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AIRCRAFT CIRCULARS

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 153

THE GUILLEMIN J.G. 10 (FRENCH)

A Two-Place Touring Low-Wing Monoplane

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THE GUILLEMIN J.G. 10 (FRENCH)*

A Two-Place Touring Low-Wing Monoplane

This airplane was built by the Blériot Company from the designs of Mr. Guillemin, who had already designed the ambulance monoplane, the J.G. 40, exhibited at the last salon and described in this magazine. Like the J.G. 40, the J.G. 10 has a very rational general design and many ingenious details. (Figs. 1, 2, and 3.)

The wing consists of a central metal portion, integral with the fuselage, and two lateral wooden portions of standard construction, consisting of two box spars and lattice ribs covered with plywood and fabric. For the simple reason of economy, Mr. Guillemin renounced the use of plywood ribs lightened by circular openings.

Each lateral portion of the wing is joined to the central portion along a broken line. The junction is made by means of two vertical pins with fittings of high-resistance steel. These pins terminate in large milled knobs which are easily operated. Each lateral cantilever wing is folded in three stages. (Fig. 4.)

1. It is disconnected along the line of separation.
2. It is rotated about an extensible pivot.
3. It is folded back against the fuselage.

The aileron control, which can be removed by means of a simple knob, is easily accessible in the leading edge.

The fuselage structure consists entirely of square duralumin tubes of uniform outside diameter, but of variable inside diameter. They are assembled by gussets with tinned tubular steel rivets by means of a special riveting process invented by Mr. Kirste and patented by the Blériot Company. (Fig. 5.)

(The rivet (I), of inside diameter d , has a shoulder e. The riveting apparatus consists of a rod T (II) with

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an enlarged end of diameter d and hand riveting tongs. At III the rivet is threaded on the rod and at IV and V both are being used to assemble a gusset and a tube. The tongs exert a pull on T while resting on the face F of the rivet. The enlarged part of T forces the shoulder e outward.)

The front part of the fuselage and also the upper and lower girders are covered with metal. The sides, back of the pilot's cockpit are covered with laced moleskin.

The engine bearer is mounted on "silentblocks." The attachments of the struts to the supporting members are parallel to the longitudinal axis of the airplane. The attachments of these members to the fuselage are perpendicular to them. The vibrations are effectively absorbed by two systems of shock absorbers placed at right angles. Hinged cowlings were rightly prohibited for an airplane whose care is not necessarily entrusted to a professional mechanic.

The two seats are placed nearly abreast, a very agreeable arrangement for touring. The airplane can be finished either as a sport plane with individual windshields (fig. 2) (which will probably be replaced by a single windshield), or as a touring plane with cockpit entirely enclosed with triplex glass. (Fig. 3.) In either case the visibility is excellent, both forward and sidewise. The central portion of the top folds back, to afford access to the cockpit and to enable the use of parachutes. The latter are placed in aluminum pockets in the sides of the fuselage near the trailing edge of the wing. The cord for connecting it with the harness is guided by three springs, which yield to a slight pull, and ends in a small socket which cannot be missed by the pilot's hand.

Central part of the wing:— Figure 6 shows the rectangular openings in the flanges of the metal spars for receiving the fittings of the wooden spars of the right wing; an extensible pin with milled knob above the front spar; in the leading edge, the removable connecting rod of the aileron control, the head of which is shown in Figure 7. From the oblique wall joining the two spars there projects the sliding pivot which serves for folding the wing. At the right of the pilot's cockpit, which is here

of the open type, is shown the socket for receiving the end of the parachute cord. Figure 7 shows the assembly of the aileron control rod with the grooved pulley by means of a milled knob. We can see the two upper cables forming part of the wing circuit. Figure 8 shows the suspension of the engine bearer by "silentblocks" arranged in pairs at 90°. Figure 9 is a fuselage joint. The small hooks at the bottom serve for lacing the covering and can be replaced by an "Eclair" fastening. Figure 10 shows the central part of the fuselage with the two outward-opening pockets for the parachute whose cords terminate in the above-mentioned sockets. The horizontal crossbar at the bottom supports the pulleys for the control cables. The crossbar parallel to it serves to support the backs of the chairs when converted into couches. Figure 11 shows the Goodrich tail wheel mounted on a rotating bracket with shock-absorbing spring.

Fuselage details (fig. 12).— Note, in front of the fire wall the four attachments for the engine bearer. The control levers are mounted on the front side of the forward metal box spar of the central part of the wing. Several assemblies of square tubes and gussets by tubular rivets are also shown.

Portion of wing (fig. 13).— At the left a metal spar of the central wing section; at the right, a wooden spar joined to the former by an extensible pin. Inside the leading edge is seen the aileron control. The control rod is mounted, by means of a milled knob, on a grooved pulley which carries cables forming a distinct circuit in each wing. No disadjustment nor uncoupling is therefore possible.

Top view of fuselage (fig. 14).— This view of the fuselage, with the top removed, is particularly interesting. Note, on both sides of the fuselage, the broken junction lines of the wings; also the fuel-level indicators and the filling plugs of the fuel tanks, which latter border the oblique portions. Also note the handrails and the steps for entering the cockpits. Inside the fuselage, note the large baggage net accessible in flight; the cockpit proper; a small table for maps and notebooks; the instrument board and, lastly, the engine. The throttle and altimetric corrector are placed under the table. The rudder pedals are in openings in the floor. The habitable space is therefore entirely free from all control levers. The right-hand chair is turned down and forms a continu-

ous surface, over 2 m (6.56 ft.) long, on which an air mattress can be laid. The seat of this chair, turned back and placed under the table, after unscrewing the right-hand control lever, leaves a hollow in which a cushion may be placed. The left seat can be transformed in like manner. Between the two seats there is the Charlestop brake lever to which Mr. Guillemin has added a locking quadrant.

Characteristics

Span of wing	13.00 m	42.65 ft.
Span of tail	3.98 "	13.06 "
Maximum chord of wing	2.30 "	7.55 "
Length	7.10 "	23.29 "
Height	2.20 "	7.22 "
Track	3.00 "	9.84 "
Wing area	23 m ²	247.57 sq.ft.
Weight empty, equipped	554 kg	1221.36 lb.
Weight, loaded	850 "	1873.93 "
Fuel capacity	130 liters	34.34 gal.
Wing loading	37 kg/m ²	7.58 lb./sq.ft.
Power loading	8.5 kg/hp	18.48 lb./hp

Translation by Dwight M. Miner,
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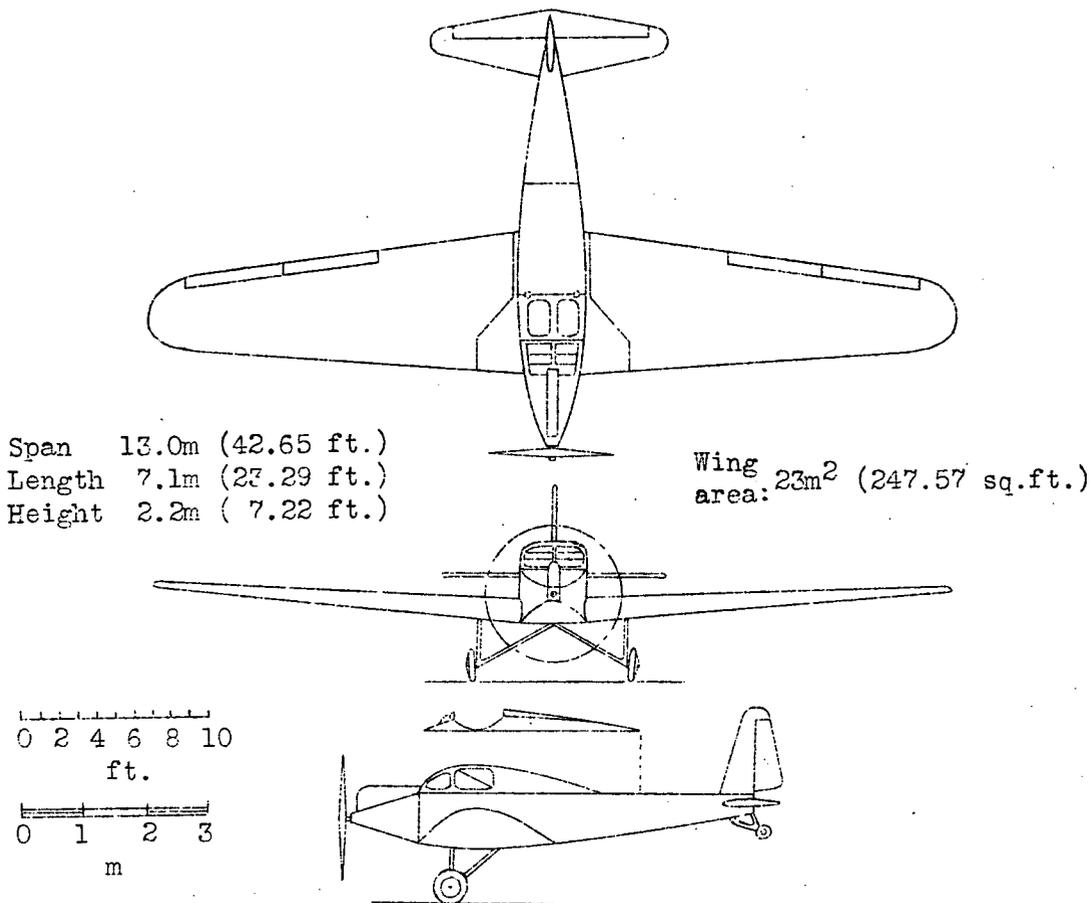


Fig. 1 General arrangement drawings of the Guillemain J.G. 10 airplane.

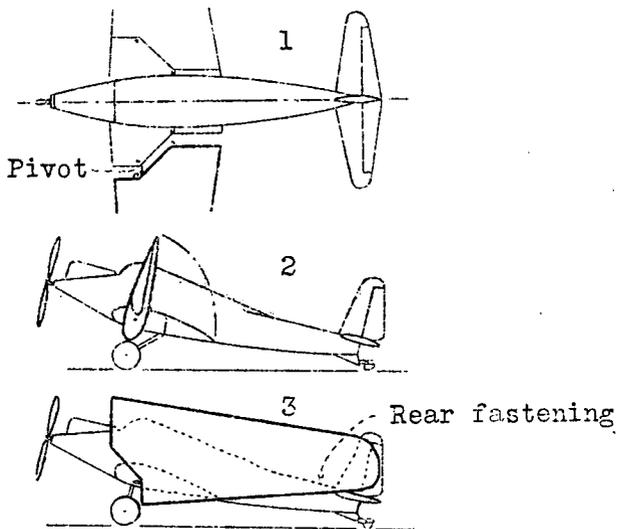


Fig. 4 Method of folding wings of the J.G. 10

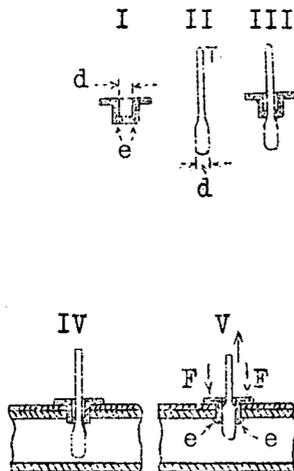


Fig. 5 Blériot method of riveting closed tubes.

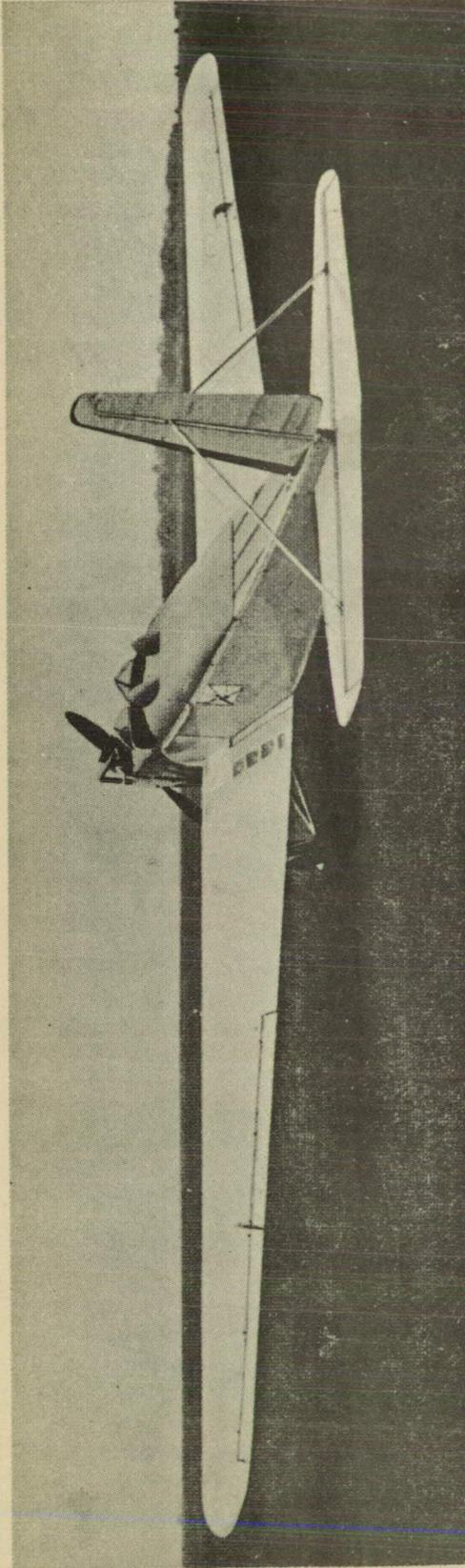


Fig. 2 The J.G. 10 equipped as a sport plane with two windshields and head rests. Note the unusual length of the tail surfaces.

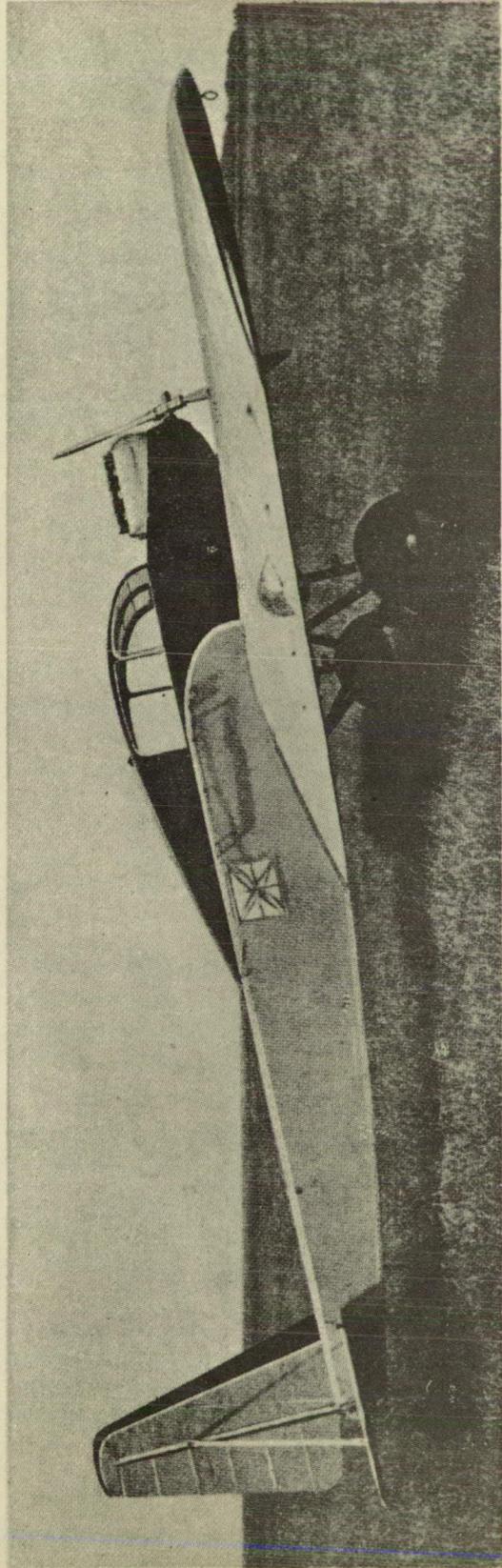


Fig. 3 The J.G. 10 with inclosed cockpit. Note the Salone and Lucas parachute in right pocket of fuselage.

Fig. 6
Central part
of wing
integral with
fuselage.

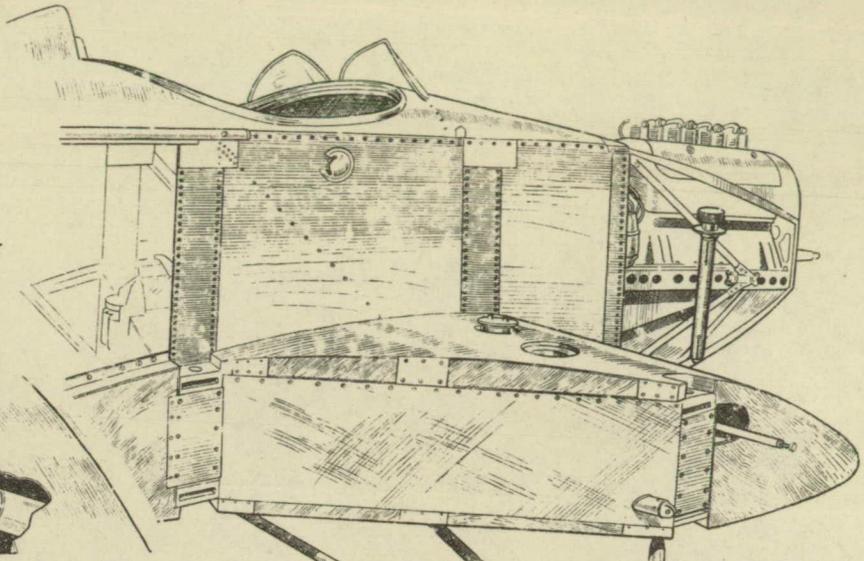


Fig. 7 Aileron control.

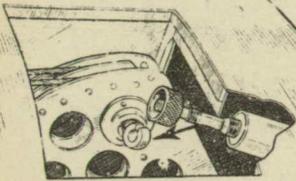


Fig. 8
Suspension of
engine bearer

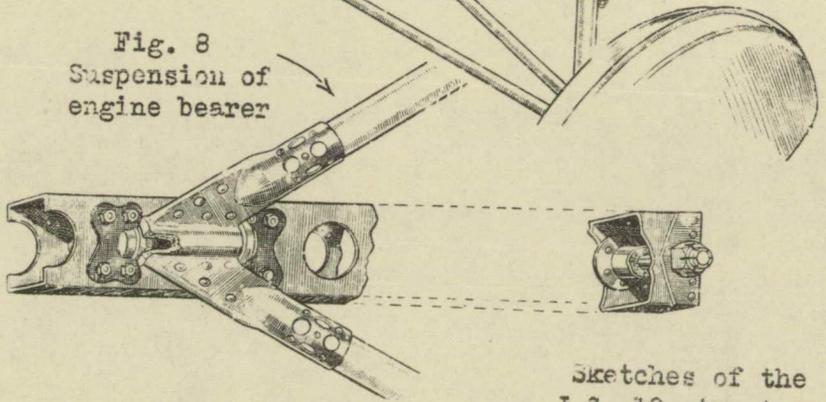
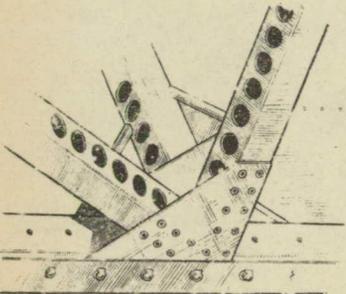


Fig. 9 Fuselage joint



Sketches of the
J.G. 10 structure

Fig. 11
Goodrich
tail wheel

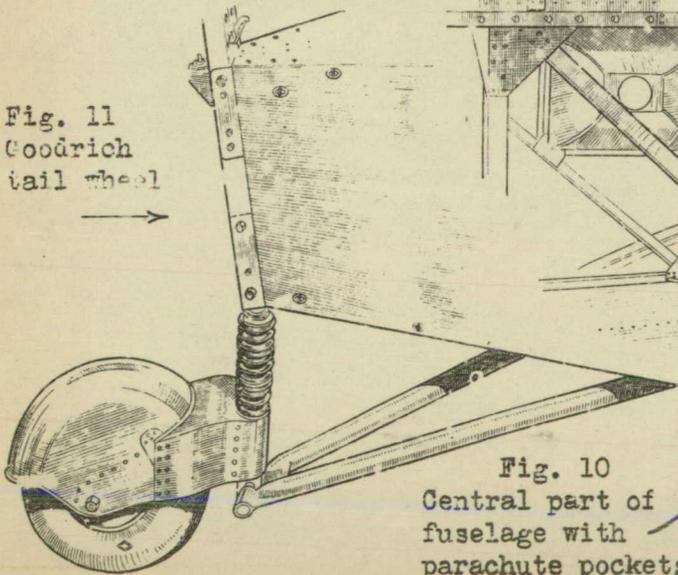
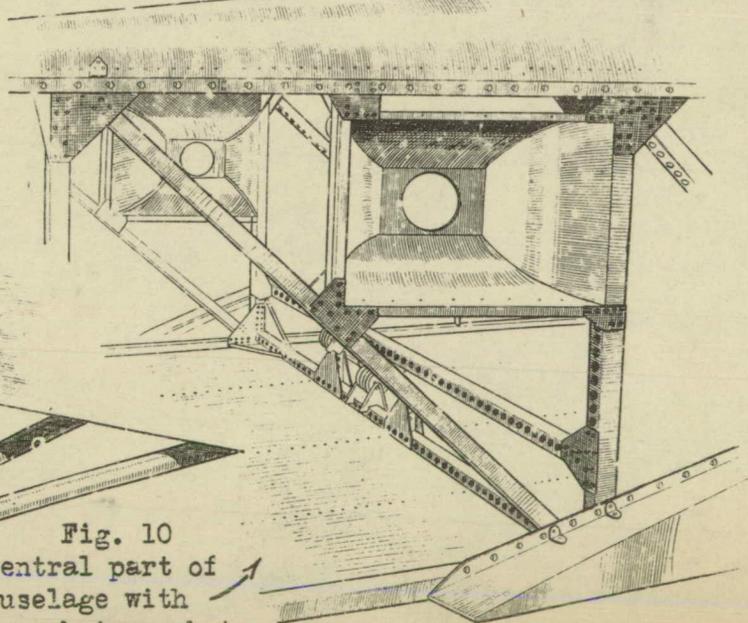


Fig. 10
Central part of
fuselage with
parachute pockets



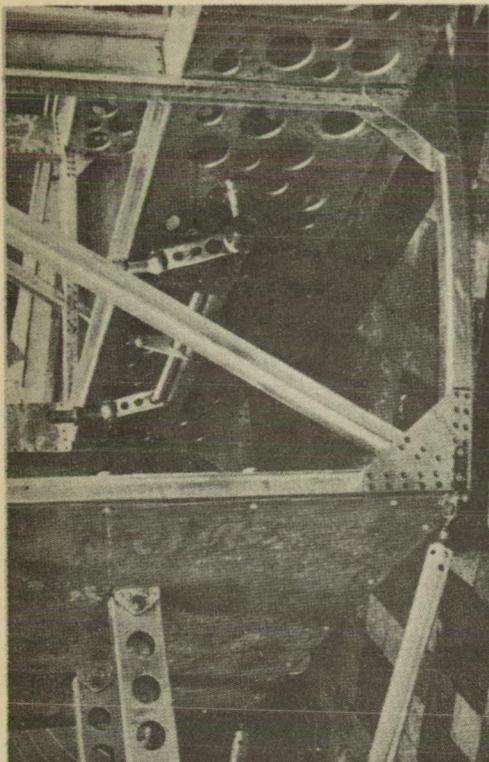


Fig. 12 Fuselage structure

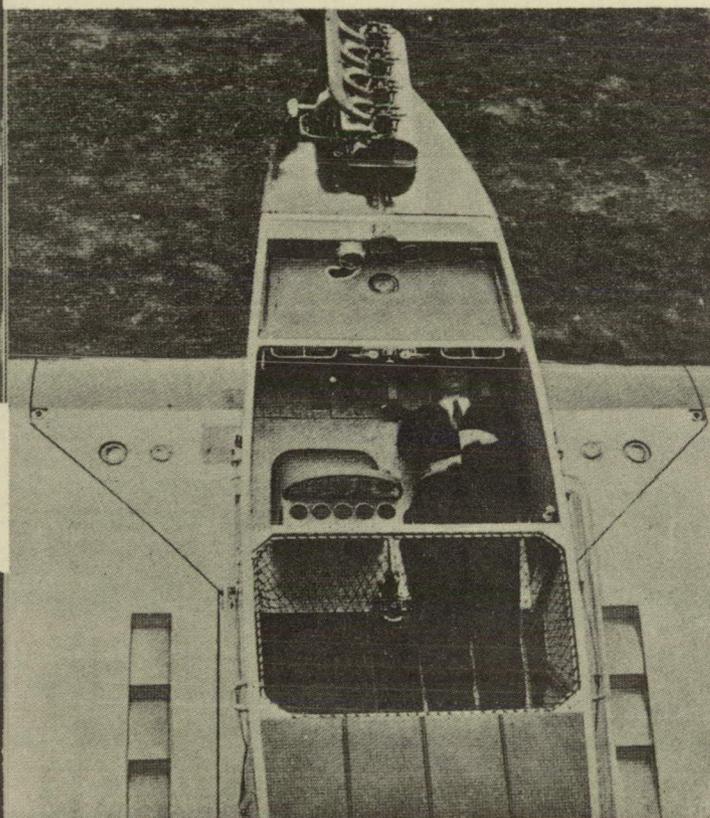
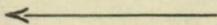


Fig. 14 Fuselage with top removed

Views of the Guillemin
J.G. 10 airplane



Fig. 13 Wing structure

