

# "An Outstanding Aircraft"

On 23 May 1944, the Martin-Baker MB5 took to the air for the first time. A low-wing monoplane, the MB5 was an aircraft described as having sleek and pleasing lines. "In my opinion this is an outstanding aircraft," commented the famous test pilot Captain Eric "Winkle" Brown. Despite such praise, the MB5 never went into production. Geoff Simpson examines the development of this remarkable aircraft and considers what might have been.

In 1949 an Australian Second World War Army veteran called "Jack" Iveson burst onto the first class cricket scene. His war service had been in anti-aircraft units in the Middle East and Papua New Guinea and he had risen to the rank of Sergeant, but now it was his peace time exploits that would grip Australia.

Iveson was, by the time that sporting fame touched him, in his mid thirties, but he managed to baffle batsmen with his "bent finger" grip. He played five Ashes test matches against England in 1950 and 1951, taking six wickets for twenty-seven runs at Sydney. Then the demands of his family business took priority and he largely gave up first class cricket, leaving many to ponder if potentially one of the greatest bowlers of all time had shone momentarily and then vanished from the test arena.

Almost contemporary with Iveson was an aviation enigma which continues to inspire the same kind of debate amongst aircraft aficionados, the Martin-Baker MB5.

For most people, think Martin-Baker, think ejector seats. The aircraft that appeared on the company's drawing boards and sometimes took to the air have largely been forgotten by all but devoted enthusiasts.

The two men who gave their names to the company were James, later Sir James, Martin and his friend, Captain Valentine "Bake" Baker, MC, AFC who had served in the RNAS, RFC and RAF and had become a flying instructor to the rich and famous.

James, or Jimmy, Martin was born in Northern Ireland in 1893. He quickly

**MAIN PICTURE:** The Martin-Baker MB5 prototype R2496 in flight - a painting by the artist Daniel Bechennec. For more information on the artist or his other works, please visit: [www.danielbechennec.com](http://www.danielbechennec.com)



showed a desire to follow in the footsteps of the inventive father he had lost at the age of two. Before the young Martin reached university he had designed a three-wheeled car. He went on to manufacture vehicles and become a racing driver.

In 1929 the Martin Aircraft Company was established at Higher Denham, Buckinghamshire, a site at which its modern successor remains in the 21st century. The company's early designs did not find favour – they were too unorthodox and the general view was that they broke too many established rules of aircraft design.

In 1934 Valentine Baker joined the organisation and the Martin-Baker Aircraft Company was established. First came the MB1 design – a low wing concept and a pioneer of monoplane design in Britain. A lack of money caused the premature ending of the project.

With the Second World War looming, the MB2 was firmly a combat aircraft and it was designed to the company's own specification. It was a fighter intended to carry eight Browning .303 machine-guns. Valentine Baker made the first flight in August 1938 and some evaluation by the RAF took place, but the type was not ordered. It might have flown in the Battle of Britain, but, instead, the prototype came

back from the Air Ministry and apparently spent the summer and autumn of 1940 languishing at Higher Denham.

Martin and Baker turned their minds to an improved fighter, the MB3, but this time the project was to end not only in disappointment but tragedy. This time, also, there was an Air Ministry specification to work to in the shape of F.18/39.

According to Martin-Baker, "the lessons learned in the design and construction of the two previous low-wing monoplanes were embodied in a new design, the MB3, which was powered by a 2,000hp Napier Sabre 24 cylinder H-type engine, driving a de Havilland variable pitch three-blade propeller while retaining the essential characteristics of the earlier designs, MB3 included many new features. The fuselage primary structure was still the round steel tube arrangement, but metal panels had taken the place of wood and fabric of earlier models."<sup>1</sup>

The wing flaps and undercarriage were pneumatically operated, thus hydraulics

were eliminated, a situation that Martin believed minimised operational hazards and maintenance problems.

Armament consisted of six 20mm cannon, each with 200 rounds of ammunition available. Excellent accessibility aided a quick turn around on the ground.

So perhaps all was ready for Martin-Baker to achieve a long-awaited breakthrough. The tragedy, leading to disappointment, occurred on 12 September 1942. For the previous two weeks the prototype had been at RAF Wing, near the Martin-Baker factory, and Valentine Baker had flown a series of tests which showed "Experimental Aeroplane No.120", as it was being described, to be easy to fly and highly manoeuvrable. RAF top brass had turned out to watch the new contender.

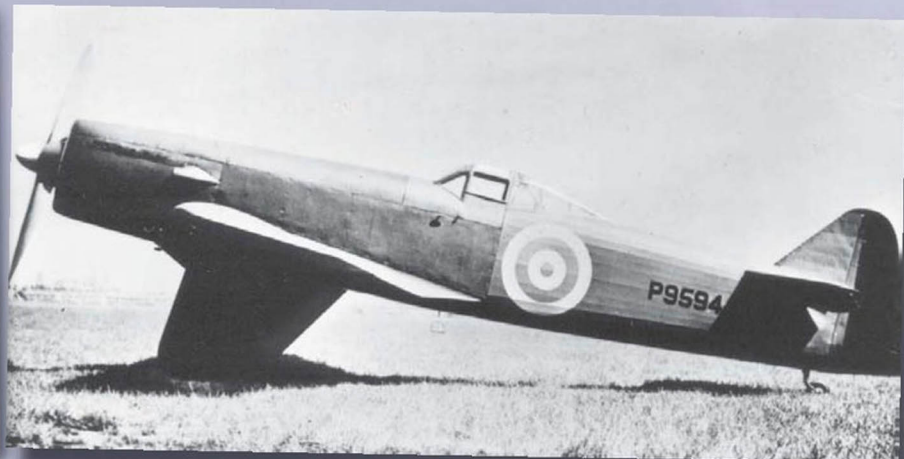
Then, on 12 September, the engine failed shortly after take-off. Captain Baker apparently tried to save the aircraft in a

**BELOW:** The MB5's one-piece sliding "teardrop" canopy was "beautifully fitted". Its "perfectly balanced" mechanism was operated by the pilot using a small wheel control. (Key Collection)

# MARTIN-BAKER

# MB5





**LEFT and ABOVE:** Two views of the MB5 in profile – images that clearly show the type's sleek lines. Note the design's low drag air intake beneath the fuselage. The cockpit was cleanly floored, an unusual feature then in British military aircraft, which gave a pleasing impression of spaciousness combined with businesslike utility. The MB5's instrument panel layout was described as "splendid"; there were no protrusions to snag clothing or equipment. (Key Collection)

**ABOVE RIGHT:** A predecessor of the MB5 – Martin-Baker's MB2, the company's first military aircraft design. The MB2 was first flown by Captain Valentine Baker at Harwell on 3 August 1938. A report on the design that appeared in *The Aeroplane* stated that "in spite of its fixed undercarriage, the MB2 had a performance as good as that of contemporary fighters and a capacity for quick and cheap production by the simplicity of its structure and easy assembly". (ww2images)

**BELOW RIGHT:** Another famous pilot to fly the MB5 was Squadron Leader Janusz Zurakowski. A member of the staff of the Aeroplane and Armament Experimental Establishment at Boscombe Down between 1945 and 1947, Zurakowski flew the MB5 at Farnborough Air Show in June 1946. Is it recorded that he considered the Martin-Baker design to be "a superlative piston-engine fighter, better in many ways than the Spitfire". (Key Collection)

forced landing, but a tree stump intervened and the aircraft was quickly enveloped in flames. A number of people tried to save the pilot, but were unsuccessful.

James Martin was shattered by the loss of his friend and business partner, a man he considered to be a skilful pilot, brave and resolute. It has often been suggested that the determination to turn his engineering talent to the improvement of flight safety dated from this moment in the life of James Martin.

To rebuild the MB3 would have taken too much time. Aircraft design also leaps ahead in wartime conditions; indeed delays meant that the design of the MB3 was, before the crash, already teetering on the brink of obsolescence in the view of the Air Ministry. So work was started on an MB4 using the Rolls-Royce Griffon engine. This never left the drawing board, though the next – and replacement – design, the MB5, certainly did.

For the MB5, the Rolls-Royce Griffon liquid-cooled V-12 engine, producing 2,340 hp, was again envisaged and used in practice, after the Bristol Centaurus had been considered and rejected. The design met the same Air Ministry specification as the ill-fated MB3. One prototype, R2496, was built and made its maiden flight at RAF Harwell on 23 May 1944.

The pilot on that occasion, Bryan Greensted (Chief Test Pilot for airscrew manufacturer Rotol), found it directionally unstable, and it was not flown again until several months of lamentably slow work on the rear fuselage and tail services had remedied this.<sup>2</sup>

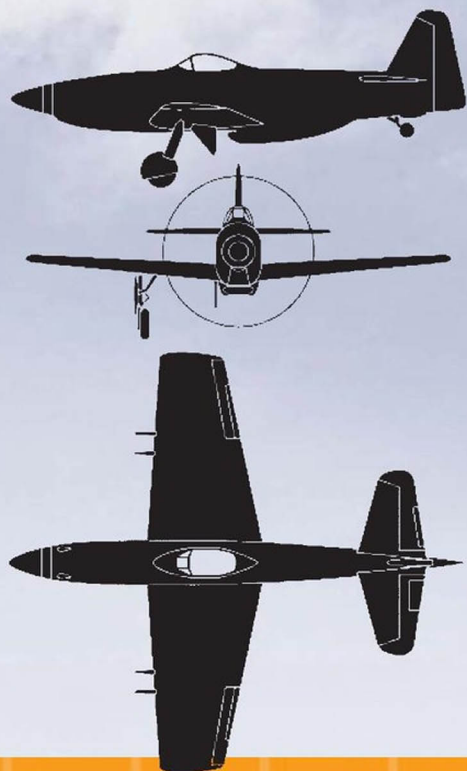
This was not the only occasion that Bryan Greensted flew the MB5. His son, Stephen Greensted,

recalls that the Rolls-Royce Griffon 83 engine in the MB5 prototype "blew up" in front of Churchill and the Chiefs of Air Staff whilst his father was demonstrating it at Farnborough:

"The engine failure nearly killed him. The cockpit filled with oily black smoke, so my father released the side window lock whilst he was banking the now silent aeroplane. The window could be wound up or down by turning a small crank, which now spun vigorously and flailed his left arm, putting it out of action. This meant that he had to put the control column between his knees whilst lowering the flaps and undercarriage in an aircraft with a high wing loading, which involved fast landings. Further, he was, unfortunately, left-handed, so this added to the drama. When he did eventually roll to a stop at Farnborough, he discovered that Churchill was already on his way back to London."

In time, further reports were enthusiastic and the MB5 appeared to be at the forefront of piston-engine fighter performance, at a time, of course, when jet propulsion was making its appearance. That first flight of the MB5 occurred only a few weeks before 616 (South Yorkshire) Squadron exchanged its Spitfires for Meteors and became the first RAF squadron to operate jets.

Nonetheless, there was much to recommend the MB5 to pilots as well.



## MARTIN-BAKER MB5 SPECIFICATIONS

### Dimensions

Length: 37ft 9in  
 Height: 15ft 0in  
 Wingspan: 35ft 0in

### Weights

Weight (Empty): 9,233lb  
 Weight (Loaded): 11,500lb  
 Takeoff Weight (Max): 12,090lb

### Performance

Maximum Speed: 460mph  
 Service Ceiling: 40,000ft  
 Rate of Climb: 3,800ft/min  
 Maximum Range: 1,100 miles



**ABOVE:** The MB5 having just taken off from RAF Chalgrove in Oxfordshire, possibly with R.G. "Dicky" Worcester at the controls. (Key Collection)

**BELOW RIGHT:** The aviation historian Philip Jarrett has noted that the MB5 prototype, by then without its engine, was used for training purposes by the Air Ministry Servicing Development Unit at RAF Wattisham, Suffolk, as late as 1949. The aircraft subsequently served as a ground target, the battered airframe reported to be at RAF Bircham Newton, Norfolk, in 1963, which time it was set alight and destroyed. (Key Collection)

"It was ... in the pilot's cockpit that one of MB5's main attractions lay," ran the words of one assessment. "The cockpit was exceptionally well laid out, with all controls coming easily and readily to hand, within the pilot's reach. Instruments were grouped in an orderly fashion, allowing routine cockpit checks to be done in logical sequence. Fuel control was centred in one lever – a feature dear to the heart of fighter pilots. Accessibility for servicing was provided by mounting the instruments on hinged panels, which opened into the cockpit. A special primary control unit was neatly installed in a manner economical to space yet effective in operation and having the advantage of bringing vital control components within the easy scrutiny of routine inspection. The cockpit was cleanly floored, an unusual feature then in British military aircraft, which gave a pleasing impression of spaciousness combined with business-like utility."<sup>3</sup>

One of the pilots who had the opportunity to try the MB5 was the renowned Captain Eric "Winkle" Brown who wrote, "Although I first saw and admired the MB5 at RAE in October 1945 when it appeared in the static park along with a collection of captured German aircraft, at a post-war exhibition

and flying display, it did not come to Farnborough for testing until the spring of 1948.

"I carried out two handling flights in April of that year on the prototype R2496. By this time the original Rota contra-props had been replaced by DH ones. The fuselage was of the Martin-Baker patented steel tube system of construction, with the covering in the form of quickly detachable metal panels. The power plant installation was particularly clean with the coolant and oil radiators and intercooler grouped together in a laminar-flow duct under the rear fuselage."<sup>4</sup>

Captain Brown went on to describe ease of entry into the cockpit as "unusually good" and the cockpit to be "outstandingly well designed" and the "acme of simplicity".

"In my opinion this is an outstanding aircraft," he wrote in his test report, "particularly when regarded in the light of the fact that it made its maiden flight as early as 23 May 1944. It is certainly open to improvement in regard to lateral handling qualities but in my brief experience of this aircraft I should say any other point for criticism would be hard to find. My lasting impression will always be one of stepping into a strange aeroplane for the first time and yet immediately feeling so completely at home with it that I might have already flown hundreds of hours in it – a compliment I could pay to no other new type of advanced aircraft I have flown to date."<sup>5</sup>

Another test pilot to get behind the controls of the MB5 was R.G. "Dicky" Worcester. "Taxiing is easy ... Initial acceleration is tremendous ... and there is no tendency





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to swing", he wrote. "Lateral stability is good. Even with the contra-prop in fine pitch, the vibration is much less than usual for a fighter. Forward view is so good that the impression of an unusually steep nose-down attitude is formed on the approach for a normal landing. Taken all round, this is a highly manoeuvrable aircraft, the controls respond finely, like those of the Spitfire ... The atmosphere in this aircraft was thoroughly 'likeable' and there was a feeling of security in the knowledge that it has an enormously strong structure."<sup>6</sup>

The staff of the Aeroplane and Armament Experimental Establishment at Boscombe Down reached similar conclusions to these pilots. Their assessment noted that the general layout of the MB5 design was "excellent and infinitely better, from the engineering and maintenance point of view, than any other similar type of aircraft".<sup>7</sup>

Despite such enthusiasm, the MB5 was no more successful in gaining entry into RAF service than its predecessors had been.

For James Martin and the Martin-Baker company, the way ahead lay with ejector seats. There was an MB6 jet design, but the drawing board was where it stayed.

In early 1944 the Air Ministry had suggested that Martin begin work on the idea of ejection seats in earnest, although Martin-Baker had been experimenting in allied fields since very early in the war, including a mechanism to jettison the cockpit canopy of a Spitfire.

After tests with dummies, it was in 1946 that the first live ejection took place from a Gloster Meteor. Orders for ejector seats

came from the United States Navy, with British orders following. After years of tribulation, it must have been a remarkable moment when Denham at last became a live factory buzzing with production work based on Martin's ideas.

One writer summed up the MB5 with these words: "Why this aircraft was not put into production remains one of the aircraft industry's minor mysteries and one which is often the subject of interesting speculation. Some will say that, as a piston-engine aircraft it came too late to be acceptable in the advent of jet fighters. However, had a decision about its future been taken early by the authorities, it could have gone into production soon enough for it to have reached squadrons in sufficient numbers to have been engaged effectively in World War II. Disappointment in failing to put MB5 into production was felt keenly by all at Martin-Baker and shared by many Royal Air Force officers and other officials."<sup>8</sup> ■



**ABOVE LEFT:** The MB5 prototype R2496 pictured with its engine running at Farnborough in 1945. (Key Collection)

**ABOVE RIGHT:** The MB5's one-piece sliding "teardrop" canopy was "beautifully fitted", and its "perfectly balanced" mechanism was operated by the pilot using a small wheel control. (Key Collection)

**RIGHT:** Bryan Greensted, Chief Test Pilot for airscrew manufacturer Rotol, who would amass some eighty hours and forty-minutes on the MB5. When he retired from flying, Bryan had a total of 16,750 hours in his log-book, the equivalent of nearly two years sitting in a cockpit! (Courtesy of Stephen Greensted)

**BELOW LEFT and RIGHT:** Two views of the replica MB5 that has been built by John Marlin in Reno, Nevada using wings from a North American P-51 Mustang. (Both images courtesy of Bart Hunt)

**NOTES:**

1. Quoted on the Martin-Baker website: [www.martin-baker.com](http://www.martin-baker.com)
2. Philip Jarrett, writing in *The Rolls-Royce Magazine*, No.86, 2000.
3. "Mr Martin's Memorable M.B.5", *Air International*, February 1979.
4. Captain Eric Brown, *Wings of the Weird and Wonderful Volume 1* (Airlife, Shrewsbury, 1983), pp.150-1.
5. Eric Brown, *Wings of the Weird and Wonderful* (Hikoki Publications, 2010), p.184.
6. *American Aircraft Modeller*, May 1971. Quoted on [www.airplanesandrocks.com](http://www.airplanesandrocks.com).
7. Tony Buttler, *British Secret Projects: Fighters and Bombers 1935-1950* (Midland, Hinckley, 2004), p.31.
8. "Mr Martin's Memorable M.B.5", *Air International*, February 1979.

