

FLYING BOAT and AIR REFUELLING

Some Observations Prompted by the Opinions of Igor Sikorsky

Power plant weight lb/h.p., 2.68 (=12,000 B.H.P. max.)
 Furnishings per passenger 250 lb.
 Passenger capacity 100
 Range 4,350-5,000 miles
 Cruising speed on 50% max.
 B.H.P. 187 m.p.h.

Wing loading .. 45 lb./sq. ft. (:wing area=4,666 sq. ft.)
 (The figures in brackets are calculated from the information given.)

After some discussion of various features of the design, Sikorsky is reported by *Inter Avia* as saying:—

“The assisted take-off has, in the opinion of the lecturer, no justification for aircraft of 40 tons and more, as the modern traffic and structural requirements—high cruising speed with great power reserve (about 300 km/h at about 50 per cent. of the available take-off power); reasonable landing speed with 70-80 per cent. of the gross weight; structural requirements resulting from large wing span; limitation of wing loading by these reasons; determination of power loading by requirements for high cruising speed—demand, apart from the take-off procedure, such qualities from the flying boat as will enable it to take off under its own power. These conditions are different in the case of much smaller planes, so that the assisted take-off may offer sufficient advantage to justify its use.

“Incidentally, it may be expected that in flying boats, with comparable wing and power loading, the take-off characteristics improve as the

size increases; first, scale effect favours bigger craft in regard to drag in the air and on the water; second, which is still more important, in the bigger craft—as far as the boat hull is being increased exactly in proportion to the cube root and the wing loading only to the fourth root of the gross weight—the most critical moment of the acceleration, namely, the passing over the hump or over the moment of maximum water resistance, occurs at a much greater speed; in other words, at a time when the wing will carry a greater proportion of the weight. Therefore, in large flying boats heavier power loadings could be employed. It is thought probable that with the wing and power loadings discussed above, the large flying boats would have excellent take-off characteristics, thus eliminating the necessity of artificial take-off methods in commercial air traffic.”

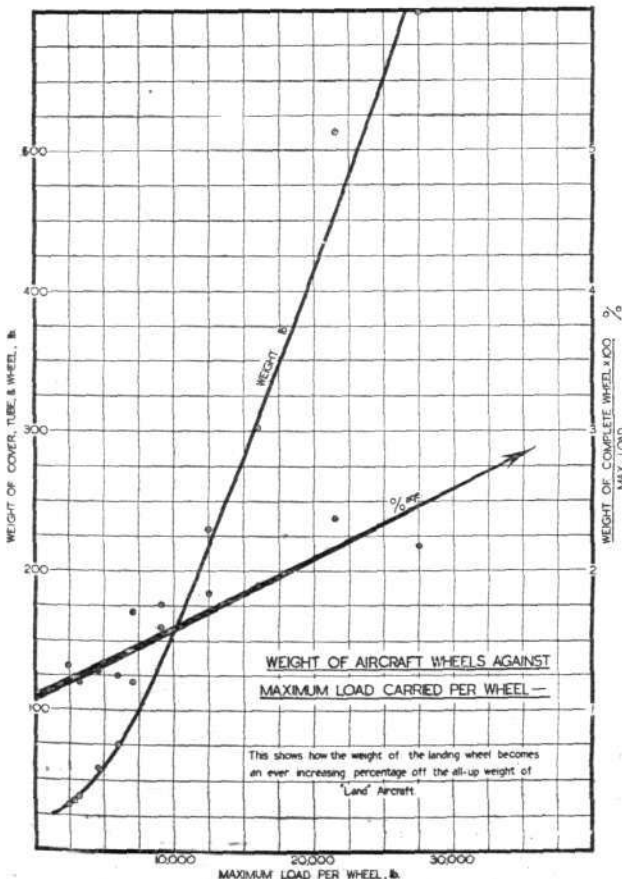


Fig. 1.

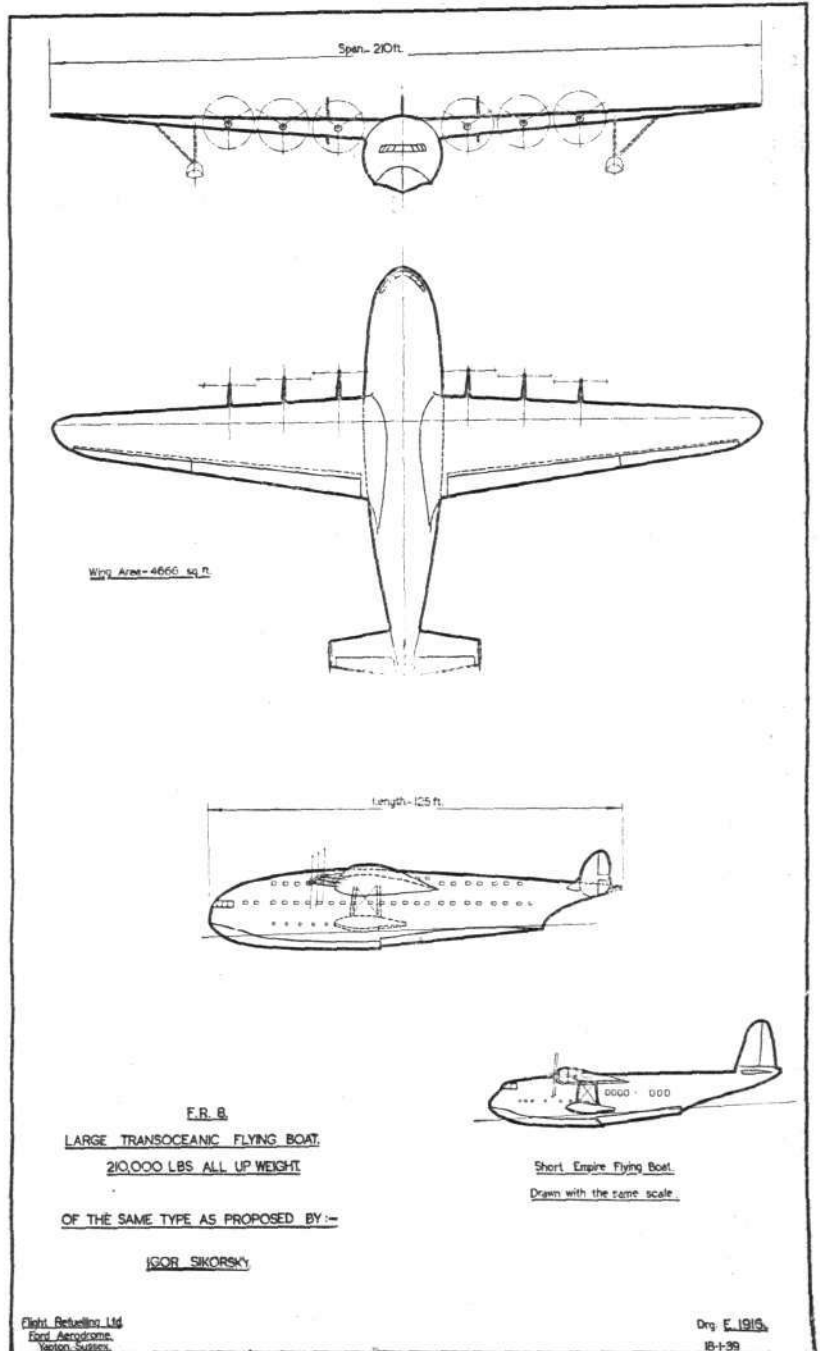


Fig. 2.