

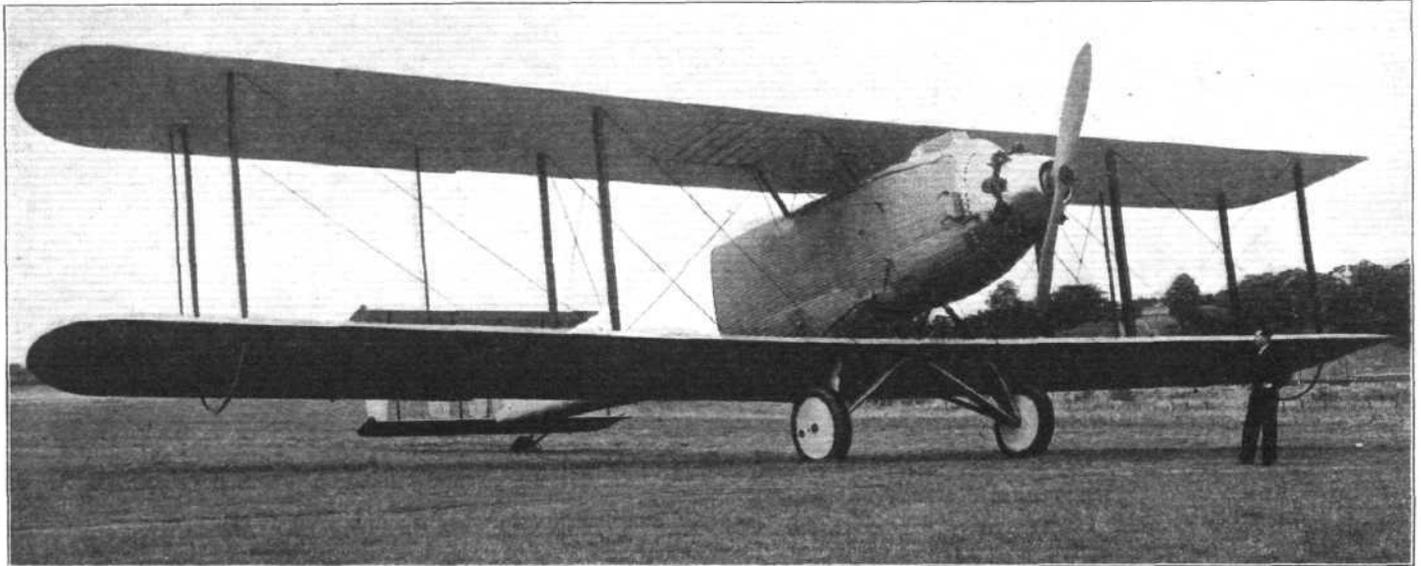
THE VICKERS "VELLORE"

A Freight Carrier which carries a Load greater than its own Weight

In many ways one of the most interesting aircraft produced in recent times, the "Vellore," designed and built by Vickers, Ltd., of Weybridge, Surrey, for Imperial Airways, Ltd., is a single-engined biplane of all-metal construction intended to carry freight and goods, a form of air traffic which has been becoming steadily more popular, and which promises to assume large proportions. Hitherto there has been no machine available designed specifically for this particular kind of work, with the result that freight and goods have had to be carried in machines not really suitable for the work. In the "Vellore," however, Mr. R. K. Pierson has

aeroplane. If it is assumed that the machine climbs at an air speed of 60 m.p.h., and as the ratio of gap to span is 0.132, the ratio of lift to induced drag corrected for the particular biplane arrangement employed is as high as 22.13 at the speed of 60 m.p.h. In other words, at that speed the induced drag is 430 lbs. only, corresponding to a thrust horse-power of 68.8, a figure which gives a good idea of the efficiency of the biplane wing arrangement of the "Vellore."

An examination of the accompanying illustrations will show that in this large biplane cellule, the fuselage itself, although of considerable actual dimensions, forms a fairly



THE VICKERS "VELLORE" : Three-quarter front view. The engine is a geared Bristol "Jupiter." From the pilot's cockpit an excellent view is obtained.

produced a machine in which high pay load per horse-power was the main object aimed at, coupled always with a reasonably good performance.

It is now a well-established fact that in order to keep down induced drag at low speeds it is necessary to have a high value of the ratio $\frac{\text{Span}^2}{\text{Weight}}$, and in the "Vellore" the span has

small percentage of frontal area, and the form is good also, with but few excrescences, so that one may assume that the total drag of the machine is low. This is borne out by the "Everling Quantities" given at the end of this article, from which it will be seen that the "High-speed figure" is as high as 24.65, a value which indicates a very small minimum drag. One may, therefore, accept it that the aero-



THE VICKERS "VELLORE" FREIGHT CARRIER : Three-quarter rear view. Note the biplane tail and the four rudders. The man standing next to the machine gives a good idea of the size.

been kept very large, 76 ft. to be exact, so that the induced drag at take-off speed and at the low speed at which the machine climbs is very small.

As the "Vellore" weighs 9,500 lbs. fully loaded, the value of $\frac{\text{Span}^2}{\text{Weight}} = 0.608$, which is very high for a commercial

dynamic efficiency of the "Vellore" design is very good. That the structural efficiency is also above normal is shown by the fact that the load carried is 51.6 per cent. of the total loaded weight. In other words, the machine carries a load greater than its own tare weight. The actual figures are : Tare weight, 4,550 lb. ; load carried 4,950 lb. ; total loaded