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NO. 4

AIRCRAFT CIRCULARS
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 23

ALBERT TE-1 TRAINING AIRPLANE

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To be returned to
the files of the National
Advisory Committee
for Aeronautics
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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

AIRCRAFT CIRCULAR NO. 23.

ALBERT TE-1 TRAINING AIRPLANE.*

This airplane, designed for the economical training of pilots, is a single-seat parasol cantilever monoplane.

The two wings constitute a unit from the structural viewpoint. It is made entirely of wood and has a variable biconvex dissymmetrical cross section. It has box spars and ribs (spruce flanges and plywood webs). The covering is plywood, which eliminates all the brace wires and turnbuckles and their fittings. The ailerons are also made of wood on the same structural principle.

The fuselage is likewise made of wood by the same method: box girders (spruce and plywood) covered with plywood, with the elimination of all brace wires and turnbuckles and their respective fittings.

The tail group is made entirely of wood, on the same principle.

The landing gear is very simple, without axle. The wheels are independent and their elastic attachment by sandows enable landing on rough ground and in tall grass without danger of nosing over. The tail skid is a double cantilever leaf spring.

The long narrow ailerons are very efficacious. Both the aileron and elevator controls are rigid adjustable tubes.

* Translation from the French.

Figures taken from "L'Aeronautique," April, 1926.

The rudder alone is operated by flexible cables.

The engine now used is the 40 HP. air-cooled Salmson A.D.9. It is fed by gravity, the fuel coming from two tanks in the wings, thereby affording great protection against fire.

This airplane is the most economical one now in use, even as compared with similar airplanes of only 25 to 30 HP. It consumes, in fact, only 13 liters (3.43 gallons) of fuel and 400 g (0.88 lb.) of oil per hour, or 9 liters (2.38 gal.) and 266 g (0.586 lb.) per 100 km (62.14 miles) at maximum speed, or still less, 6-7 liters (1.59-1.85 gal.), at the economical speed of 100-110 km (62-68 miles) per hour. It is therefore more economical than a 10 HP. motor car.

This airplane therefore combines the best qualities for economical use. It is of simple construction and easily disassembled, the wing being attached to the fuselage at six points by twelve bolts, the tail group by five bolts, each wheel and its struts by three pins. It can not get out of adjustment and its amortization is very long, due to the conservation of its original qualities of flight by means of the varnish "Lionoil" which covers the plywood and, by rendering it impermeable, gives it an almost unlimited length of life. Consequently, the upkeep of the airplane (exclusive of the engine) is almost zero. Moreover, the use of an air-cooled engine, which eliminates the radiator, facilitates its employment in all seasons with the minimum cost for upkeep.

Lastly, this airplane is put in the first class by the "Bureau Veritas," which affords the advantage of ability to insure both the pilot and the airplane on the best possible terms.

U s e s

1. As an economical training airplane, especially for pursuit pilots. It executes the whole gamut of acrobatic stunts, loops, spins, etc., and can be equipped with a machine-gun kinetograph.
2. As a mail airplane, because of its small fuel consumption, its high speed and the reliability of its engine-propeller group.
3. As a military airplane for the rapid transmission of orders from one army to another. It can also be used in place of cavalry, since it can carry a machine gun well supplied with ammunition.

General Characteristics

Weight empty	255 kg (562.18 lb.)
Useful load	102 " (224.87 ")
Fuel "	30 " (66.14 ")
Full "	387 " (632.73 ")
Wing area	10 m ² (107.64 sq.ft.)
Horsepower	40
Wing loading	38.7 kg/m ² (7.93 lb./sq.ft.)
Power "	9.7 kg/HP.(21.38 lb./HP.)
Power per unit area	4 HP./m ² (.372 HP./sq.ft.)

Official Performances, made with 40 HP. Salmson A.D.9 Engine
and Duhamel Propeller.

<u>Altitude</u>	<u>Speed</u>	<u>Climbing time</u>
0	152.5 km (94.76 mi.)	
1000 m (3281 ft.)	149 " (92.58 ")	5' 30"
2000 " (6562 ")	145 " (90.10 ")	12' 30"
3000 " (9842 ")	139 " (86.37 ")	21' 30"
4000 " (13123 ")	132 " (82.02 ")	34' 30"
5500 " (18045 ")	Theoretical ceiling	
Take-off run (in still air)	98 m (322 ft.)	
Landing " (in still air)	88 " (289 ")	

Useful load includes pilot, parachute, fire extinguisher,
starter, and official recording instruments.

Full load consists of:

Fuel for 2.25 hours, 30 liters (7.93 gal.) = 22.0 kg
(48.5 lb.);

Oil " 15 " , 8 " (2.11 ") = 8.0 kg
(17.6 lb.).

There is a second 30-liter fuel tank for a total of 4.5 hours:

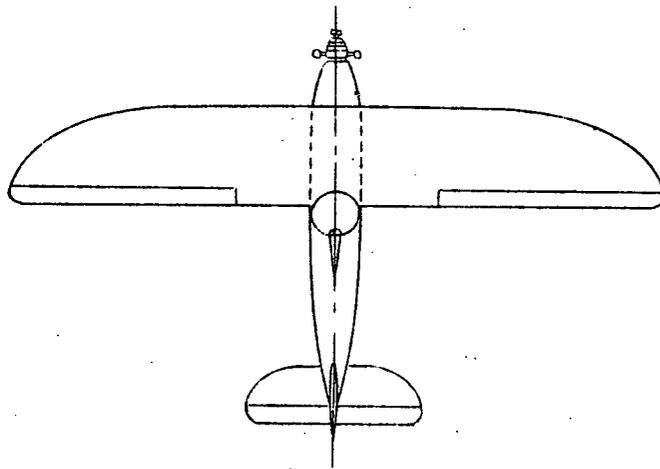
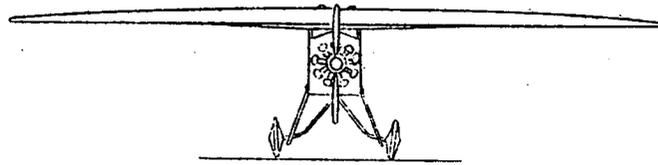
Radius of action at maximum speed, 650 km (404 miles);

" " " " economical speed, 1000 km (621 miles);

Speed at minimum power, 85 km (52.83 mi.) per hour;

Economical speed, 105 " (65.26 ") " "

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



Salmson
40 HP.
engine

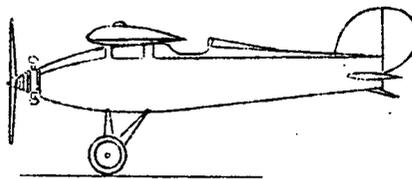
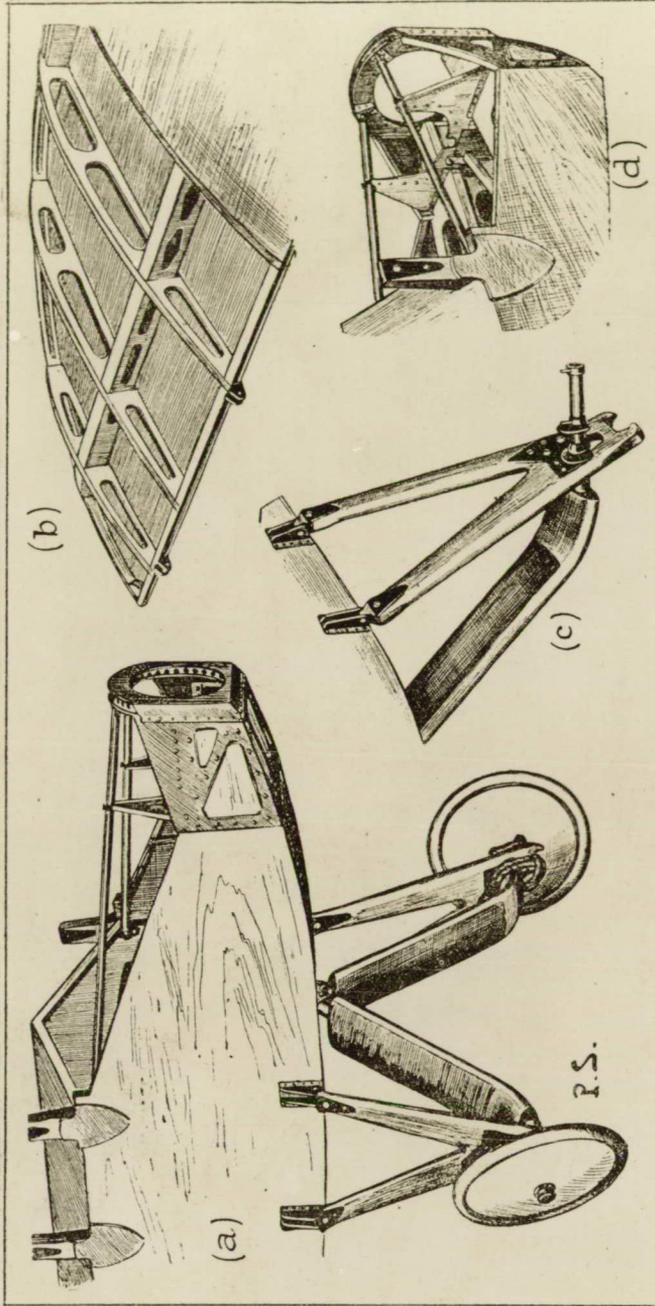


Fig.1 Albert training airplane.



- (a) Front end
- (b) Wing structure
- (c) Landing-gear struts
- (d) Engine supports

Fig. 2 Structural details of the Albert training airplane. Salmson A.D.9 engine.

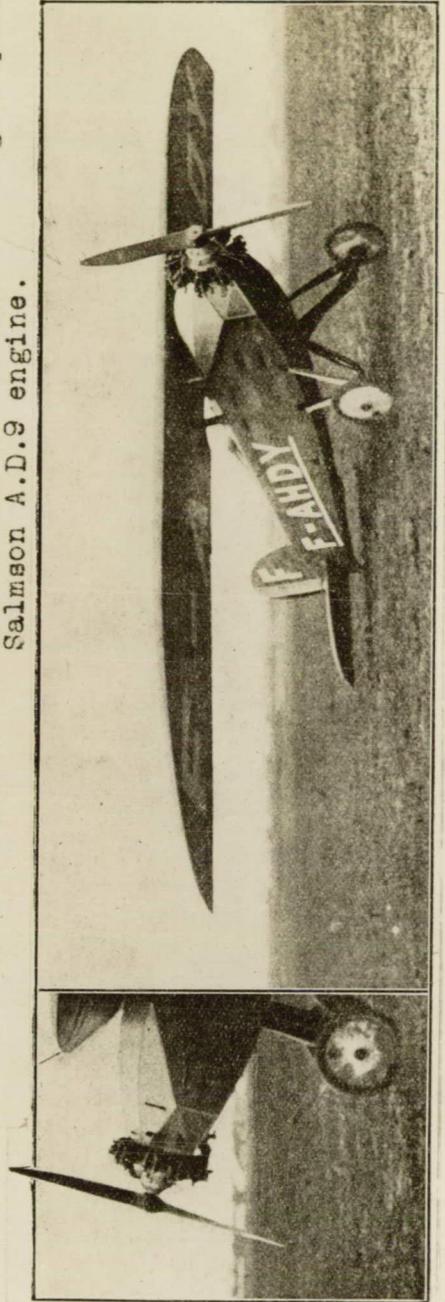


Fig. 3

Views of the Albert training airplane.

Fig. 4