

**LARGE PRINT GUIDE**



# **THE BATTLE OF BRITAIN**

THE  
**BATTLE**  
OF **BRITAIN**

## Image

---

(Rear of panel) An observer on lookout,  
1939–1940.

C994 © Crown Copyright

## THE BATTLE OF BRITAIN

---

Following the defeat of France by Nazi Germany in the first year of the Second World War, Prime Minister Winston Churchill announced ‘I expect that the battle of Britain is about to begin ... The whole fury and might of the enemy must very soon be turned on us. Hitler knows that he will have to break us in this Island or lose the war. If we can stand up to him, all Europe may be free and the life of the world may move forward into broad, sunlit uplands.’

From 10 July to 31 October 1940, the RAF fought the Luftwaffe relentlessly, supported by a wide range of civilian organisations on the ground. When Hitler realised that Germany could not gain air superiority, he abandoned his plans to invade Britain.

In Churchill’s words ‘This was their finest hour’.

## **Supermarine Spitfire Mk I**

---

More than any other aircraft, the Spitfire has become a much-loved symbol of winning against the odds. Designed by RJ Mitchell, its speed, agility and firepower made it one of the RAF's leading fighter aircraft of the Second World War.

At the beginning of the Battle, RAF fighter pilots flew in formations developed in peacetime. Many found these to be placing them at a disadvantage, so they adopted the German fighter tactics of the 'Schwarm'.

This is the world's oldest surviving Spitfire and first flew in April 1939. Allocated to No. 72 Squadron, it was regularly flown by James Nicolson who went on to earn the only Victoria Cross awarded to RAF Fighter Command during the Battle of Britain. Damaged in June 1940, K9942 was repaired and used for training during the Battle.

72/A/263

### **Dimensions**

Span: 11.2m / 36ft 10in.

Length: 9.1m / 29ft 11in.

### **Date**

1938–1941

### **Use**

Single-seat fighter

### **Engine**

One 768kW / 1,030hp Rolls-Royce Merlin III  
twelve-cylinder Vee liquid-cooled

### **Top speed**

353mph / 583km/h

### **Maximum altitude**

9,723m / 31,900ft

### **Armament**

Eight .303in. / 7.7mm machine guns  
– four in each wing

### **Where used**

UK, France

## **Gloster Gladiator Mk I**

---

The Gloster Gladiator was the RAF's last biplane fighter and the first to feature an enclosed cockpit for the pilot. Deliveries began in 1937, with Gladiators continuing to serve in the early years of the Second World War.

During the Battle of Britain, Gladiators of No. 247 Squadron protected the Plymouth naval dockyards, frequently escorting inbound convoys. Withdrawn from UK front line defence in 1941, they continued to be used for metrological reconnaissance and training.

This Gladiator was built in 1937 and was employed on trials and training duties. Although it never took part in the Battle of Britain, it is used here to represent the Gladiator's role in that conflict.

74/A/17

### **Dimensions**

Span: 9.85m / 32ft 3in.

Length: 8.4m / 27ft 5in.

### **Date**

1937–1944

### **Use**

Single-seat biplane fighter

### **Engine**

One 626kW / 840hp Bristol Mercury IX  
nine-cylinder air cooled radial

### **Top speed**

253mph / 407km/h at 14,500ft / 4,420m

### **Maximum altitude**

10,058m / 33,000ft

### **Armament**

Four Browning .303in. / 7.7mm machine guns:  
two in forward fuselage and two below lower  
wings

### **Where used**

UK, France, Norway, Malta, Greece, North Africa,  
Middle East

## THE DOWDING SYSTEM

---

The Dowding System was the first integrated air defence system. Information about approaching raids was received from radar stations and the Observer Corps and filtered. It was then passed to Controllers, who deployed their resources, including anti-aircraft artillery and fighter squadrons, to counter the threat. This gave the RAF a crucial advantage over the enemy, leading Churchill to describe Dowding's leadership as 'an example of genius in the art of war'.

Today, the RAF still uses a similar system to mobilise its Quick Reaction Alert stations to protect UK air space.

### Image

---

(Rear of panel) Chain Home transmitter towers, a central part of the Dowding System.  
CH15337 © Crown Copyright

## Dowding: The Man and the System

---

Air Chief Marshal Sir Hugh Dowding, as Air Officer Commander-in-Chief of Fighter Command, had a clear goal – the air defence of the United Kingdom.

The Dowding System he created was the first integrated air defence system, linking the means of detection to the defence forces. It also provided a clear method of communicating the information to all concerned, linking Fighter, Balloon and Anti-Aircraft Commands.

### 1. Uniform Jacket of Baron Dowding of Bentley Priory

1940–1970

This jacket is typical of those worn by officers in 1940 and bears Dowding's medal ribbons, pilot's badge and rank tapes. It was bequeathed to the Museum after his death in 1970.

71/U/1224

## 2. Operations Room Clock (replica)

1939–1945

The coloured segments on the Operations Room clock helped the Controller read and interpret plotting table information. Markers were placed on the table to represent incoming raids and defending fighters with colours matching the clock segment at the time the information was received or updated.

79/I/1326

## 3. Air Ministry Bell

1940

Bells have been used for hundreds of years to attract people's attention. The RAF has used them to warn of fires, air raids, or for fighter pilots to scramble. This bell was alleged to be one featured in a well-known photograph of a scramble at RAF Biggin Hill, with the phrase 'Don't run and tell, ring this like hell' chalked on it. The photograph, however, was from a film made of No. 222 Squadron in Lincolnshire. The casting date of 1940 means that this bell was probably issued after the Battle ended.

70/G/960

## Image

---

ACM Sir Hugh Dowding.  
D1417, © Crown Copyright, Imperial War Museum

## Hawker Hurricane Mk IIc

---

The Hawker Hurricane Mk I entered service in 1937 as the RAF's first eight-gun monoplane. During the Battle of Britain, Hurricanes shot down approximately 60% of enemy aircraft – more than all the other air and ground defences combined.

The Hurricane Mk IIc, a later development equipped with four 20mm cannon, was manufactured in larger numbers than any other version. Some were armed with bombs and nicknamed 'Hurri-Bombers'. The last Hurricane left the production line in July 1944 and today flies with the RAF's Battle of Britain Memorial Flight.

This Hawker Hurricane IIc, built in March 1944, served as a training aircraft and was displayed for many years at RAF Biggin Hill. Although this particular aircraft never took part in the Battle of Britain, it is used here to represent the Hurricane's role in that conflict.

1995/1004/A

### Dimensions

Span: 12.2m / 40ft.

Length: 9.6m / 31ft 5in.

### Date

1941–1946

### Use

Single-seat fighter, fighter-bomber, tactical reconnaissance fighter, photographic reconnaissance aircraft

### Engine

876kW / 1,175hp Rolls-Royce Merlin XX V-12

### Top speed

332mph / 534km/h

### Maximum altitude

Service Ceiling 10,912m / 35,800ft

### Armament

Four 20mm / 0.78in. Oerlikon or Hispano cannon

Two 113kg / 250lb or two 227kg / 500lb bombs

### Where used

UK, Malta, Yugoslavia, Middle East, Far East, USSR

## Nicolson VC

---

As a pilot during the Battle of Britain, Eric James Brindley Nicolson was awarded RAF Fighter Command's only Victoria Cross. On 16 August his Hawker Hurricane was hit by an enemy aircraft. Despite sustaining serious injuries, and with his Hurricane ablaze, he continued to pursue and shoot down a Messerschmitt Bf 110.

James had previously served with No. 72 Squadron and undertook several operational patrols in Spitfire Mk I K9942 displayed alongside this case.

### 1. Flying Jacket of Wing Commander James Nicolson

1940–1945

The 1938 pattern Irvin jacket was widely issued and worn by RAF aircrew during the Second World War.

Acquired by the RAF Museum in 1983 with assistance from the National Heritage Memorial Fund.

83/U/1061

### 2. Medal Bar of Wing Commander James Nicolson

1939–1945

Medals, from left to right: Victoria Cross (replica), Distinguished Flying Cross, 1939–1945 Star with Battle of Britain clasp, Aircrew Europe Star, Burma Star, 1939–1945 Defence Medal, 1939–1945 War Medal.

Acquired by the RAF Museum with assistance from the National Heritage Memorial Fund.

83/D/1062

---

‘By continuing to engage the enemy after he had been wounded and his aircraft set on fire, he displayed exceptional gallantry ...’

London Gazette, 15 November 1940

### Images

---

Flight Lieutenant James Nicolson VC.  
P018589, © EJB Nicolson

Nicolson standing on the wing of a Hurricane.  
CH1630, © Crown Copyright, Imperial War Museum

## **Messerschmitt Bf 109G-2**

---

The Messerschmitt Bf 109 was the Luftwaffe's principal fighter during the Battle of Britain. It could outclimb and outgun the RAF's Hurricanes and Spitfires. However, its limited range allowed pilots only twenty minutes flying time during raids over south-east England.

The Luftwaffe 'Schwarm' tactic was a widely spaced formation of four fighters made up of two 'Rotten' or pairs. The leader (the 'Rottenführer') had the job of making kills while his wingman (the 'Rottenflieger') protected his leader's tail, flying behind, to one side and slightly above.

This aircraft, known as 'Black 6', protected German forces retreating after the Battle of El Alamein in 1942. It was found abandoned near Tobruk and rebuilt. It proved extremely useful to the RAF during flight testing and trials work. It is used here to represent the Bf 109's role during the Battle.

X001-2501

### **Dimensions**

Span: 9.92m / 32ft 6.5in.

Length: 9.02m / 29ft 7in.

### **Date**

1942–1945

### **Use**

Single-seat fighter

### **Engine**

One 1,099kW / 1,475hp Daimler Benz DB 605A  
twelve-cylinder inverted Vee liquid-cooled

### **Top speed**

385mph / 619km/h at 25,00ft / 7,620m

### **Maximum altitude**

10,972m / 36,000ft

### **Armament**

One 20mm / 0.78in. MG FF/M engine mounted  
cannon

Two 7.92mm / 0.31in. MG 17 machine guns  
mounted in the fuselage

### **Where used**

Europe, UK, USSR, North Africa

## **Junkers Ju 88R-1**

---

The Junkers Ju 88 was one of the most versatile aircraft of the Second World War. It was adapted as a dive-bomber, night-fighter, intruder, anti-tank aircraft, torpedo bomber and reconnaissance aircraft.

During the Battle of Britain, Ju 88s were used on armed reconnaissance missions, mine-laying operations and bombing raids.

In May 1943, this Ju 88 night-fighter was flown to RAF Dyce in Scotland by a defecting Luftwaffe crew. By studying its radar equipment, British scientists developed counter-measures to help safeguard RAF bombers operating over Germany. It is one of only two remaining intact, original examples of this type and, although this particular aircraft never took part in the Battle of Britain, it is used here to represent the Ju 88s role in that conflict.

78/A/953

### **Dimensions**

Span: 20.0m / 65ft 7.5in.

Length: 14.4m / 47ft 2in.

### **Date**

1943–1945

### **Use**

Night-fighter

### **Engine**

Two 1,193kW / 1,600hp BMW 801MA  
fourteen-cylinder air-cooled radial

### **Top speed**

341mph / 549 km/h

### **Maximum altitude**

Service Ceiling 9,144m / 30,000ft

### **Armament**

Three 7.92mm / 0.31in. MG 17 machine guns in nose

One 20mm / 0.75in. MG 151/20 cannon in nose

Two 20mm / 0.75in. MG FF cannon in ventral gondola

### **Where used**

Germany, Norway, Denmark, UK

## Accumulator Trolley

---

The rapid refuelling and re-arming of fighter aircraft was vital to RAF success in the Battle of Britain. Ground crews worked in all weathers, and occasionally under fire, to ensure aircraft were available when needed.

The batteries in aircraft were small so the Accumulator Trolley, known universally as a 'Trolley Acc' was used to provide the high power needed to start aircraft engines. The engine was used to recharge the batteries in the trolley.

83/V/46

### Date

Around 1939–1957. This pattern was introduced in the late 1930s and was superseded by an improved pattern by the late 1940s.

### Voltage

Both the Hurricane and the Spitfire of the Battle of Britain era used a 12 Volt system while some larger aircraft used an 18 or 24 Volt system. Trolleys could be linked together to provide greater voltages.

---

'... we spent all night going round checking the trolley accumulators to see that they were fully charged, and the small engines which operated the charging units were working.'

Corporal Reginald Humphries,  
BBC People's War website

## Images

---

A pilot and his ground crew standing in front of a Hurricane waiting for the Trolley Acc to charge its batteries.

PC71-66/1124, Cyril Peckham Collection,  
© RAF Museum

A pilot of No. 17 Squadron standing in front of his Hurricane Mk I, with the Trolley Acc plugged in, 1940.

P010065, Copyright unknown (lapsed)

## **Boulton Paul Defiant Mk I**

---

The Defiant introduced a new tactical concept in two-seat RAF fighter design by concentrating all armament in a four-gun turret behind the cockpit. During the Battle of Britain, it proved no match for German fighters and was quickly withdrawn from daylight operations, moving to a night-fighter role.

Defiants were later adapted to serve with air-sea rescue squadrons, anti-aircraft co-operation units, air observer and air gunnery training schools and for target towing duties. From 1942, they were employed on radar countermeasure duties to support RAF night bombing raids.

The only surviving example of its type, this Defiant, manufactured nearby in Wolverhampton, served as a night-fighter with No. 307 Polish Squadron in the final months of the Battle.

74/A/16

### **Dimensions**

Span: 12.0m / 39ft 4in.

Length: 10.8m / 35ft 4in.

### **Date**

1939–1943

### **Use**

Monoplane, two-seat turret day and night-fighter

### **Engine**

One 768kW / 1,030hp Rolls-Royce Merlin III  
twelve-cylinder Vee liquid-cooled

### **Top speed**

303mph / 486km/h at 16,500ft / 5,029m

### **Maximum altitude**

8,565m / 28,100ft

### **Armament**

Four .303in. / 7.7mm Browning machine-guns  
operated by a dedicated gunner in a powered  
Boulton Paul turret

### **Where used**

UK, France, Netherlands, Belgium

## No. 307 Squadron: the Polish night-fighters

---

After the German invasion of Poland in September 1939, many Polish airmen escaped to Britain. In 1940, Polish squadrons began to be formed within the RAF. Polish aircrew were some of the most experienced and successful to fight with the Allies.

No. 307 (Lwów) Squadron, flying Boulton Paul Defiants, was the only Polish Air Force night-fighter squadron to serve in the RAF during the Second World War.

### 1. GQ Parasuit, Boots and Gauntlet

1939–1942

The GQ Parachute Company developed a parasuit exclusively for the air gunners of Boulton Paul Defiant two-seat fighters, as the gun turret had no space to store parachutes. Nick-named the ‘Rhino Suit’, it incorporated a main parachute and a smaller drogue parachute in two large panels on the back.

1994/0362/U, 1989/0029/U, 74/U/805, 806,  
1989/0028/U

## 2. No. 307 Squadron Badge

1940–1947

The badge shows an eagle owl – the squadron’s nickname – and a crescent moon, referencing its role as night-fighters. By coincidence, the motto ‘Semper Fidelis’ (Always Faithful) appears on the city crests of both Lwów, the squadron’s home city, and Exeter, where the squadron was based for two years.

76/U/1380

---

‘Had it not been for the magnificent work of the Polish squadrons ... the outcome of the battle would [not] have been the same.’

Air Chief Marshal Sir Hugh Dowding

### Images

---

An air gunner boarding his Defiant while wearing a GQ Parasuit, 1940.

CH-874, © Crown Copyright, RAF Air Historical Branch

New Defiants outside the Boulton Paul factory, Wolverhampton. P014433, Copyright Unknown

## AFTER THE BATTLE

---

The Battle of Britain has been seen as a campaign fought by British pilots in the skies over Kent and London. In fact, those who fought in the air were supported by many on the ground, both in the Services and civilians. Luftwaffe general Adolf Galland later commented ‘We could do no other than knock frontally against the outstandingly well-organised and resolute direct defence of the British Isles’.

While Hitler’s invasion was postponed, and eventually abandoned, the end of the Battle did not mark the end of civilian suffering. German night bombing raids continued in the Blitz until Hitler turned his attention to the East and the invasion of the Soviet Union in 1941.

### Image

---

(Rear of panel) Coventry after the Blitz of 16 November 1940.

H5597 © Crown Copyright



### Discover more

---

Additional Large Print Guides accompany these displays

### People of the Battle of Britain

**15 August 1940**

