

‘A topping fighting two-seater’

*The Bristol Fighter may have been the most effective operational aeroplane in World War I, says **David Ogilvy***

Pressure – or the threat – of a major war has created efficient operational aeroplanes within remarkably short time frames. This was especially noticeable in the 1939-1945 upheaval, during which the Spitfire, among others, improved in speed and overall performance at a pace that would be economically impracticable in more peaceful times. The trend, though, was born long before this, and in 1916 a large and powerful two-seater emerged to become what many people have described as the most effective fighting machine of World War I. This was the Bristol F2, which saw daylight at a critical time in world history and, to speed its entry into

service, initially used the wings of an earlier design – the Royal Aircraft Factory BE 2D.

The first prototype, A3303, took to the air on 9 September 1916, powered by a Rolls-Royce 12-cylinder liquid cooled Vee of 190 hp, which later became known as the Falcon 1. Subsequently this engine layout proved right, for the pattern was retained with the Kestrel, Merlin and even the Griffon that powered Shackletons well into the post WW2 era. As the F2A, the Bristol prototype went to Orfordness for armament trials, which included fitting Constantinesco gun-synchronising gear to allow a Vickers gun to fire forwards through the arc of the propeller and a Scarff ring for the

observer's Lewis gun in the rear cockpit.

All production F2As had redesigned wings and on 8 March 1917 – only six months after the prototype's initial flight – the first examples went to No.48 Squadron of the Royal Flying Corps (RFC) in France. Initially the results were disastrous, with unacceptably heavy losses, two being shot down by the renowned Baron Manfred von Richtofen. The troubles, though, were short-lived and instead of relying on the observer to engage the enemy with his Lewis machine gun, the fixed forward-firing Vickers gun was used offensively as in a single-seat fighter, leaving the observer to operate in a defensive role. Once the new crew co-operation procedure was established, the results were excellent.

Many pages have been written about the Fighter's exploits and achievements, but here we are concerned more with the virtues of the



aeroplane itself. Within two months of receiving the new aircraft, 48's Commanding Officer wrote this report:

"Regarding the Bristol, she is a topping fighting two seater, the best here. She is faster than the Hun two seater, but cannot match the latest Albatros Scout for speed. Where she does score tremendously is in her power to dive. In this she is above many English or Allied machines." He continued: "Many Huns who have dived on the tail of one, missed and gone on diving, have been dived after, overtaken and destroyed. They are dived plumb vertically for thousands of feet until the noise is like that of a million sabres cleaving the air. The indicated speed then is 60 to 90 mph the second time round the dial. The indicator reads normally to 130mph then a space, so probably the speed is well over 230mph. She loops well. She stands an enormous amount of punishment in the way of being shot about and several have been hard hit and come home, to be written off charge as beyond repair."

Despite this encouraging assessment, the

original F2A had a short operational life and soon was replaced by the F2B, which had several improvements. These included changes to the wings at the roots and a modification to the fuselage, the latter mainly to allow the pilot a better view. Also, the very sparse cockpit of the earlier version was upgraded with a simple but recognisable instrument panel. Several engines were used, including the 200 hp Sunbeam Arab and Wolseley Viper of similar power, but by far the majority had the very successful Rolls-Royce Falcon III V-12 that developed 275 hp and remained the key power unit throughout the F2B's long and active life. Perhaps its reliability was partly because it attained maximum power output at only 2000 rpm.

The Royal Air Force was formed on 1 April 1918 by the amalgamation of the Royal Flying Corps and the Royal Naval Air Service and, by the war's end seven months later, the new force had 17 operational squadrons of Bristol Fighters; 3,100 had been built. Unlike its contemporaries, though, this was not the end of the line, as production continued until

December 1926, when J8458 became the 4469th and final example to emerge. In the post-war years F2Bs served mainly on army co-operation work, both at home and overseas. Final withdrawal came as late as 1932, when the last operational machines left Iraq and India and the mark IV, the dual-control trainers, were retired from Oxford and Cambridge University Air Squadrons.

During the early post-war years several F2Bs were released onto the market and by 1922 there were 22 on the British register. Many more were sold overseas for both civil and military purposes, with the Aircraft Disposal Co Ltd at Croydon (a subsidiary of Handley Page) carrying out the overhauls and conversions. Others were bought and stored, including one that made this article possible: D8096, which became G-AEPH. It was owned by my near namesake C P B Ogilvie, who kept it in his hide-away Primrose Garage at Watford with the intention of restoring it to flying condition. He failed to do so, and as late as 1946, with youthful cheek, I persuaded him to let me see it. It was almost complete but



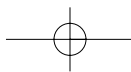
**Above: D8096 in its First World War colours, which is still wears today
Below: two views of the original Bristol F2A**



via Philip Jarrett



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dismantled and in a generally sad state. I had no thought that eventually it would take to the air again and that, 21 years later, I would be privileged to fly it.

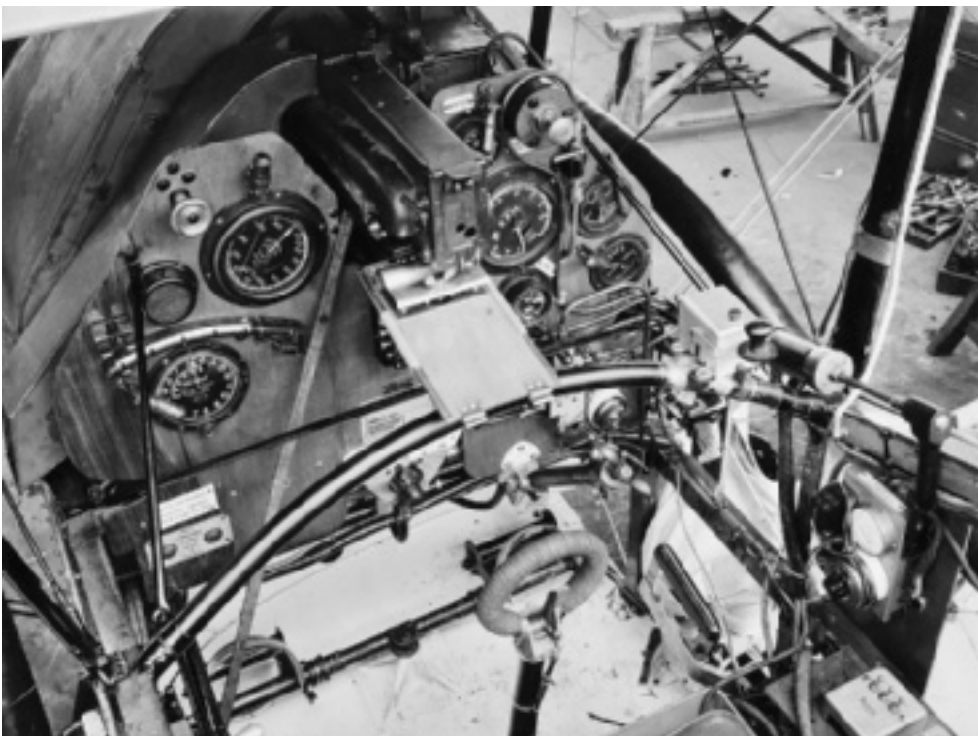
Ogilvie had an understandably stubborn desire to retain his prize piece, but he was eventually persuaded to part with it by the late Leonard ('Jacko') Jackson, then manager of the Shuttleworth Collection. Subsequently the airframe returned to its original home, the Bristol Aeroplane Company, for restoration, while its Falcon III engine received comparable treatment at its Rolls-Royce birthplace. The two were re-united, and the born-again Bristol Fighter flew from Filton on February 14, 1951.

The F2B was given an inter-war RAF scheme of overall silver with olive green cowlings and trimmings, carrying its original Service serial, D8096. It remained at Bristol until June 1952, when it was transferred to its new home at Old Warden.

About 20 years later, at the time of a major overhaul, D8096 reappeared in its more sombre wartime colour scheme which it wears today.

I believe very firmly that, whenever practicable, historic aeroplanes should be flown. It is important, though, to prevent unnecessary wear, tear or strain, that their use should be under tight control and restricted to essential air tests, a safe minimum of pilot familiarisation flights and short careful demonstrations. As evidence that this practice has been followed on D8096, the logbooks reveal that between its installation on December 20 1950 and its removal for major work in September 1982, the Falcon had run for 168 hr, or about 5 hr each year. In later life even this modest average was reduced, for between March 1993 and December 2004 the total was 36 hr, or little more than 3 hr per annum. This reveals sound housekeeping, an essential ingredient in the responsible operation of any ageing aeroplane.

Despite the Bristol Fighter's proven strength

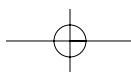


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in active service, in June 1924 the Air Ministry, which at that time controlled matters relating to both Service and Civil aviation, issued a surprising directive: 'no Certificate of Airworthiness for a Bristol Fighter will be issued or renewed until the I-section front spars on the top mainplanes have been strengthened by gluing and screwing half-inch three-ply to their undersides.' I have not seen any evidence to support a need for this, nor can I find any stories of battered wingless Bristol fuselages strewn over the fields of France in 1917-18.

Now we move a long way forward to Denham on a warm evening in May 1967,

where D8096 was to spend the night after participating in a display. As Shuttleworth's relatively new General Manager I was slowly gaining experience on some of the Collection's very special aeroplanes, but, very rightly, opportunities were scarce. However, Dicky Martin, then the organisation's senior pilot, invited me to taxi the machine across the aerodrome to the hangars, adding 'and, to keep the engine cool, do a circuit or two on the way.' I should add that I had taken considerable prior interest in D8096 and had digested some facts and figures prior to the succinct pre-flight briefing that Dicky gave me. After this short familiarisation flight, during





which I endeavoured to assess what it must have been like to operate the machine in anger in 1917-18, I had to wait 18 months before another opportunity arose; it is on this second and subsequent flights that I base my thoughts and findings. Hours were very tightly constrained and my third experience on the type was a demonstration at a public display. Shuttleworth pilots need to get a grip quickly!

Two features sunk in. The very large two-bladed propeller left relatively little ground clearance, so it would be important not to lift the tail high on take-off; and below the instrument panel was a complex of pipes and taps that controlled the pressurisation of the

fuel system. The former was easily manageable, but the latter took time to assimilate. I wondered how, in stress of battle, a pilot finding a drop in pressure would be able to think sufficiently clearly to play the taps in the right order.

Following thorough external and internal checks, starting the engine, after pumping up the fuel pressure, calls for two or three prop-swingers operating in harmony with linked arms, as the Falcon's compressions are too

strong for one person to overcome. The pilot's procedure involves energetic winding of the handle for the starter magneto, but this needs careful co-ordination with the workers outside. Alternatively, the engine may be fired into life by means of the Hucks starter, a mechanical device mounted on a Ford chassis. Once running, the Falcon sounds, feels and is purposeful. The only difficulty is the position of the magneto switches, which are not only outside the cockpit but out of view!

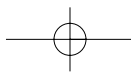
Taxying calls for wing-walkers, as the F2B's large slab-sided fuselage gives it a strong determination to turn into wind, with no brakes to prevent it from doing so. Take-off is impressive, with a rapid acceleration, and less tendency to swing than one might expect. It is airborne after a very short run, especially if care is taken to keep the tail fairly low to prevent a propeller scrape. Although rate of climb is one good measure of an aeroplane's

Top left: The cockpit layout is rather haphazard but contains all the pilot requires
Lower left: F2Bs under construction, with radiators fitted before engines
Top: Lewis machine gun in rear cockpit gave a wide range of fire
Below: D8096 in the inter-war colour scheme which it wore for several years



via Philip Jarrett





value as a (useful fighting) machine, in the interests of the Falcon's age, I avoided a full-throttle ascent and turned to published records for the answer, but the results were frustrating. I found figures varying from 875 to 1,300 ft/min, but, as no weights were quoted to check whether these were comparable, I was barely any the wiser. From "feel" I am sure that the higher figure is nearer the truth.

In normal flight the rudder is relatively light and the elevators are even lighter, but the ailerons are unexpectedly heavy, needing two hands for manoeuvring at higher speeds. Perhaps the most noticeable feature of the Brisfit's handling, though, is its behaviour in turns, which must come as a surprise to any pilot with a relatively modern mind.

On more recent aeroplanes the ailerons operate differentially, which means that a down-going control (on the outside of the turn) moves less than its opposite partner travelling upwards, but there is no such luxury on the Brisfit. As a result, an attempt to turn on ailerons alone, or with insufficient use of rudder, causes the machine to bank correctly but to change heading in the wrong direction. This is because the full-travel downgoing aileron generates drag where it is least needed; so to keep the aircraft in balance and achieve the desired result calls for generous use of the feet, preferably applying into-turn rudder slightly before moving the control column in the same direction. This must have added to the problems of accurate gunsighting, but the successes achieved prove that the pilots of the day knew what they were doing.

From several styles of approach to the stall, a gentle buffet preceded an equally mild break-away, with only a modest tendency to drop a wing. As a high-drag aeroplane the Brisfit is not very fast. The published maximum speed is 125 mph at sea level, only 5 mph below the permissible limit on the Shuttleworth machine, but this is no handicap in the relatively gentle demonstrations that are the order of the day. A large trim lever on the right side of the cockpit serves well to relieve fore-and-aft load between different airspeeds. It is important throughout a flight to keep constant checks not only on the oil pressure, but also on the fuel pressure and coolant temperature, the last of which is controllable from the cockpit by use of radiator shutters.

The landing is critical, and it is important to do this as nearly as possible into wind. The final over-the-fence approach speed is a very modest 55 mph and, with a touchdown at about 40 mph and a helpful tailskid, the subsequent ground run is very short, though still long enough to display a tendency to swing into a groundloop. The Brisfit gives its pilot a



Philip Jarrett



Top: Hucks starter was an alternative to the armstrong method
Above: this angle shows how the fuselage lies midway between the upper and lower wings
Below: B2bs of 141 Sqn at Biggin Hill, late 1918. Note four-bladed props

pre-flight visual warning of this, for there are hoops under each lower wingtip to prevent it from scraping the ground on the way round.

The Bristol Fighter leaves a favourably positive mark on the memory. In a critique of its pure handling qualities, it lacks well coordinated flying controls, but this is compensated by a number of matching virtues. By measurements of its time it was (and fortunately still is) a big and powerful "adult" aeroplane that called for and received a high level of respect.

Its record as the most effective fighting aeroplane of the First World War and its unique continuation in RAF squadron service for 14 years afterwards provide better evidence than words can offer. This is even more

surprising when we consider that when, in 1915, Frank Barnwell started designing the Bristol R2A, it was not intended to be a fighter, but an artillery spotter.

D8096 was built late in 1918 and was not flown operationally during WW1, but in 1923 it was flying in Turkey with 208 squadron. Following its retirement, subsequent storage and eventual restoration, for 56 years it was the world's only airworthy Bristol Fighter. However, more recently two others have undergone long-term rebuilds and both emerged in mid-2006 to enable a three-ship formation to appear once each at Duxford and Old Warden. I was very fortunate to be commenting at the latter event, so I had the opportunity to absorb the unique sight and sound that most probably will never occur again; the two newcomers, D7889 (G-AANM) and D8084 (G-ACAA) have departed to owners in the USA and New Zealand respectively. So now the old stalwart D8096 has the honour of being Europe's sole flying example of one of the most famous and successful fighting aeroplanes of its time. ■



via Philip Jarrett

