



## Aviation Science & Development at Farnborough History and Learning Briefings



### MAJOR FRANK W GOODDEN

#### Distinguished Test Pilot

Major Frank W Goodden was a test pilot who made a significant contribution to aircraft design at Farnborough.

He was a naturally skilled pilot who, like other early pioneers, tragically lost his life too early in the service of the Royal Aircraft Factory.

Frank Goodden started his aviation career in balloons and airships and had taken part in the Hendon flying displays.

In the spring of 1914, Goodden joined the Farnborough Team of test pilots, having taken his *brevet* (a warrant authorising a commissioned officer to hold a higher rank temporarily) in only the previous summer - a testament to his natural skills and the rate of expansion of aviation at this time.

This briefing looks at the achievements of his short, but distinguished career at Farnborough.

#### The Problem of Spin

Goodden flew a number of factory aircraft during their development; and the first flight of the FE8 was made by him on 15th October 1915. Although a good aircraft, it was delayed in production and did not come into service until the middle of 1916. By that time it was virtually out of date, such was the pace of technology in those mid-war years.

One of the continuing problems of these early aircraft - not well understood at the time - was the phenomenon of the 'spin'. In this 'spin' state the aircraft spirals down in the fully stalled condition and, although a number of pilots had managed to recover from a spin, they were not clear how it had been accomplished. Most pilots were apprehensive of spinning and very few would enter a spin deliberately - but a few types of aircraft had a reputation of being 'prone to spinning.' After a few incidents, the FE8 started to become one of these. To forestall these accusations, it fell to the Factory to show otherwise and Goodden was the test pilot chosen to carry out the demonstrations.

On the 23rd August, Frank Goodden made a number of deliberate spins in an FE8, recovering successfully on all occasions. Starting at 3500 ft he induced a spin until the aeroplane was turning about a point mid-way between the right-hand wing tip and the body. He set up three spinning tests to the right and three to the left, recovered from each and set a procedure by which the aeroplane could be persuaded to get out of the spin. The details of the trial were made available to interested parties by their publication in R&M 168, and although the fear of spinning did not immediately disappear, at least service pilots accepted the FE8 as a safe aircraft which, like other

FAST is developing a series of briefing on key aspects of Farnborough's Aviation Heritage.

These briefing notes are not intended to be a complete and comprehensive history of the subject of the title, but are intended to stimulate the imagination and encourage further reading. To that end, a 'further reading' list is included at the end of each briefing. By reading a number of different histories, written by varying authors over a range of timescales, a balance of the differences can be achieved - and the reader's own opinions formed. But we hope that these briefings will be an interesting summary.

It is a continuing process and a number of further briefings are planned.

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11. Frank W Goodden (Test Pilot)
12. Samuel Franklin Cody
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## Testing Prototypes

Frank Goodden flew many of the first flights of the Factory prototypes, one of the more interesting being the FE4, a large twin-engined pusher biplane that was intended to meet three rather diverse requirements - a ground attack fighter with a one-pounder gun; a short range bomber with a 1200 lb bomb-load; and a long range bomber. The prototype was ready for AID inspection on the 8th March 1916 and made its first flight, with Frank Goodden at the controls, a few days later. It proved to be underpowered and woefully sluggish, in spite of the second prototype being fitted with 250hp Rolls Royce engines and flown on its first flight, again by Goodden on the 5th June 1916. It proved to be an uncompetitive aircraft and both prototypes were broken up after July 1917.

It was not to be the last time that lack of suitably powerful engines were to be the demise of prototype aircraft.

## The SE5 and an Early Loss

In mid-1915 the Factory unveiled a 'Scout' design that was to have a significant effect on the War for the RFC. Like many Factory designs there were a number of staff inputs and this design was by HP Folland with a number of inputs from Goodden highlighting the pilot's viewpoint. The SE5 used the Hispano-Suiza V-8 200hp engine which had been recognized as a significant advance in engine design. Three prototype SE5s were built, the first - A4561 - being completed by November 1916.

Frank Goodden took it up for its first 10 minute flight at about 10 am on the 22nd November 1916 and was enthusiastic about its capability. The second prototype, A4562, was flown by Goodden on the 4th December, followed by the third prototype on the 12th January 1917. This aircraft, after suitable modification, was to become the SE5a.

On the 28th January, Goodden took-off on a routine test flight in the second prototype. About 10 minutes into the flight the port wing cellule collapsed at around 1000 ft and Goodden was killed in the ensuing crash. He was just 26 years old and, as a Royal Aircraft Factory test pilot since 1914, had made the first flights of at least six new Factory designs.

Goodden was buried in Aldershot Military Cemetery, alongside Cody and Busk, both of whom had also died when testing experimental aircraft.



Above : Frank Goodden in the prototype SE5 in which he lost his life