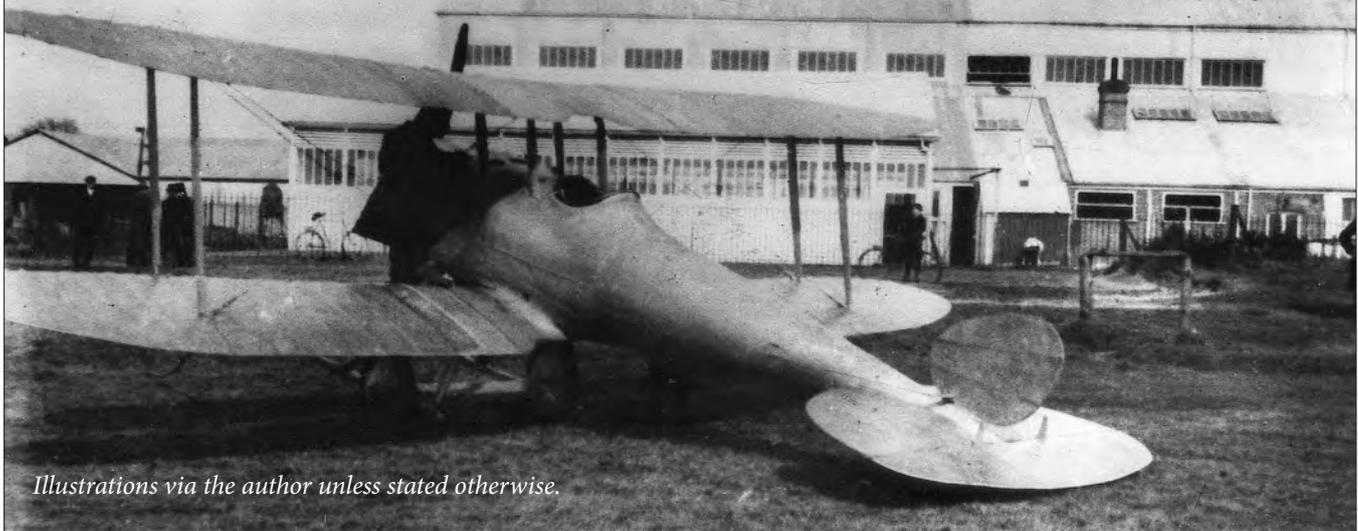


The Royal Aircraft Factory B.S.1/S.E.2

by Paul R. Hare



Illustrations via the author unless stated otherwise.

B.S.1/S.E.2 on Farnborough common with the Royal Aircraft Factory's Balloon shed and the extended 'Beta' airship shed in the background. The streamlining is obvious as is the small size of the rudder.

IN JANUARY 1912, MERVYN O'GORMAN produced a list¹ of aeroplanes that he suggested should be constructed at the Royal Aircraft Factory, of which he was Superintendent, which included, as well as a gun carrying machine, a twin engined machine and a float plane;

a high speed aeroplane ...capable of speeds of at least 90mph, with a landing speed not more than 60mph.

O'Gorman's proposal continued;-

It is intended to ascertain the advantage of a high speed machine over a somewhat slower speed machine in bad weather and also, if possible, to develop the fastest practical type of machine.

Later the same month O'Gorman informed the Advisory Committee for Aeronautics in a confidential memo² that the development of the high speed aeroplane would be carried out wholly independently of the other types so as to keep the experiments separate and distinct in order that as much as possible might be learned there from.

The high speed aeroplane was designated as the First Bleriot (i.e Tractor) Scout, or B.S.1, under the system of nomenclature then in use at the Royal Aircraft Factory, design work being undertaken by Geoffrey de Havilland, with the assistance of Henry Folland, who also did the loading calculations. It is not certain how soon after O'Gorman's proposal design work actually started but it seems likely that the factory did indeed concentrate its effort on other types first as the majority of the drawings bear dates in the autumn of 1912.

The basic outline was achieved by the simple expedient of scaling down the B.E.3 albeit with some revision, especially to the forward fuselage where changes were necessary to provide the single cockpit. Although it was intended to fit a 100hp Gnome rotary, the cowling was designed to accommodate the physically bigger 140hp Gnome, should one become available.

The fuselage was of circular cross section formed around four longerons to a point aft of the cockpit with the tail section being a true monocoque of moulded plywood. The biplane wings employed the RAF6 aerofoil section, the most efficient then available, with single bay bracing to further reduce drag.

The fuel tank, which was fitted in the top decking immediately ahead of the pilot, where it provided a gravity feed to the carburettor, was divided longitudinally and held 21½ gallons of petrol in the starboard section and eleven gallons of oil in the port. The few instruments, tachometer, column air speed indicator, altimeter, compass and watch, were fixed directly to the rear of the tank, there being no separate instrument board, whilst the horizontal clinometer was fitted to the top longeron to the right of the pilot's seat and the ignition switch to his right.

All in all it was a very neat design, its streamlined appearance marred only by the sturdy four strut, twin skid, undercarriage considered necessary to cope with the rough surface of Farnborough Common. It was, almost certainly, the first ever true high speed scout, an honour usually claimed for the Sopwith Tabloid which it pre-dated by several months.³

As was usual Royal Aircraft Factory practice at the time, the stress calculations allowed for a minimum factor of safety of three and, for example, in establishing the size of the axle tube Henry Folland first considered 1⅞in x 12 gauge tube, which gave a factor of safety of 3.5, then 1⅞in x 14g which was lighter and yet gave 3.8, before adopting 1¾in x 14g at 3.35.⁴

The unloaded weight was calculated as 855lb, a figure which proved 5lb in excess of the actual weight when the machine was completed, and which demonstrates the extent to which the Farnborough team's work was based in maths and science whilst many commercial rivals still worked by intuition and empiricism.

The machine was completed by March 1913, around which time the Factory changed its system of nomenclature to one based not on a design's physical characteristics, as previously, but on its intended performance. Henceforth S would stand for Scouting, rather than Santos, and, since the previous S class design, the ill-fated canard S.E.1 was not to be continued, the B.S.1 was renamed Scouting Experimental No.2.⁵ Therefore it was as S.E.2 that the high speed machine made its first flight on 13 March, piloted by Geoffrey de Havilland who was then still the Royal Aircraft Factory's chief test pilot, in addition to his role there as a designer.