



LÉON-ARSÈNE BRISSARD

French aviation historian JEAN-CHRISTOPHE CARBONEL revisits his *TAH* series on those magnificent Frenchmen who risked their reputations, fortunes — and often lives — to further the cause of early aviation across the Channel with a look at the curious ducted-fan-driven flying-machine designed before the First World War by the mysterious Monsieur Brissard

HE FLYING-MACHINE designed by Léon-Arsène Brissard is a true mystery. According to the late Leonard E. Opdycke in his book *French Aeroplanes Before The Great War* (Schiffer, 1999), it was built at "Givat in the north of France" with the intended aim of "reaching the North Pole". However, the machine was "still uncompleted by the first day of 1914". That is Opdycke's basic outline of the story — but it is in fact much more complex than that.

The machine itself is probably the best-known part of the story, thanks to three period postcards and a patent published in French and English. The most notable feature of the machine is the pair of ducts either side of the main fuselage, in which propellers were to be fitted. Their function was described thus in the patent:

"The air sucked by [the propellers'] rotation is driven backwards in the form of two columns, which contribute to the stability of the apparatus [i.e. aircraft]. Furthermore, the lower surfaces of these cylinders may be considered as supporting surfaces. The propellers turn in contrary directions, which increases the lateral stability, and as they are arranged in the cylinders, which guide the currents of air, they allow the attainment of considerable speeds. These



propellers are preferably constructed of metal." Thus the cylinder ducts were expected to increase lift, stability and speed, presaging the development of the ducted fan/channel-wing concept in the 1950s and 1960s [see Willard Custer & the Channel Wing *in* TAH16 – Ed.]. This type of propulsive arrangement was also widely publicised during the 1930s by Italian engineer Luigi Stipa, but it is unknown if Stipa

had any knowledge of Brissard's work. Two of the postcards depict the machine being assembled in a workshop at 188 Rue de la Roquette in Paris (making the machine one of the few aircraft constructed within the city walls of the capital). The author visited the site and noted that the workshop where the aircraft was built still exists, being recognisable by means of the large side windows in the left wall of the workshop (as seen on the postcards). However, the ceiling windows have disappeared and have been replaced by additional levels.

These two postcards show the two ducts, the port-side example of which has the rear section complete and the skeletal structure of the forward section attached, while the starboard duct has only the rear section completed, with no forward structure attached. The propellers are not yet installed but the inline (probably eightcylinder) engine is, with its driveshaft pointing to the rear. The whole of the nose section is made of metal tubing, while the rear section of the fuselage and the structure of the ducts (except the structural rings, described as made of metal in the patent) are wood. According to the patent, OPPOSITE PAGE & ABOVE Two of the period postcards depicting the prospective flying-machine designed by Léon-Arsène Brissard. The postcard on the opposite page, dated May 1, 1914, shows his design under construction at 188 Rue de la Roquette, near Père-Lachaise cemetery in Paris. The postcard above shows a rather fanciful version of the machine in an artist's impression, with cranked or upturned winglets and a twin-finned tail.

the undercarriage comprises diabolo-style (i.e like cotton-reel) wheels, "the axles of which are connected elastically to each runner by means of a flexible plate which is fixed to the runners; by this means the wheels can 'give' at the moment of alighting, and the apparatus [aircraft] slides on the runner".

The third postcard depicts an artist's impression of the definitive appearance of the complete aircraft. The latter has a surprisingly modern look, with a fully enclosed fuselage, twin fins, winglets (or possibly horizontally cranked outer wing sections) and a notable lack of flying wires, the latter almost certainly artistic licence, as the two photographic postcards clearly show many wires. The patent also notes that "the wings are held rigid by shrouds connecting them to a support fixed to the upper part of the apparatus, and to stays of the landing device at the lower part".

DESIGN DISCREPANCIES

All three postcards were issued by the same publisher, E. Thomas, which suggests that they were printed at the same time, possibly to accompany fundraising activities for the