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No. 42

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THE MUREAUX "BRUNET 302" PURSUIT AIRPLANE

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Washington  
May, 1927

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THE MUREAUX "BRUNET 302" PURSUIT AIRPLANE.\*

By J. Serryer.

Engineer Brunet is a young technician who has already distinguished himself by designing a particularly interesting airplane, the Descamps observation airplane.

The new airplane designed by Mr. Brunet also has interesting characteristics. Like its predecessor, it has an all-metal framework of very simple structure. The materials used (tubes, sections and sheets) are almost exclusively duralumin and are used just as they are supplied, without any special treatment.

The Brunet 302 airplane is made in the Mureaux factories. It has satisfactorily undergone its static tests, with a safety factor of 12, and its flight tests will soon be made at Villacoublay by pilot Marc.

This pursuit airplane is a monoplane with a wing section or profile of medium thickness. The wing is braced against the lower part of the landing gear by a pair of N struts on each side of the fuselage. Being designed especially for high-altitude flying, its wing has a very large aspect ratio and is particularly efficient. The wing profile (a Brunet No. 7 S.C. 228) is very fine for lifts corresponding to the altitude at

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\*From "Les Ailes," March 24, 1927.

which the airplane is intended to work and enables, moreover, the employment of two equal spars equidistant from the mean position of the center of lift. This profile also has the advantage of admitting only slight displacements in the center of lift. Seen in plan, the wing is of uniform chord, with well-rounded tips. It is made in two parts, which are united over the fuselage by a convergent cabane.

The unbalanced ailerons extend the whole length of the span. They are mounted on a duralumin tube and their semirigid control can be provided with a device enabling the differential or simultaneous operation of the two parts. This device consists of a worm gear, which makes it possible to vary the length of the control rods. The landing speed can thus be considerably reduced.

The wing structure consists of two box spars formed by two webs and two special section flanges of duralumin, these parts being assembled by bolts or rivets and cross bars. The spars are joined together by duralumin tubes in the planes of the top and bottom flanges, thus giving the wing great rigidity against torsion.

The ribs, likewise metal, are of the Warren girder type and are made of a unique form of V-section duralumin for the flanges and cross bars, the latter being joined to the flanges by a single rivet with tubular bracing. The wing is covered with fabric in the usual way. There are no brace wires.

The framework of the fuselage consists of four longerons and diagonals of duralumin tubing. Each end of the diagonal tubes is flattened, lined and fastened with tubular rivets to sheet-duralumin connections. This type of connection is used for the whole fuselage. It enables easy repairs without special tools. The fuselage is covered with sheet duralumin in front and fabric in the rear. The covering is put on in removable panels, so as to facilitate internal repairs.

The pilot's cockpit is just behind the rear spar of the wing, which is cut away at this point. The cockpit for the observer or gunner is just behind the pilot's cockpit. It is provided with apparatus for radio, heat and light, two parachutes, photograph camera, etc. The armament may consist of four to six machine guns and twelve 10 kg (22 lb.) bombs.

The horizontal empennage consists of a stabilizer, which is adjustable during flight and a two-part unbalanced elevator. The stabilizer framework consists of two spars of rectangular duralumin tubing and V-section ribs. It is braced by a strut on each side.

Engine-propeller group.- Two different engine mountings have been made for the Brunet airplane. They are removable and interchangeable, one being designed for the 500 HP. Hispano-Suiza and the other for the Salmson engine of the same power. Moreover, any 500 HP. engine can be installed. Both engine mountings consist of duralumin tubes assembled the same as in

the fuselage structure and are attached to the fuselage longerons by four brackets. The mounting designed for the Hispano engine consists of a bed, which is supported by the longerons in front, and a rectangular tube, held by two V's, attached to the fuselage. The whole is braced by duralumin tubes. The mounting designed for the Salmson engine has the form of the frustum of a pyramid with a square base. It has, in front, a "caisson" which supports the engine. Each engine mounting contains an oil tank and a fire extinguisher.

There is one fuel tank, detachable in flight, between the engine and the pilot. The fuel is delivered by two A.M. pumps. Space is provided for a supplementary tank, which is not detachable, but which can be emptied quickly. The radiator, of the honeycomb type, is located under the engine mounting. The cooling is regulated by partially covering the radiator.

The landing gear (without axle) has a wide track gauge of 2.6 m (8.53 ft.). Each wheel is mounted independently of the other in a horizontal frame secured, on the outer side, to the wing strut and, on the other side, to the fuselage struts. Each wheel frame consists of a fixed part and a jointed removable part on which the wheel is mounted. The shock absorption is taken care of by eight sets of sandows for each wheel, the strands being parallel and independent.

The tail skid, of steel and duralumin, has an orientable shoe and sandow shock absorber.

## General Characteristics

Span	15.00 m	49.21 ft.
Length	8.45 "	27.72 "
Height	3.10 "	10.17 "
Chord	2.30 "	7.55 "
Wing area	32.5 m <sup>2</sup>	349.83 sq.ft.
Weight empty	1160.0 kg	2557.4 lb.
Weight of fuel	300.0 "	661.4 "
Useful load	520.0 "	1146.4 "
Full load	1980.0 "	4365.2 "
Wing loading	61.2 "	134.9 "
Power loading	4.0 "	8.82 "

## Theoretical Performances

Speed at sea level	245 km/h	152.0 mi./hr.
Speed at 2000 m ( 6562 ft.)	243 "	151.0 "
Speed at 5000 " (16404 " )	231 "	143.5 "
Minimum speed	102 "	63.4 "
Climb to 2000 m ( 6562 ft.)	5 min.	28 sec.
Climb to 4000 " (13123 " )	12 "	31 "
Climb to 6000 " (19685 " )	25 "	16 "
Theoretical ceiling	8600 m	28215 ft.

Translation by Dwight M. Miner,  
National Advisory Committee  
for Aeronautics.

Span 15 m  
(49.21 ft.)  
Length 8.45 m  
(27.72 ft.)  
Height 3.10 m  
(10.17 ft.)  
Wing area 32.5 m<sup>2</sup>  
(349.83 sq.ft.)

Hispano-Suiza  
500 HP  
engine

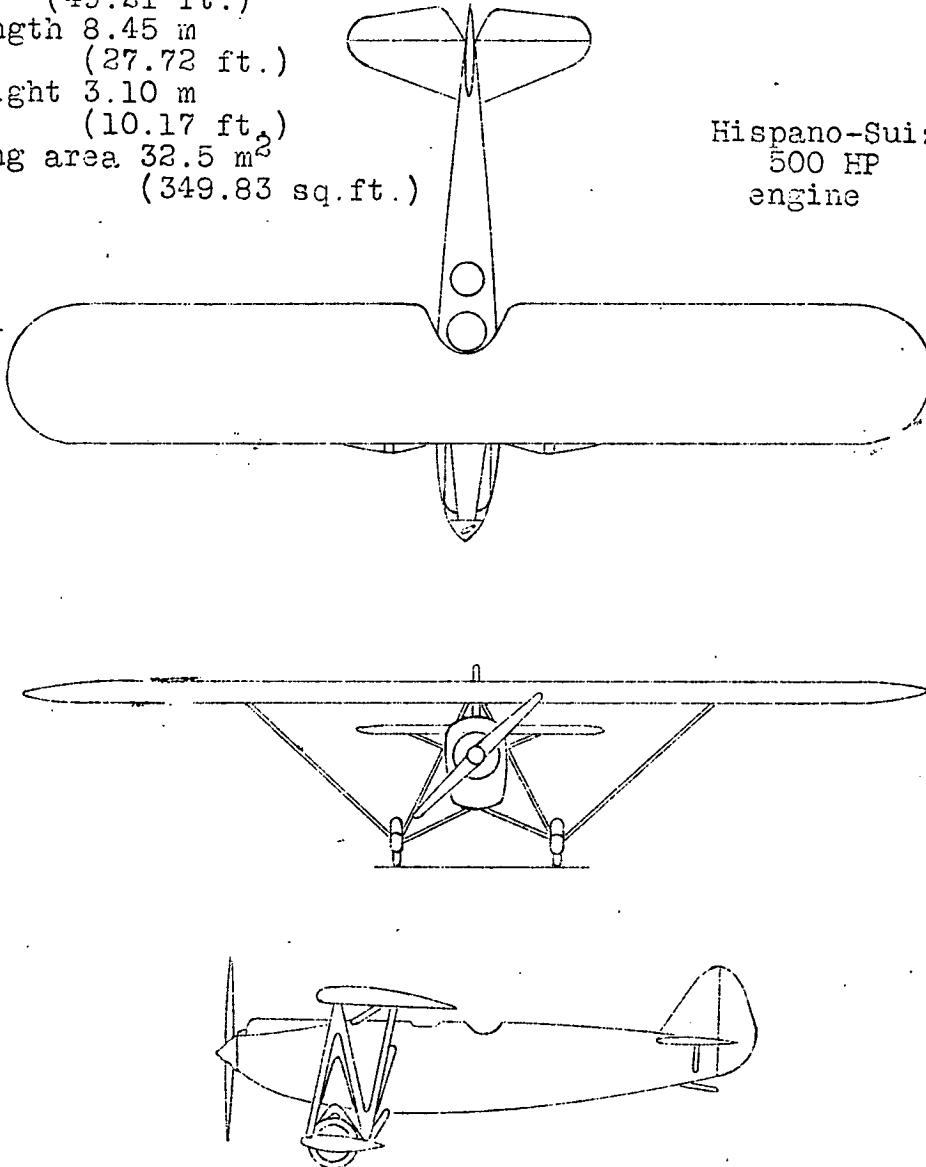


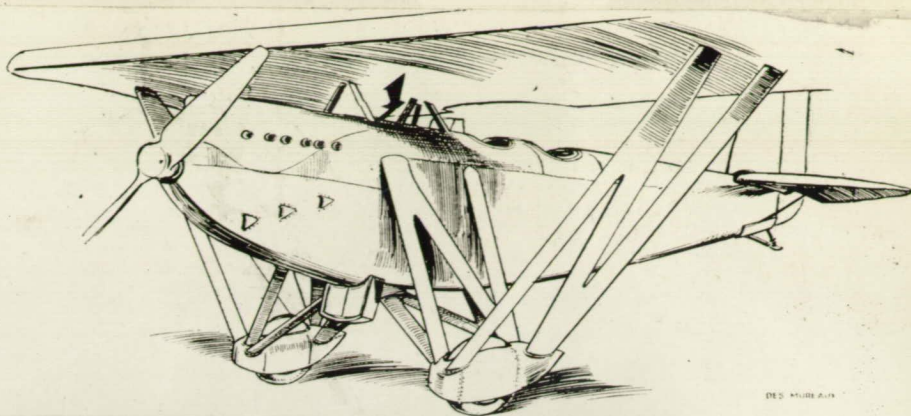
Fig.1 The Mureaux Brunet 302 airplane.

Fig.2

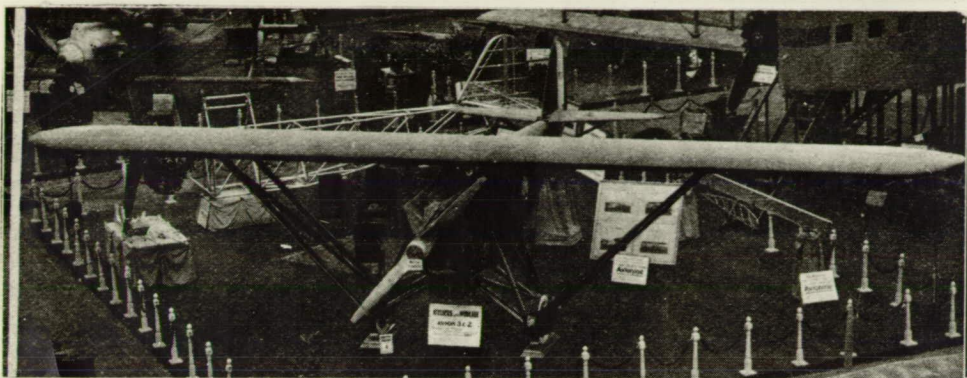
The 3 C.2 two-seat fighter of the Ateliers des Mureaux is a parasol monoplane with unusual wing bracing.

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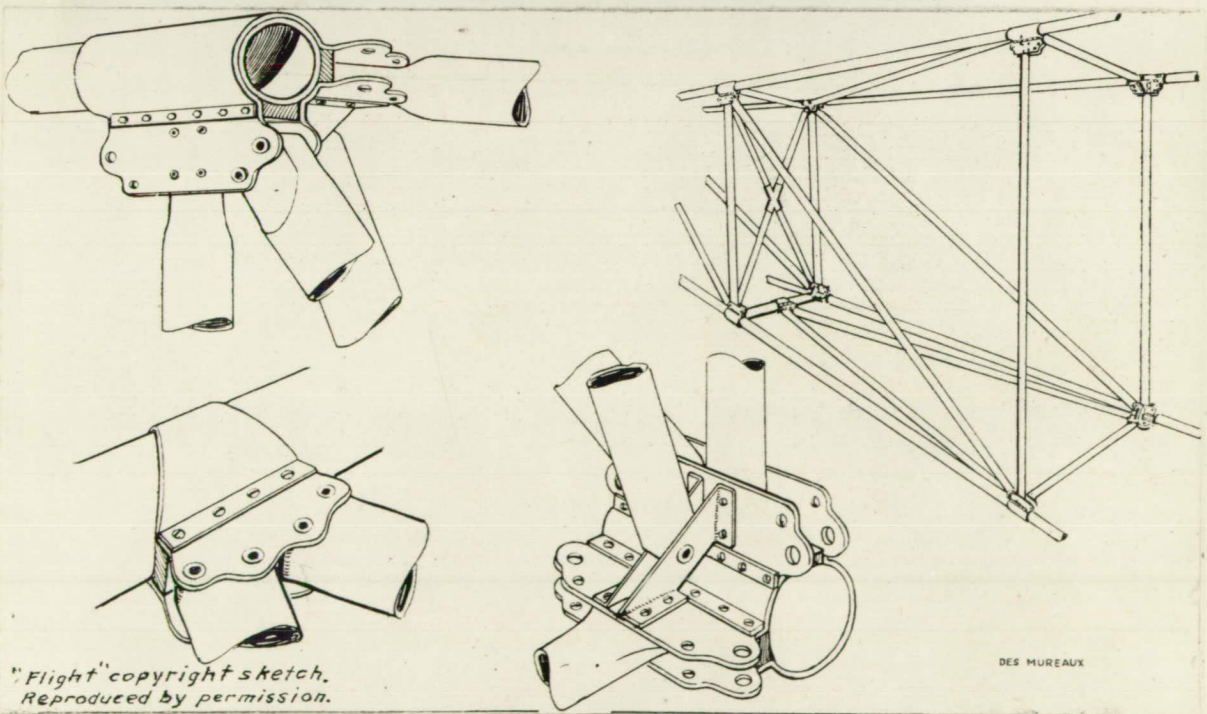
DES MUREAUX



The Ateliers des Mureaux exhibited a type 3C2 with unusual monoplane wing bracing. Behind it may be seen the skeleton of an all-metal fuselage.

["FLIGHT" Photograph Reproduced by permission.

Fig.4



"Flight" copyright sketch. Reproduced by permission.

DES MUREAUX

Fig.3 Sketches showing the details of the form of fuselage construction used on the Ateliers des Mureaux airplane. Compared with some of the metal work exhibited, this particular form is simple and should be cheap.

Views and structure of the Brunet 3C2 airplane. 7784 A.S.



Fig.5  
Wing  
structure.

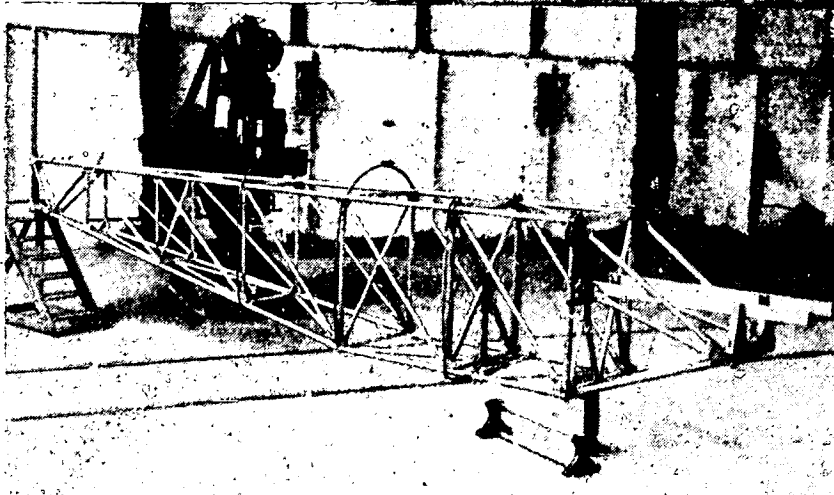
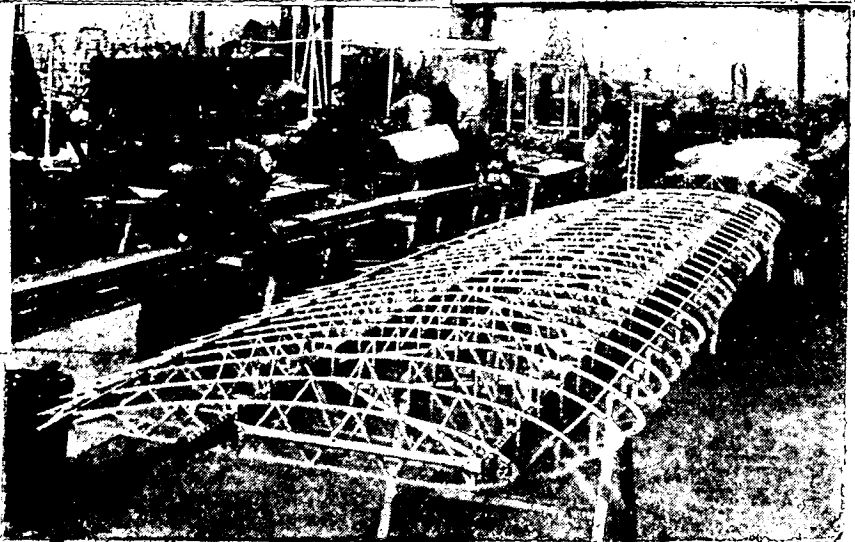


Fig.6  
The  
fuselage  
structure.

Fig.7  
Wheel  
of  
landing  
gear.



Parts of the Brunet  
302 airplane.

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