

# THE ROYAL AIRCRAFT FACTORY

# R.E.1



by Paul R. Hare

*RE1 in flight near Farnborough. :RAE negative 173*

ONE OF THE FIRST TASKS assigned to 24 year old Henry Philip Folland, after he joined the design team at the Royal Aircraft Factory towards the end of 1912, was to detail a new two-seater designed specifically for reconnaissance and so intended to be inherently stable, thus relieving the pilot of the task of keeping the machine steady and leaving him free to study the ground below.

This new machine was a refinement of the BE2<sup>1</sup>, including the innovative single bay wing bracing recently developed by the Factory and with a simplified undercarriage that had only four vertical struts. It was originally designated BS2, or Blériot Scout No 2, which defined it as a fast tractor design, and Folland had completed 18 pages<sup>2</sup> of sketches and calculations, each headed with this designation, before the machine was re-designated Reconnaissance Experimental No 1, or R.E.1, under a new system of classification introduced by Mervyn O'Gorman, the Factory Superintendent, which grouped designs according to their intended role rather than, as previously, their general configuration. Folland's notes continue for another ten pages, all headed RE1, although he appears to have re-visited some earlier work as on one of the previous pages the heading BS2 is crossed out and RE1 written above it.

Unusually for that period, the majority of the fuselage frame was designed to include steel tube in the construction, its diameter and thickness having been selected to afford a minimum factor of safety of six, in order to cope with the stresses imposed by manoeuvring. The bottom fuselage member, to which the undercarriage attached, was designed as a box section, fabricated from 22 gauge sheet. All other aspects of its construction were entirely conventional, although the wing root fittings included quick release bolts

which allowed the wings to be easily detached and strapped to the fuselage sides for road transport; an operation which two men could complete in five minutes, so that the machine could accompany an army on the march, a concept very much in vogue at the period and one which O'Gorman had wished to investigate for some time.

The wings employed a new aerofoil section, RAF6, which allowed a deeper rear spar than hitherto possible and so ensured that a factor of safety of six was achieved throughout the structure without excess weight. Lateral control was by warping, controlled by means of a wheel on the control column since it had been found that gusts could occasionally move a pivoting control column with sufficient force to cause the pilot discomfort. The engine controls were mounted in the centre of the wheel where it was thought they would be conveniently to hand.

The engine was to be a V8 air-cooled Renault rated at 70 horsepower. Unusually, the exhaust pipes were connected

*Two details from Folland's notes, showing studies of an aerofoil section.*

