was certainly very light, and appeared to be reasonably rigid. Inserted into this rib were short spar stumps, and one presumes that these represented the actual spar construction. If this be the case, it would appear that the spar construction is not all that it might be, being built-up of two vertical sides riveted to channel-sections top and bottom. The feature which appears open to criticism is that the channels have their open side facing outward. Thus, while riveting is undoubtedly facilitated, the edges of both flat sides and channels are at the maximum distance from the neutral axis, *i.e.*, at the point of maximum stress. In this country, it has been found that, in order to obtain full advantage of the metal used, no edges should be near the top and bottom of the spars, but should be turned in towards the neutral axis. It is possible, however, that in the actual wing some additional material is added, in which case this criticism might fall away.

In plan view, the fabric-covered wing has a pronounced sweep back, and it is braced by one large strut on each side, forked at its outer end to meet the spars, and secured on the fuselage to an enormous fitting of Duralumin, hinged to the two main bulkheads which also carry the undercarriage

together, and thus reduce the turning couple set-up when one side engine stops. The de Monge "72" will have the following dimensions:—Span, 32 ms. (105 ft.); length, 15.2 ms. (50 ft.); height, 4.15 ms. (13 ft. 7 ins.); wing area, 210 sq. ms. (2,260 sq. ft.). The engines to be fitted are Lorraine-Dietrichs of 375 h.p. each, giving a total of 1,125 h.p. With a total loaded weight of 20,000 lbs., and fuel sufficient for a radius of action of 600 miles, the useful load is estimated at 3,000 kgs. (6,600 lbs.) or 30 passengers. The estimated maximum speed is 220 kms. (137 miles) per hour, and the landing speed, 85 kms. (53 miles) per hour. For shorter distances, the useful load could, of course, be increased, and the amount of fuel carried decreased. Even with the long range, however, the power expenditure is only 37.5 h.p. per passenger carried, which is extremely good. We trust to be in a position to keep our readers informed of the progress of this machine, which has many unusual features, and which, if it comes even approximately up to the estimated figures, would appear to mark a considerable improvement.

H. AND M. FARMAN, BILLANCOURT (SEINE)

Of the three machines exhibited by Farmans, the most interesting was, perhaps, the little cantilever monoplane two-seater touring 'bus. The large commercial machine, with a power expenditure of 600 h.p. for 8 passengers, would not appear to be very "commercial," and the bomber was of usual design, except that it was built entirely of metal. As, however, the gentleman in charge of the stand flatly refused our representatives permission to make any sketches,



The Farman "Commercial" biplane carries eight passengers, and has an engine of 600 h.p.

and centre-section struts. In order to improve the view forward, the centre-section of the wing has been made much thinner than the end pieces, so that the pilot can look both over and under the wing. The wing section used is bi-convex, with a slight negative camber on the underside.

A Lamblin radiator of special design is secured to the "throat" of the fuselage, just in front of the undercarriage front struts. Just ahead of this radiator is a small oil cooler, also evidently of Lamblin production.

The main dimensions of the de Monge "52 C-1" are as follows:—Length 7 ms. (23 ft.); span, 10.9 ms. (35 ft. 9 ins.); wing area, 24 sq. ms. (258 sq. ft.); total loaded weight, 1,350 kgs. (3,000 lbs.); power loading, 10 lbs./h.p.; wing loading, 11.6 lbs./sq. ft. The estimated performance is: Speed at ground level, 270 kms. (168 miles) per hour; at 2,000 ms. 260 kms. (161 miles) per hour; at 4,000 ms. 250 kms. (155 miles) per hour; at 6,000 ms. 230 kms. (143 miles) per hour; ceiling, 7,500 ms. (24,600 ft.); landing speed, 105 kms. (65 miles) per hour.

In addition to the full-size machine, M. de Monge exhibited a scale model of a commercial three-engined monoplane which he has designed, and which is now in course of construction. This machine is to be without fuselage in the ordinary sense of the word, the passengers' cabin being formed by the thick centre-section of the wing. Two narrow fuselages or tail booms, project back from the wing engines, and a third engine is mounted centrally. By fitting three-bladed airscrews, of the Lumière-Leitner-Watts type, of small diameter, it has been possible to keep the engines very close

together, and thus reduce the turning couple set-up when one side engine stops.

The Farman monoplane is, perhaps, somewhat less displeasing to the eye than the majority of Farman machines, but even so it is by no means a pretty machine. The short span and great length, coupled with the very pronounced taper of the wings, gives it a very peculiar appearance, which is not improved by the low placing of the wings, *à la* Junkers. The machine is built entirely of wood, with the exception of the engine mounting and cowling, and, of course, of the fabric covering.

The fuselage is of rectangular section, and the wing roots are built-up as an integral part of it, being faired into the flat sides of the fuselage. The engine housing is kept very low, and as a glass top has been added to the cabin, the pilot can look out over the top of his engine fairly well. A feature which we do not like very much is that, in order to get into or out of the cabin, the occupants appear to be obliged to hold on to a couple of exhaust pipes running along the sides of the cabin. After the engine has been running some little time, this might prove annoying. Also, if the machine should turn over on landing, it would seem that it might be difficult for the occupants to emerge.

The wing, as already stated, is a cantilever monoplane, built in three sections, of which the centre section remains in place on the fuselage, while the two end pieces can be quickly detached. The wing is of great thickness and extremely large chord at the body, tapering rapidly both in chord and thickness towards the tips.