

# THE DEVELOPMENT AND USE OF THE SALMSON CANTON-UNNÉ AERO ENGINE 1908 – 1918

## Part 2

by Peter J. Cowlan

RETURNING TO THE SUBJECT of engine designations, the same sales catalogue mentioned previously features a list of all the engine types being produced under Salmson patents by the Gloucestershire concern. They are as follows: M7, M9, 2M7, B9, D9 and, of course, the 2D9. Also listed are the Type K axial engine, and the Type I (Industrial), although it is believed unlikely that any of these were produced in Great Britain. Leaving aside the earlier Type B axial engine, there is the likelihood of confusion arising with regard to the purpose built horizontal Type B, and the B9.

Angle in *Aerosphere* refers to the 140-hp B9, as ... *similar to the Type B ...* and yet does not actually refer to it as being either horizontally or conventionally mounted. *Aerosphere* does however contain figures for the Type B – bore 110mm, and stroke 150mm. The Dudbridge catalogue does contain a photographic illustration of the horizontal Type B but does *not* list any figures for it. On another page, however, it does feature the above list of engines, the figures for the B9 being; bore 120mm, and stroke 150mm, with a power output of 140-150-bhp. An engine designated B9, power output 150-hp, does actually feature in an advertisement in the French periodical *L'Aerophile*, in August of 1914. Also, previously featured in *L'Aerophile*, in April 1914, was another Salmson advertisement, this time listing an engine of 110-125-hp, with the designation A9. The belief is, therefore, that both the A9, and B9, were indeed forerunners of the M9, with both B9 and the shorter stroke M9 actually being marketed together for a period of time in 1914. Curiously, Brugiere fails to make any reference at all to engines designated A9 and B9 in his book.

All these radial types were to encompass features that would become common to all subsequent Salmson Canton-Unné engines; these included the aforementioned valve springs, as well as the distinctive copper water jackets.

These water jackets underwent three separate and distinctive design alterations during the years 1910-1913, changes that were common to both seven and nine-cylinder units. 1913 also saw one other fundamental change to the cylinder area of these engines. On the early designs, the spark plugs had been located perpendicularly, between the inlet and exhaust valves. On the next type, however, they were positioned to the side of the cylinder, at around 110 degrees from the vertical. Unlike the earlier units, the design of water jacket on this type of engine, identified hereafter as M7 and M9, featured a pronounced bulge which encircled the cylinder head area, the spark plugs being located in the lower part of this prominence. Whilst bearing in mind all of the above, the author has in the course of his research, discovered a document which seems to add yet more confusion to any potential engine list.

It is a four-page brochure, unfortunately undated, for a nine cylinder horizontally mounted engine. The cover illustration shows an engine identical in most respects to a vertically mounted unit of circa 1911/12 but fitted with a 90-degree drive; its designation – Type V! As far as the author can comprehend, the only possible reason for this designation is

that referred to earlier in this story – ‘V’ signifying ‘vertical’, this engine being in all respects identical to a ‘normally’ mounted unit, *apart* from the angled reduction drive. However, one intriguing detail regarding the unit illustrated is that it seems to include provision for the water cooling of the exhaust valves. This is something, as far as the author is aware, that was not featured on any other type of Salmson Canton-Unné engine.<sup>1</sup>

### OTHER CLIENTS

As mentioned earlier, Louis Breguet was, if not the first, certainly at the very forefront of aircraft manufacturers who would utilize the products of Emile Salmson and his partners. Some other British manufacturers are now detailed.

One of the first examples of a Salmson Canton-Unné engine fitted to a machine built by a British manufacturer was that of the Bristol Burney Hydroplane; the second version, X2, being powered by an 80-hp horizontal unit. The next incarnation, X3, was initially intended to have a pair of 70-hp Renault engines but the Admiralty stepped in and offered to lend a 200-hp 2M7, this probably being a unit purchased direct from the Salmson factory.

Apart from Bristol, a number of other British manufacturers also saw Salmson engines as the ideal fitment for their aircraft, the Sopwith Aviation Co Ltd being one such concern. Their Bat Boat No.2 and Type 157 were both powered by the 2M7. Another Sopwith design to be completed, and again equipped with a 2M7, was, up until the 1990s the subject of some uncertainty as to its correct designation. It is now recognised that this was the Sopwith Special Seaplane, which carried the serial 170. The positioning of the engine on this machine was unusual, especially for an engine mounted in the tractor position. The propeller was driven via a long extension shaft, this being supported by a bearing mounted within a frame mounted at the fore-front of the fuselage structure. This shaft was necessary on account of the engine being sited immediately in front of the wing line; this positioning allowing a degree of streamlining to be applied to the engine cowling.

Just prior the outbreak of WWI, The Blackburn Aeroplane & Motor Company produced its Type L seaplane. Just one of these was made, being impressed by the Admiralty immediately upon the commencement of hostilities. Powered by a nine-cylinder 130-hp unit, this machine did not survive long in service, being wrecked after being flown into a cliff.

Samuel J. White & Co Ltd's first venture into the aircraft business was with a large seaplane, flown for the first time in 1913, fitted with a 160-hp Gnome. By the time of the Olympia show, in March the following year, the updated version was equipped with the more powerful Salmson 2M7. As with any new design, especially perhaps with one from a company whose business up to that time had been shipbuilding, teething problems were encountered. On one machine, No.177, a rudder bar failure caused it to crash in to sea, fortunately without loss of life. The subsequent attempt to tow it back to shore was unsuccessful and it sank. The