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AIRCRAFT CIRCULARS

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 145

THE MAUBOUSSIN M 11 TOURING AIRPLANE (FRENCH)

A Two-Place High-Wing Monoplane

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LINDBERGH RESEARCH AERONAUTICAL LABORATORY
LANGLEY FIELD, HAMPTON, VIRGINIA

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1724 STREET, N.W.,
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Washington
May, 1931

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THE MAUBOUSSIN M 11 TOURING AIRPLANE (FRENCH)*

A Two-Place High-Wing Monoplane

By André Frachet

Pierre Mauboussin, in collaboration with Louis Peyret, designed the M 10, a light single-seat monoplane of 34 hp, which captured four world records. Recently this same airplane, converted into a float seaplane, climbed to over 4000 m (13120 ft.).

The Mauboussin M 11 (Figs. 1, 2 & 3) is an improved enlargement of the M 10 (Fig. 4). It has two seats side by side and is equipped with L. Peyret double-hinged ailerons, wheel brakes with shields, and an engine cowling of the N.A.C.A. type.

The M 11 has a one-piece cantilever wing resting on the fuselage. It is tapered and has elliptical tips. Its aspect ratio is 9.5. It has a profile of variable relative thickness, very fine at small angles of attack and without displacement of the c.p.

The ailerons cover almost the whole of the trailing edge (Fig. 1) and are provided with the Louis Peyret device, with double hinges, which insures greater efficacy at all angles of flight. On the other hand, the ailerons can be actuated simultaneously in the same direction by means of a lever, thus making it possible to increase the already large lift of the wing and to modify its fineness.

The wing is attached at four points to fittings arranged in the form of a square. After removing the bolts, it can be turned 90 degrees so as to bring it parallel to the fuselage. In order to permit this maneuver, the vertical empennage, which is mounted on hinges, can be turned down to the horizontal position. It is then supported by two struts which, during flight, remain against the walls of the fuselage. Moreover, the shock-absorbing struts of the landing gear, ordinarily attached to the front wing spar, are attached to the top of the fuselage.

*From Les Ailes, Feb. 5, 1931, and data furnished by the manufacturers.

The wing structure is wood. It consists of two box spars of equal strength, of strips parallel to the spars and of simple and box ribs. The whole surface is covered with plywood of variable thickness, protected by a special varnish.

The very short fuselage has a rectangular section and terminates in a vertical rudder post. Its framework, likewise of wood, consists of four longerons held in place by transverse frames. All its faces are covered with plywood.

The enclosed cockpit has two seats placed side by side. It occupies the part of the fuselage situated under the wing and is entered through a large door on the right-hand side. There are many windows in the walls and ceiling protected by transparent panes. The wind shield is triplex glass. The visibility is excellent in all directions. The pilot sits on the left. A dual control can be installed in front of the passenger. Behind the two seats there is a baggage compartment.

The empennages are wood, like the wing. Each consists of a fixed part and an unbalanced movable part. They are cantilever and have thick sections. They are very efficacious, due to their ample area.

The M 11 is equipped with a nine-cylinder, air-cooled, direct-drive Salmson radial engine, having a bore of 70 mm (2.76 in.), a stroke of 85 mm (3.35 in.), a total piston displacement of about 3 liters (183 cu. in.), and developing 40 hp at 2000 r.p.m. It drives a Levasseur metal propeller or a metal-tipped two-bladed wooden propeller. Its hourly consumption is about 10 kg (22 lb.) of fuel and 1 kg (2.2 lb.) of oil. It is mounted on an easily removable, autogenously welded, steel-tubing frame, which is attached to the front end of the fuselage by four bolts. It is separated from the cockpit by a fire wall. The cowling, of the N.A.C.A. type, was designed by Mr. Mauboussin. While reducing the drag, this cowling serves as a muffler and also to heat the intake gases. The engine is started, from the cockpit, by a crank or by an automatic starter.

The two fuel tanks, holding 60 liters (16 gal.), are located in the wing. They can be replaced by larger tanks.

The two-part landing gear has a track of about 2.5 m (8.2 ft.). Each part consists of a pair of struts hinged to the bottom of the fuselage and forming a V, the apex of which meets the bottom of the vertical shock-absorbing strut, the latter being provided with a Messier oleopneumatic shock absorber or with a Mauboussin shock absorber of rubber washers. The

disk wheels measure 650 X 80 mm (25.59 X 3.15 in.) and are provided with independent brakes, which are operated by pedals on the rudder bar and by a lever similar to those used in automobiles. The conical disks are of light metal.

The dirigible tail skid is braked by sandows and has a spring-steel shock absorber, but, when the wheels are provided with brakes, this skid is replaced by a small wheel mounted elastically under the rudder post.

The landing gear can be easily replaced by two wooden floats, using the same fittings, thus changing the M 11 into a seaplane.

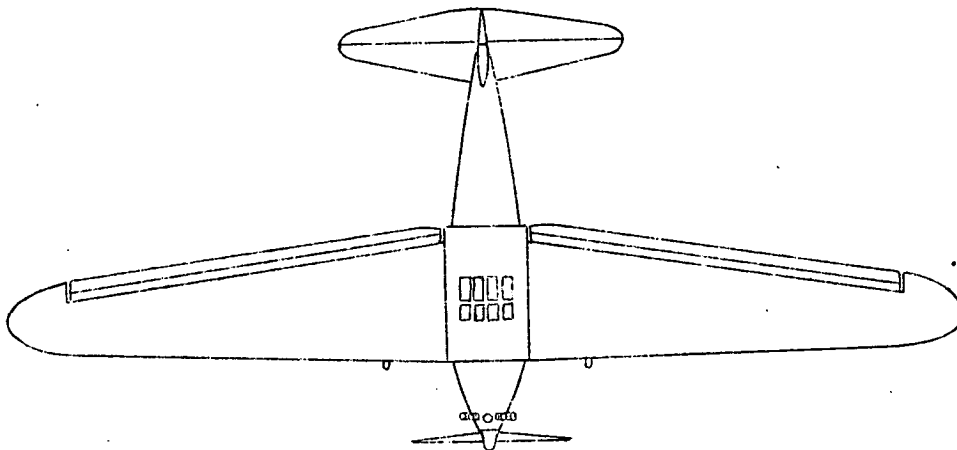
Characteristics

| | | |
|---------------------|------------------------|-----------------|
| Span | 11.75 m | 38.55 ft. |
| Max. chord | 1.60 " | 5.25 " |
| Length | 5.50 " | 18.04 " |
| Height | 2.86 " | 9.38 " |
| Wing area | 14.6 m ² | 157.15 sq.ft. |
| Weight empty | 320 kg | 705.48 lb. |
| Fuel and oil | 45 " | 99.21 " |
| Crew | 150 " | 330.69 " |
| Weight loaded | 515 " | 1135.38 " |
| Wing loading | 35.5 kg/m ² | 7.27 lb./sq.ft. |
| Power loading | 12.9 kg/hp | 28.05 lb./hp |
| Power per unit area | 2.7 hp/m ² | .251 hp/sq.ft. |

Performances

| | | |
|------------------------|----------|--------------|
| Max. speed near ground | 155 km/h | 96.3 mi./hr. |
| Cruising speed | 135 " | 83.9 " |
| Landing speed | 65 " | 40.4 " |
| Ceiling | 4500 m | 14760 ft. |
| Range of action | 500 km | 310.7 mi. |

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



Span 11.75 m (38.55 ft.)
Length 5.50 " (18.04 ")
Height 2.86 " (9.38 ")
Wing
area: 14.6 m² (157.15 sq.ft.)

Salmson
AD 9
40 hp
engine.

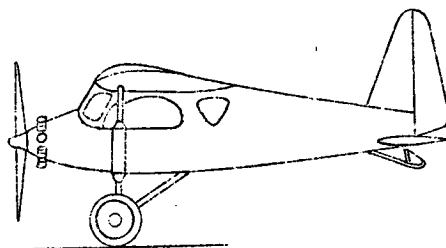
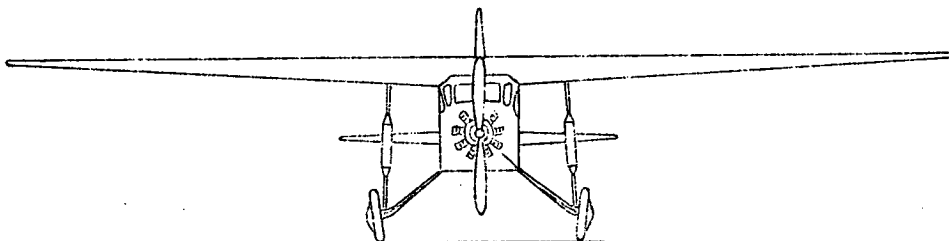
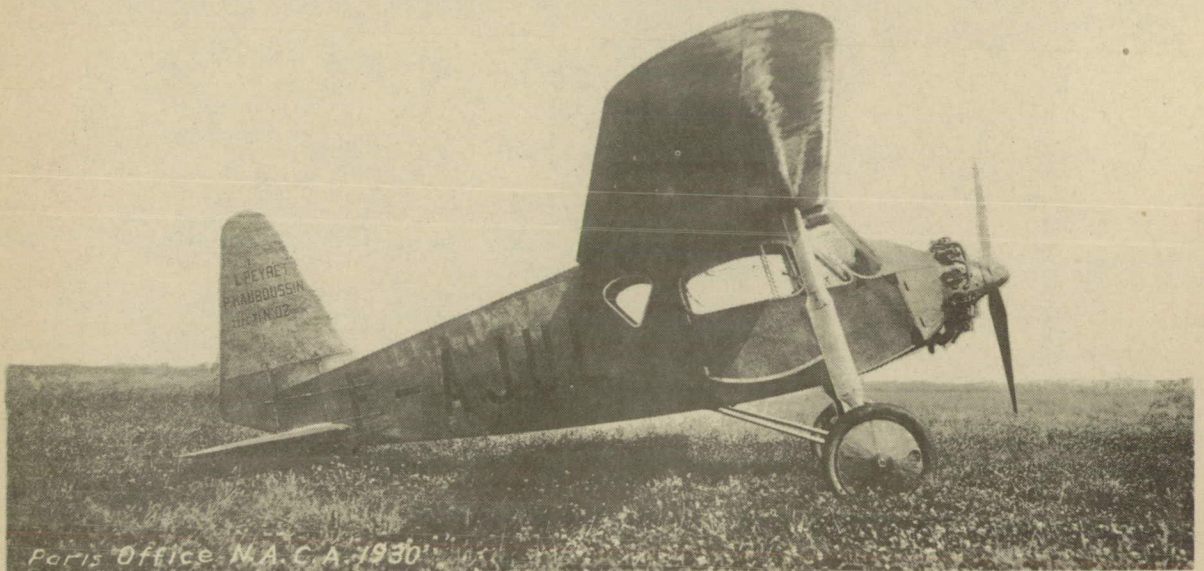
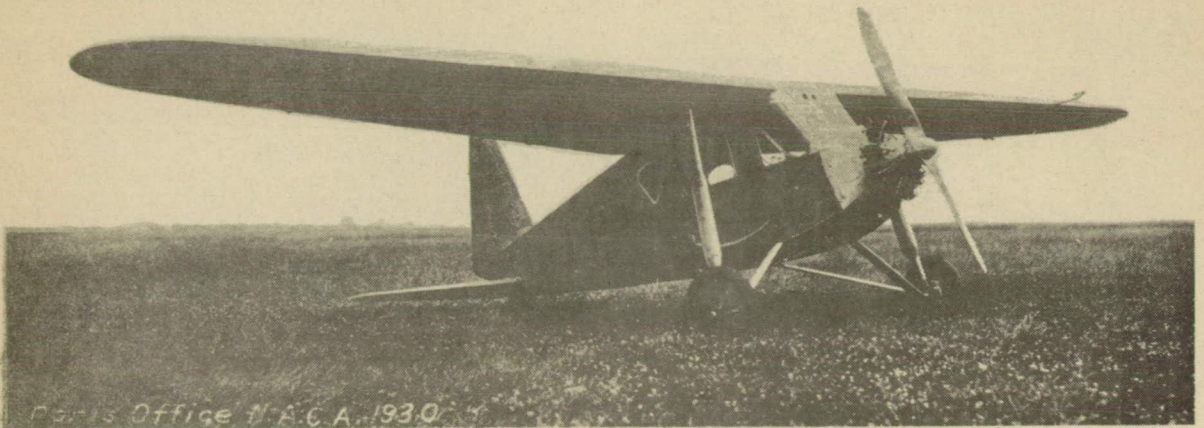


Fig.1 General arrangement drawings of the Mauboussin M-11 airplane.



Figs.2,3 Views of the Mauboussin M-11 airplane.



Fig.4 View of the Mauboussin M-10 airplane.