

AIRCRAFT CIRCULARS  
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

---

No. 113

---

THE DYLE AND BACALAN "DB 70" COMMERCIAL AIRPLANE (FRENCH)  
An All-Metal High-Wing Monoplane

---

Washington  
March, 1930

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

AIRCRAFT CIRCULAR NO. 113.

THE DYLE AND BACALAN "DB 70" COMMERCIAL AIRPLANE (FRENCH)\*  
An All-Metal High-Wing Monoplane.

The appearance of this airplane recalls the "DB 10." It has a central body in the form of a very thick wing, to which are attached the wings, fuselage, engine nacelles and landing gear. It is made entirely of duralumin with coverings of sheet duralumin, the fittings being of high-resistance steel. The wing system consists of a thick and deep central section and two wings properly so called (Figs. 1, 2, 3, and 4).

The central body is a very thick habitable wing of dissymmetrical biconvex profile. It forms an important part of the passenger cabin. Its frame consists of four main spars parallel to the leading edge braced by box girders. The wing spars, brace wires, engine nacelles, fuselage, and landing gear are attached to it by metal fittings. The central body has a height of 1.95 m (6.4 ft.) and a fore-and-aft length of 2.3 m (7.55 ft.).

The wings proper have a uniform chord and a uniform profile which is flat on the lower side. Good lateral stability is assured by giving the wings a dihedral angle of 3 degrees. Each wing is attached to the central body and is supported in the middle by a hinged strut, the lower end of which is attached to

---

From a circular of the Société Aérienne Bordelaise. See also  
Les Ailes, November 14, 1929.

the lower part of the central body.

The framework of each of the two fuselages consists of four longerons, braced on all four sides by struts and cross pieces, and is covered with sheet duralumin.

The presence of two fuselages enables the use of a horizontal empennage of large aspect ratio. The stabilizer is adjustable and the elevator is balanced. Each fuselage carries a vertical empennage consisting of a fin and a balanced rudder.

The landing gear has two pairs of wheels 1300 x 275 mm (51.18 x 10.82 in.), one pair under the outer edge of each fuselage. It has a track gauge of 6.7 m (22 ft.) without continuous axle. One of each pair of wheels is placed on each side of a V strut parallel with the longitudinal axis of the fuselage and braced by a lateral strut to the bottom of the central body. Each pair of wheels is provided with an oleo-pneumatic shock absorber and a cylinder integral with the landing-gear strut. The wheels are provided with brakes.

The "DB 70" is equipped with three 600 hp Hispano-Suiza engines with reduction gears and tractor propellers. The engines are mounted forward of the central body so as to diminish the interference between the central body and the propellers. The gasoline tanks are placed in the wings, a passage in the leading edge being reserved, however, to afford the mechanic access to the engines during flight. Each engine is absolutely separated from the cabin by a fire wall and by another wall designed to absorb the noise.

There are two pilot seats abreast and provided with a disconnectable dual control. They are placed forward of the leading edge of the central body, thus affording an unobstructed view, and in easy communication with the mechanic and navigator. Each of these is provided with a separate compartment. A third compartment will contain the radio outfit and all instruments required for night flying.

The space reserved for the passengers consists of two lateral cabins connected by a central salon. There are also a kitchen and a toilet room. The cabins and the salon have a combined volume of 58 m<sup>3</sup> (2048.24 cu.ft.). They cover an area of about 30 m<sup>2</sup> (322.9 sq.ft.) with a clear height of 1.88 m (6.17 ft.). Each cabin occupies a lateral section of the central body and a section of the corresponding fuselage. It has a length of 5.35 m (17.55 ft.) and a width of 1.8 m (5.9 ft.). The equipment of the cabins differs according to whether the airplane is to be used for day or night flights. On day flights it can carry 28 passengers: 10 in each cabin and 8 in the salon. On night flights it can carry 24 passengers: 16 lying down in the cabins and 8 sitting in the salon. Each cabin has two rows of four chairs separated by a central aisle. By a simple device the chairs are converted into two tiers of beds.

In the day equipment the seats are lighter. In the salon there are two tables and eight chairs. The cabins and salon receive the light and views from large mirrors situated on the

sides of the fuselage and of the central body and on the ceiling of the latter. The heating and ventilation are accomplished by taking pure air from the outside and conducting it over the exhaust pipes into the cabins. Access to the cabins is provided through three doors: one on the outside of each fuselage and the main entrance in the bottom of the central body.

#### Equipped as an Ambulance Airplane

The form of the cabin, as already described, is particularly well adapted for equipment as an ambulance airplane. Thus equipped, 22 wounded can be carried on regular hospital stretchers: 4 in each side cabin and 12 in the central body. When superposed, the stretchers leave a space of 0.75 m (2.46 ft.). Between two stretchers on the same level, there is a space of 0.5 m (1.64 ft.), which is ample for passage. The stretchers are introduced through the central entrance, which has been freed from all obstructing brace wires for this purpose. The wall provided with a door on the passenger airplane can be replaced by several removable panels, thus providing a maximum opening of 1.88 x 2.24 m (6.17 x 7.35 ft.). A special hoisting device enables the raising of the stretchers from the ground without jolts. A free space 2.2 x 3.6 m (7.22 x 11.81 ft.) is still disposable in the central cabin. This can be used as a place for dressing wounds, with every desirable convenience, or for four to six additional stretchers or chairs or any combina-

tion of these. The kitchen may be used to prepare hot drinks and boiling water. Normally this airplane can carry 20 wounded persons lying down, 4 patients seated, with space for the doctor and attendant, and the kitchen.

With fuel for six hours flight at full power, the total weight is still less than the weight of the commercial airplane. The baggage of the wounded can also be carried, up to 30 kg (66.14 lb.) per person.

#### Characteristics

Span	37 m	121.39 ft.
Length	20 "	65.62 "
Height	6 "	19.68 "
Wing area	218 m <sup>2</sup>	2346.53 sq.ft.
Weight empty	7600 kg	16755.1 lb.
Weight of fuel	2000 "	4409.24 "
Crew and accessories	500 "	1102.31 "
Useful load	2900 "	6393.4 "
Full load	13000 "	28660.05 "

Power, 3 Hispano-Suiza engines of 600 hp each = 1800 hp

## Performances

Maximum speed near ground	200 km/h	124.3 m.p.h.
Cruising speed at 1000 m	180 "	111.9 "
Radius of action	1000 km	621.4 miles
Hours of normal flight	5.5	
/ Ceiling	4500 m	14764 ft.

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

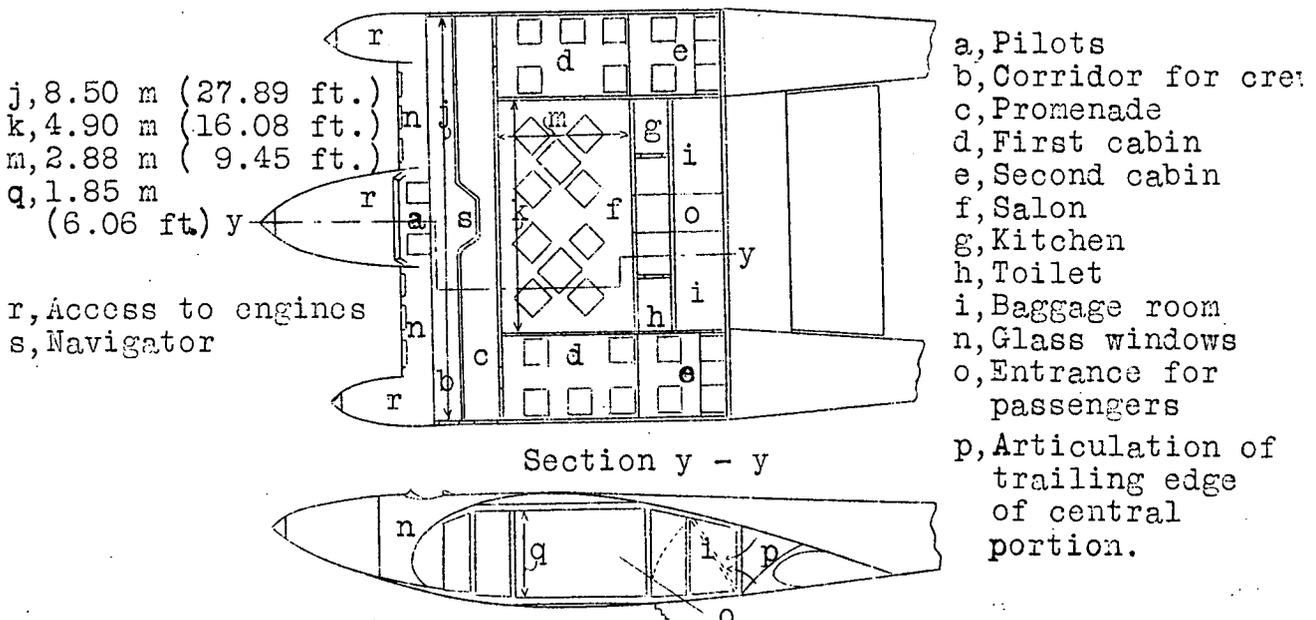
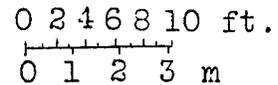
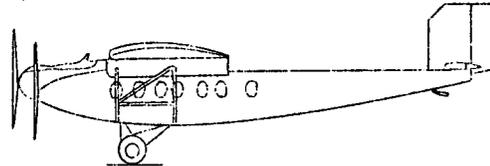
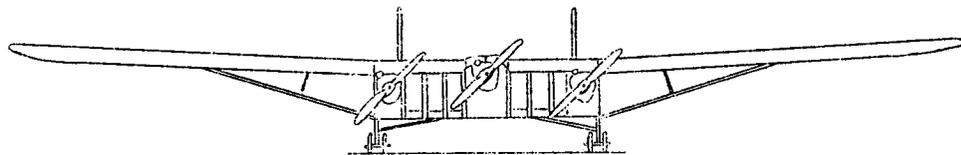
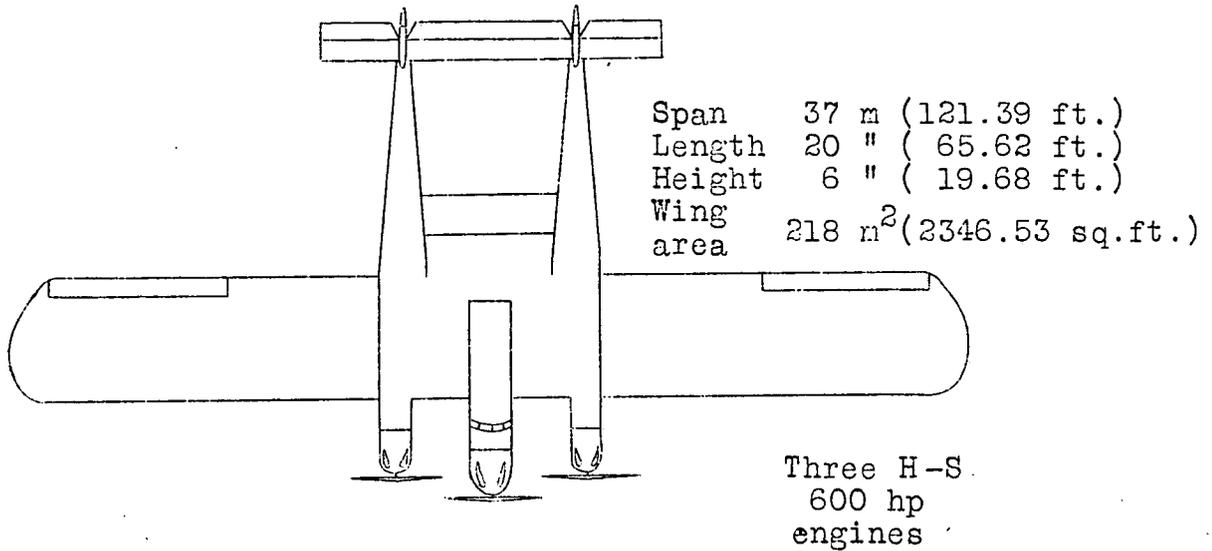
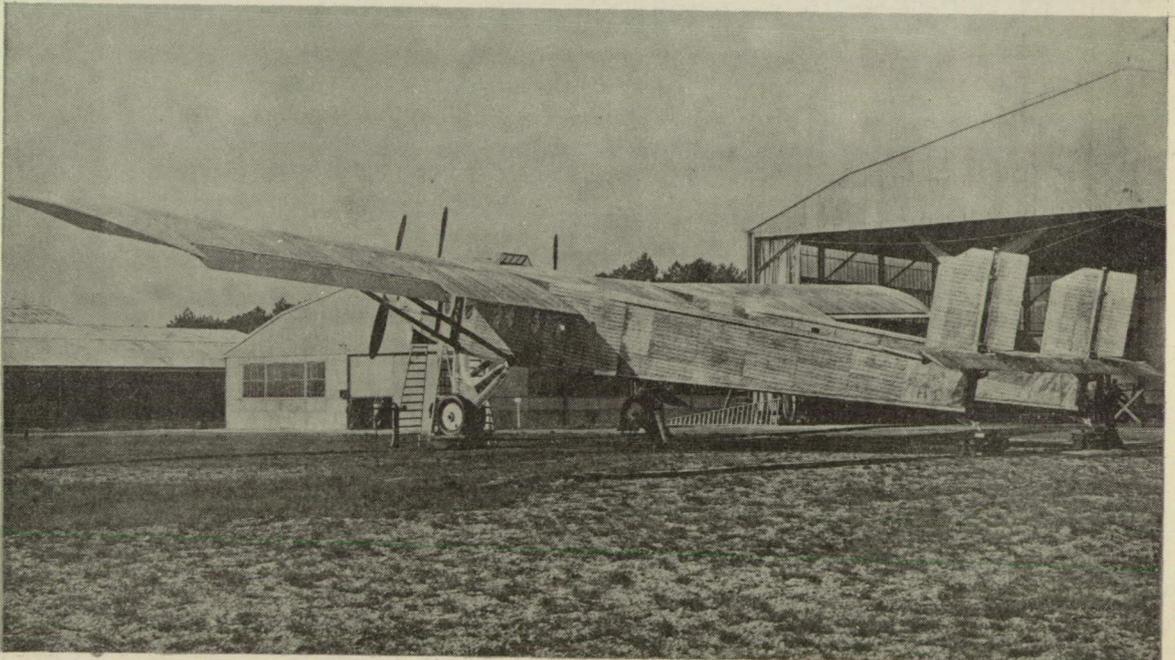
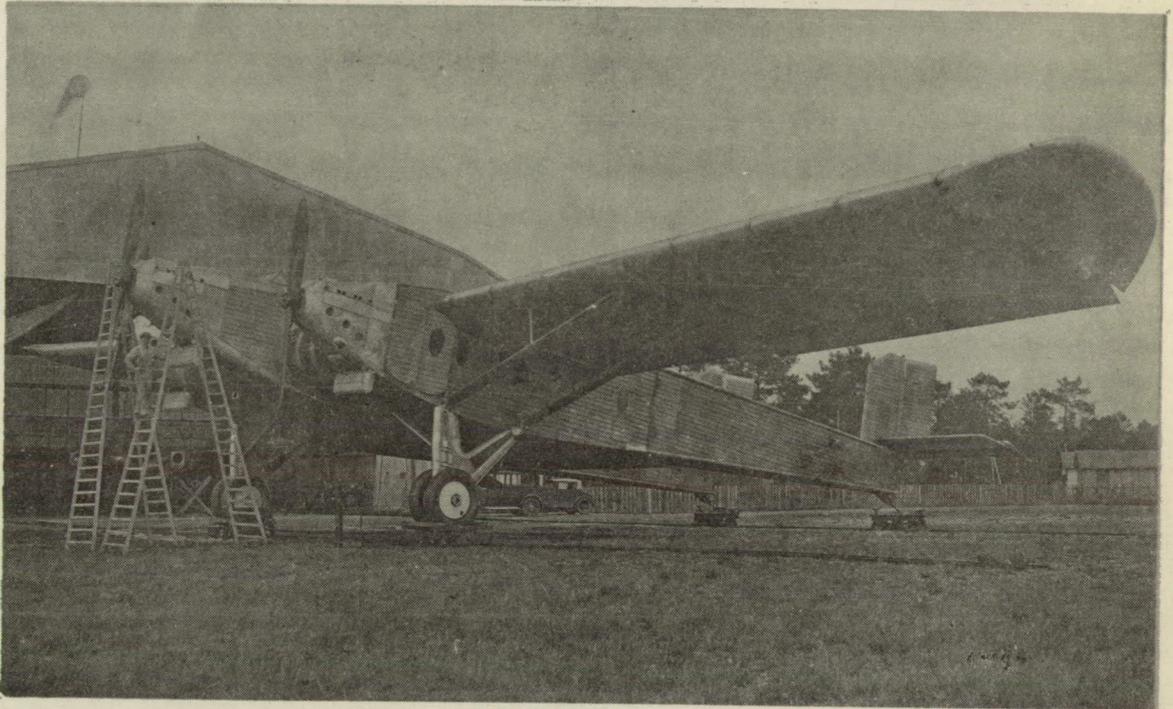
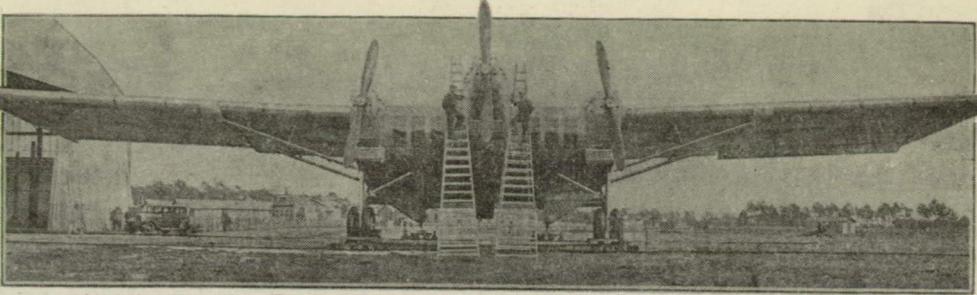


Fig.1 General arrangement drawings of the D.B.70 commercial airplane.



Figs.2,3,4 Views of the Dyle and Bacalan D.B.70 commercial and transport airplane.