THE BRISTOL " BULLPUP " : Three-quarter front view.

THE BRISTOL "BULLPUP"

An Interceptor Fighter with Bristol "Mercury" Engine

DESIGNED to intercept an enemy raider as soon as possible after receipt of news that the raider is approaching a certain locality or area, two essential qualifications form the basis of the design of an aeroplane of this class: The greatest possible rate of climb, in order that the interceptor may reach the altitude of the raider in the shortest possible time, and high speed at the operational height of the raider, so that the interceptor may overtake the raiding aircraft without loss of time. In order to achieve these two essential qualities, the aircraft designed for interception of raiders must of necessity sacrifice certain other qualities. For example, the interceptor is assumed to be stationed at no very great distance from the route along which the raider is approaching, and, consequently it is permissible to reduce the range of the interceptor, or, in other words, to save weight by carrying a minimum of fuel. Also, as weight must be reduced in order to achieve the necessary climb, all items of equipment which it is at all possible to do without are omitted in this class of aircraft. For example, wireless adds a good many pounds of weight, and as the interceptor's duty is solely to find and attack the raider, and not to communicate his whereabouts to the ground or to other aircraft, interceptor fighters do not carry wireless. Briefly, the equipment of an interceptor fighter is reduced to the two bare necessities: Guns and oxygen apparatus (the class being intended to operate at great heights). This, at any rate, is the theory on which we are working at present, although it does not follow that the policy may not in time have to be changed.

The Bristol " Bullpup " is an interceptor fighter, generally similar in design and construction to the Bristol Company's well-known " Bulldog " ordinary fighter, but differing from the older machine in certain details, and carrying as equipment, guns, ammunition and oxygen apparatus only. The " Bullpup " carries two Vickers 0·303 guns, one on each side of the fuselage. The machine is of all-metal construction, with exception of the covering, which is fabric except for the forward portion of the fuselage. The pilot is situated behind the trailing edge of the top centre-section, which is cut away for view. The pilot's sight line is approximately parallel with, and some six inches below, the chord line of the top plane. The " Bullpup " has an overall length of 23 ft. 2 in. (7 m. 060), a wing span of 30 ft. (9 m. 150), and a height of 10 ft. (3 m. 050). A Very pistol is carried, with stowage space for cartridges. If desired, mountings can be supplied for extra guns on the lower wings. These guns are operated by remote controls.

The Bristol Company has instituted a form of specification, couched in telegraphic terms, and with the items arranged in alphabetical order, which appears to describe the machine in the smallest possible space, and we have thought this style of description rather neat, and are retaining it in the following notes :—

Ailerons.—One pair on top wings only. Frise balance. Main spar and trailing edge in steel tube. Remainder in steel strip.

Aldis Ring and Bead Sights.—Mounted on a rigid tubular structure attached to the top of fuselage.

Belt Box.—Contains a total of 1,200 rounds. Easily filled and detachable. Constructed in duralumin with detachable necks and hinged doors for filling.

Rudder Bar.—Adjustable in flight through 4-in. horizontal movement. Adjustment does not necessitate altering length of control cables.

Elevator and Aileron Controls.—Operated by control column connected to a rockshaft on which a sprocket is mounted for operating the ailerons. The sprocket is connected by a chain to a secondary sprocket driving a lever. Thence by cables to pulleys near lower wing tip, then up to ailerons which are on top wing. Tecalemit lubricators fitted.

Centre Planes.—Steel tube spars and trailing edge. Duralumin sheet leading edge, and steel strip remainder. Top centre plane wire braced inside. Bottom centre plane strut braced to withstand undercarriage stresses.

C.C. Firing Gear.—Standard Air Ministry installation fitted.

Instrument Board.—Made in metal. A.S.I. altimeter and running switch fitted on port half. R.P.M., oil-pressure gauge, watch, doper and starting switch fitted on starboard side. Compass card holder, compass and cross level in centre.

External Bracing.—$\frac{3}{8}$-in. single R.A.E. lift wires, $\frac{1}{4}$-in. single R.A.E. ground wires (in each truss).

Single pair of N interplane struts.

Electrical Installation.—Generator, Mk. III.A. 500 watts at 12 volts (40 amps) fitted. Voltage control fitted (No. 2 Mk. III.A.). Generator field shunt fitted. Switchbox No. VII.A. fitted.

Fuselage Fore End.—High-tensile steel tube construction. Plate fittings at joints. No wire bracing in side elevation (tubes only).

Fuselage Rear End.—High-tensile strip steel construction. No wiring in sides, top or bottom plans. High-tensile steel tube stern frame braced in elevation with steel tube. Similar to fuselage front end in being exceptionally rigid.

Fin.—High-tensile steel tube framework with channel section duralumin ribs. Aluminium leading edge. Upper part forms a shield for balance of rudder.

Fireproof Bulkhead.—$\frac{1}{8}$-in. asbestos with 26 SWG aluminium front and back.

Gun Mountings.—Steel box girder mounting Adjustment up and down, and sideways provided. Gun readily detachable from mounting.

Gas Starter System.—Installation provided for R.A.E. trolley gas starter, *i.e.*, to plug in to side of fuselage, with distribution cock, master switch, &c., in the cockpit.

Wing Gun Mountings are optional. These are for mounting one (or more) pair of Lewis guns on the underside of