

THE D.H. TYPE 34 COMMERCIAL BIPLANE

Napier "Lion" Engine

As will be seen from the accompanying general arrangement drawings, the D.H. 34 is a good deal like the famous D.H. 18 in its general lines. It has, however, been improved in several respects, as a result of the extensive experience gained with the 18's, and will represent a real step forward in the development of the truly commercial aeroplane.

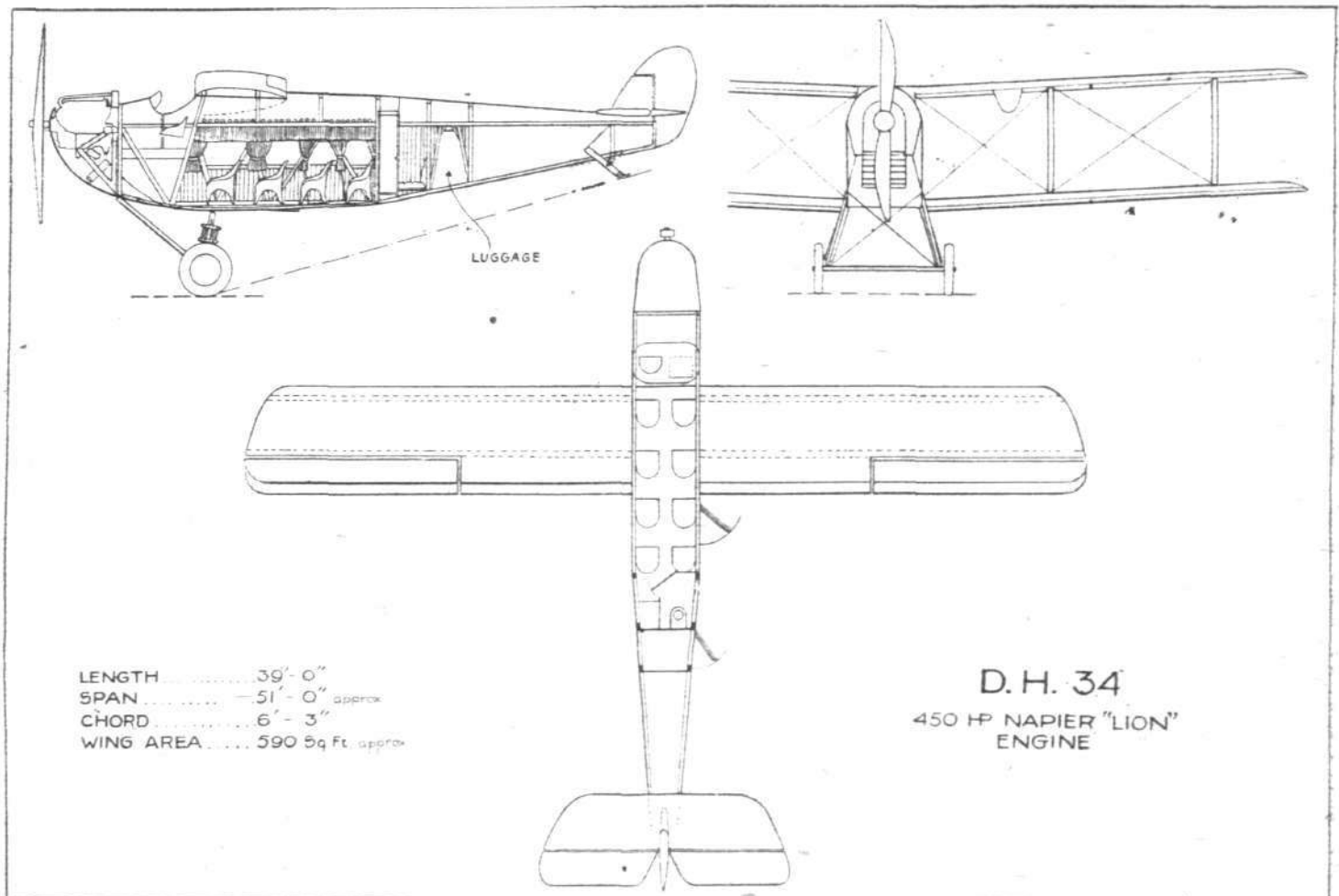
Apart from improvements in aerodynamic design, the D.H. 34 incorporates constructional simplification which makes for cheapness of manufacture. Its performance is also better than that of the 18, while the useful load is greater. The quick get-off and rapid pulling up after landing which characterise the 18 have been retained in the new type, so that altogether the machine has much to recommend it for commercial flying in the true sense of the word.

In the construction of the fuselage considerable simplification has been effected. This structure is now entirely covered with three-ply, so that there will be no trueing-up to attend to during use. Also, in case of a forced descent on the sea, this form of construction gives great flotation, as the cabin

are two independent low-pressure systems to a common filter and junction box. A fireproof bulkhead separates the engine from the rest of the machine. Danger from fire is further guarded against by the use of Blaisdell "Petro-Flex" at all points where relative movement occurs, and all rubber joints will be avoided.

In other respects, such as wings, tail, undercarriage, etc., the 34 is similar to the 18. The control system incorporates the differential aileron movement first experimented with in the type 29 cantilever monoplane. This has been found to give very good results. Ball-bearing controls are fitted throughout, and all cables passing over pulleys or through guides have been avoided. It is thought that this is a feature which will be appreciated by those responsible for running the machines, as control cables are a constant source of trouble.

The undercarriage is similar to that which has proved so successful on the 18's, its main feature being long shock absorber extension (12 ins.) and oleo damping gear. The



doors will be provided with means for watertight closing. The cabin occupies a large amount of the fuselage space, the main cabin being 12 ft. long by 4 ft. wide, by 7 ft. high. It is thus possible for the passengers to stand upright, and as there are numerous windows in the sides as well as roof lights, the cabin should be both light and airy, especially as ventilators are provided by means of which the used air is constantly sucked out through the roof, fresh air—either cold or hot as required—entering through pipes near the floor. Eight seats are arranged in the main cabin, a ninth being placed opposite the lavatory, and if desired the seat next to the pilot can be occupied by a passenger, thus bringing the total capacity up to 10. This gives a power expenditure of 45 h.p. per passenger carried, which is very good, especially as the cruising speed is 105 m.p.h. The pilot's cockpit is in front of the wings, thus giving an excellent view.

The engine installation is similar to that of the 18 already described in this journal. By undoing four bolts and the petrol and engine connections the whole engine unit can be removed. An underslung radiator is fitted which can be removed without disturbing the propeller. The petrol tanks are placed some distance out, under the top plane, and there

whole undercarriage can be removed from the machine by undoing four bolts.

The main characteristics of the D.H. 34 are as follows: Length o.a., 39 ft.; span, 51 ft.; height, 12 ft.; wing area, about 590 sq. ft.; weight of machine empty, but with water, 3,365 lbs.; pilot, 180 lbs.; useful load, 10 passengers with luggage, or about 2,000 lbs. of freight; 80 gals. of petrol, 575 lbs.; oil, 78 lbs.; wireless and electric lighting, 120 lbs.; total loaded weight, 6,218 lbs. approximately; wing loading, 10.5 lbs./sq. ft.; power loading, 13.8 lbs./h.p.; cruising speed, 105 m.p.h.; duration, 3½ hours at cruising speed.

Economical as was the D.H. 18, the 34 promises to be considerably more so, and the figure for ton-miles per gallon should work out very well as compared with other rapid means of transport, especially when it is remembered that this machine does its travel at the rate of over 100 m.p.h., while older means rarely average half of that speed. As there is a considerable reserve of power which can be used in case of head winds, etc., the machine should be able to maintain its average of 100 m.p.h. with good regularity, even under unfavourable conditions. Later on, when construction has progressed a little further, we hope to be able to publish sketches of some constructional details.