



**THE PARIS AERO SHOW 1924**

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**AERO ENGINES AT THE PARIS AERO SHOW**

In the very limited space at our disposal it will not be possible to give anything like a detailed account of the aero engines at Paris, nor even a complete list of the engines shown. The following photographs illustrate some of the more interesting engines, particulars of which will be given in the following notes. The British aero engines exhibited have already been dealt with, and consequently no further description appears to be called for here. One exception is the Bristol "Jupiter," on which a very important innovation was to be seen. This consisted in a variable timing gear, operated by the pilot, which enables the timing to be adjusted according to altitude. The gear is very simple and neat, and all that appears on the outside of the engine are a few cranks and levers. That the fitting of this variable timing

gear has been well worth while there can be no doubt, as during tests at Filton a very greatly improved climb and generally better performance have been attained with the "Jupiter" provided with the gear. It is not, we believe, claimed by the Bristol Aeroplane Company that the timing gear provides a substitute for the supercharger, but while that is being developed and improved, the variable timing gear gives, by extremely simple means, some of the advantages of the supercharged aero engines.

**THE ANZANI ENGINES**

A very complete series of radial air-cooled engines was shown by Anzani, ranging from the three-cylinder "Y"-type of 25 h.p. to a 10-cylinder model of 250 h.p. The engines were, however, all of well-known type, and do not appear to call for any special comment here.

**A 1,000 H.P. BREGUET**

On the Breguet stand was to be seen an imposing aero engine of 1,000 h.p. From looking at it one did not at once associate it with aircraft, as the size was more reminiscent of a marine type Diesel engine, and it is difficult to see how an aeroplane designer could produce a "nose" that would house the Breguet within a reasonable compass. On closer inspection the engine was found to be a development of the Breguet-Bugatti which has been exhibited at several Paris shows, and to consist of two of these units joined together on a common and enlarged crankcase, one engine being on top and the other below the crankcase. The Breguet-Bugatti, it may be remembered, consists of two eight-cylinder-in-line engines placed side by side, and in the 1,000 h.p. engine another such unit has been added below the crankcase. A large propeller shaft runs through the centre of the crankcase, and is driven by reduction gearing from the four engines comprising the complete unit. Each of the four eight-cylinder engines is provided with an automatic clutch, so that should one engine stop it is automatically declutched, the remaining three carrying on. The 1,000 h.p. engine has 32 cylinders, with a bore and stroke of 108 and 160 mm. respectively. The compression ratio is 5.5 to 1. There are three valves per cylinder, two inlets and one exhaust. The engine is stated to develop its rated power of 1,000 h.p. at 2,200 r.p.m., and the weight of the engine complete is 1,090 kgs. (2,400 lbs.). The dimensions of the 1,000 h.p. Breguet are as follows: Length over-all, 2.332 m. (6 ft. 8 ins.); width, 1.104 m. (3 ft. 7 1/2 ins.); height, 1.02 m. (3 ft. 4 ins.).

**THE FARMAN ENGINES**

Two engines were exhibited by Henry and Maurice Farman, both of the "W" or "broad arrow" type. It is now several years since the Farman brothers first commenced aero engine work, and during the interval they have been quietly improving their engines until now the type 12 WE at least, rated at 500 h.p., can claim to have "arrived," having to its credit the world's duration record without landing (37 hrs. 59 mins. 10 secs.). The other engine shown, the type 18 WD, is rated at 600 h.p., and as the type title indicates has 18 cylinders placed in "W" formation. It differs from the 12 WE, however (apart from the number of cylinders),



**THE BIGGEST AERO ENGINE AT THE SHOW :** This is the 1,000 h.p. Breguet aero engine, which consists of two Breguet-Bugattis placed on opposite sides of a common crankcase. The engine would be somewhat difficult to instal in an aeroplane of ordinary size.