Handley Page exhibition

Large Print Guide

Please leave in the gallery for other visitors to use.

Outside West Keepers' Gallery

Radlett Aerodrome in September 1947

The site of Radlett Aerodrome in June 2018

West Keepers' Gallery
Three panels on right hand wall

Sir Frederick Handley Page

Frederick Handley Page was born in 1885 and was just 18 years old when the Wright Brothers completed the first ever controlled, powered flight in 1903. Three years later, in 1906, Handley Page graduated as an Electrical Engineer and joined The Aeronautical Society. In June 1909 he started the first company specifically for aeronautical engineering in the country.

Handley Page's interests were very wide. He cared passionately about good education and helped to found Cranfield College of Aeronautics, and supported Northampton Polytechnic. He was deeply committed to safety and is sometimes referred to as "the father of the Air Registration Board". He was knighted in 1942 for his contribution to the war effort.

He had enormous charisma and he made a point of making himself known to all his employees from the shop floor upwards and generated enormous loyalty.

Images:
1. Sir Frederick Handley Page at the Radlett Aerodrome in the 1950s
2. Handley Page with one of his test pilots in 1918

Handley Page moves to Radlett

In 1912, Handley Page moved his company to Cricklewood where they were eventually able to fly from the airfield at the Cricklewood aerodrome. From here Handley Page developed the O/100 and O/400 bombers which were used during the First World War, but by the late 1920s housing was being built much closer to the aerodrome and a new site was needed.

One of Handley Page's test pilots, Major James Cordes, remembered an occasion when he had been forced by bad weather to land in a field between Frogmore and Colney Street, alongside the Midland Railway line, and suggested this as a new location for the factory and aerodrome.

Radlett Aerodrome was opened by the Duke of Kent on the 7 July 1930. Initially, when aircraft were brought out of the hangar onto the field to fly, they had to first remove the sheep who grazed there.

Images:
1. Radlett aerodrome in 1930 from the air.
2. Horse-drawn mowing equipment in front of an HP42 aircraft.
3. The Duke of Kent and Frederick Handley Page.

The Handley Page slot

One of Handley Page's greatest achievements was the development of the Handley Page slot which was his solution to the frequent and often fatal, crashes caused by stalling and spinning. This still has a worldwide influence on aircraft design today.

A slot is an air gap between a small slat and the wing allowing wind to pass between the two. Using a wing with a slot has many advantages:

- allows a larger angle of attack
- reduces the speed at which the aircraft stalls
- allows for a short runway take-off
- gives higher stability at low speeds
- is more manoeuvrable.

The Handley Page slot was patented in 1921 and provided the company with much of its profit during the 1920s and 30s as well as saving many lives.

Images:

1. The Handley Page slot in action on a biplane.

2. An illustration of how the Handley Page slot works.

Labels in desktop case under panels

Handley Page Type E Monoplane	
Crew	1
Length	32 ft 0 in (6.71 m)
Wingspan	32 ft 0 in (9.76 m)
Engine	1 × Isaacson 5-cylinder air-cooled radial, 50 hp (37 kW)

Handley Page 20 Monoplane	
Crew	1
Length	30 ft 0 in (9.15 m)
Wingspan	47 ft 6 in (14.5 m)
Engine	1 × Liberty 12-N water cooled V-12, 400 hp (300 kW)

The Handley Page Slot

This article describes Frederick Handley Page's development of the Handley Page Slot.
This aerodynamic slot was designed to prevent stall / spin accidents which were very common in early aircraft and often fatal. The slot principle was a major aerodynamic advance and it still has a world-wide influence on aircraft design.
The slot was patented in 1921, and the RAF adopted his "Auto-Slot" in 1928 for all their aircraft.

In large wall case, right hand case.

Handley Page in the First World War: Type O bombers

At the start of the First World War Captain Murray Sueter, the Head of the Royal Navy's Air Department, asked Handley Page to produce a 'bloody paralyser of an aircraft' which he could use for long distance bombing raids.

The O/100 was named because of its 100-foot-wide wingspan and it was the largest aircraft built in Britain at the time. It was a biplane and could carry a crew of two and six 45kg bombs.

In 1917 the O/400 went into production with bigger engines, an increased bomb load and stronger plating.

The O Type bombers flew in operations across German occupied territory in France and Belgium and as far away as the Dardenelles (in modern-day Turkey).

Images:
1. An O/100 in RAF colours.
2. The O/400 on the ground at Radlett aerodrome.
3. The O/7 transport variant for China to carry 14 passengers.

Handley Page O/400 Bomber	
Crew	4 or 5
Length	62 ft 10¼ in (19.16 m)
Wingspan	100 ft (30.48 m)
Engine	2 × Rolls Royce Eagle

Handley Page Heyford Bomber	
Crew	4
Length	62 ft 10¼ in (19.16 m)
Wingspan	100 ft (30.48 m)
Engine	2 × Rolls Royce Kestrel

In large wall case, centre case.

A touch of luxury: HP42 airliner

In 1928, British airline Imperial Airways needed a large airliner to operate on its long-distance routes to various parts of the globe and so work was initiated on what would become the HP42. Handley Page ultimately designed two largely similar aircraft: the HP42 was for their long-range Eastern routes and the HP45 for shorter routes across Europe.
The HP42 had two separate passenger cabins, one positioned forward, and the other aft, of the wings. The cabins featured a high degree of luxury with lots of space, relatively wide windows, and full onboard services.

On 11 June 1931, the first flight with fare-paying passengers was carried out to Paris. Due to the high cost of air travel at this time, typical passengers were usually members of high society, such as royalty, celebrities, and senior business figures.

Images:
1. The HP42 airliner in front of a hanger at Radlett aerodrome.
2. A view of the HP42 airliner from above.
3. The Duke of Kent exits an HP42 on his visit to the aerodrome.

Flying in style

This photograph shows the interior of an HP O/700, the airliner variant of the Type O bombers. The seats are arranged in pairs facing each other, much more like a modern train.
The HP 42 interior was even more luxurious as shown in the book below).

Handley Page 42 Airliner	
Crew	4
Capacity	24 passengers
Length	92 ft 2 in (28.09 m)
Wingspan	130 ft (39.62 m)
Engine	4 × Bristol Jupiter XIF 9-cylinder radial engine, 490 hp (365 kW) each

HP42 Hannibal

HP 42 Hannibal had its first flight in November 1930. It flew for ten years, despite an early crash on a flight from Croydon to Paris in 1931 and was eventually lost over the Gulf of Oman on 1 March 1940, with eight aboard. No trace of the aircraft, the air mail it carried, or its occupants has ever been discovered and the cause of its loss remains unknown.
This model, made by Nicholas Aronica, was highly commended by the International Plastic Modellers' Society at the 2010 National Championships.

HP42 Hadrian

At the start of the Second World War Hadrian was assigned to No. 261 Squadron RAF at RAF Odiham. On 6 December 1940, Hadrian was torn loose from its moorings at Doncaster Airport in a gale, cartwheeled, and ended up inverted on a railway track next to the airport. The aircraft was too badly damaged to be worth repairing. The aircraft made a brief appearance in the 1936 movie Song of Freedom starring Paul Robeson.

In large wall case, lefthand case.

World War Two: Hampden & Halifax

In the 1930s, with the prospect of another war approaching, Handley Page turned back to bomber design and produced the Hampden which took part in the first British raid on Berlin.

In response to a 1936 government request for heavier, longer-range aircraft, Handley Page designed the four-engined Halifax.

Alongside the Avro Lancaster, the Handley Page Halifax was the most prolific British heavy bomber of the war and unlike the Lancaster it was used in all campaigns. Although in some respects better than the Lancaster (such as crew survivability), the Halifax suffered in terms of altitude performance and was redeployed toward the end of the war as a heavy transport and glider tug.

Images:
1. The final assembly of a Hampden bomber at Radlett in 1938 ready for a flight test.
2. Handley Page Halifax Mk 1 (RR Merlin Engines) at Radlett circa 1940.
3. An assembly line of Halifax bombers during the Second World War.

Handley Page Hampden Bomber	
Crew	4
Length	53 ft 7 in (16.33 m)
Wingspan	69 ft 2 in (21.08 m)
Engine	2 × Bristol Pegasus XVIII 9-cylinder air-cooled radial piston engines, 1,000 hp (750 kW) each at 3,000 ft (914 m)

Svenska Flygvapnet

One of these Hampden models has been painted in the colours of the Swedish Flygvapnet (Air Force). During the Second World War a Hampden was bought by the Flygvapnet and assigned to Reconnaissance Wing F 11 at Nyköping just south of Stockholm.

Handley Page Harrow Bomber	
Crew	5
Capacity	20 fully equipped soldiers or 12 stretcher cases
Length	82 ft 2 in (25.05 m)
Wingspan	88 ft 5 in (26.96 m)
Engine	2 × Bristol Pegasus XX nine-cylinder radial engine, 925 hp (690 kW) each

Handley Page Halifax Heavy/Night Bomber	
Crew	7
Length	71 ft 7 in (21.82 m)
Wingspan	104 ft 2 in (31.75 m)
Engine	4 × Rolls Royce (front two models) 4 × Bristol Hercules (back model)

HP Halifax

These three Halifax models are based have been given the numbers of three real aircraft.

W1048 is now on display in Hangar 5 at the RAF Museum. It had to be rescued from the floor of Lake Hoklingen in Norway as its pilot, Don MacIntyre, had made an emergency landing on the frozen ice in 1942.

HR792 was dismantled after an emergency landing on the Isle of Lewis in 1945. A crofter, Mr McKenzie, purchased the fuselage section for use as a hencoop and It is now on display at the Yorkshire Air Museum.

LV917 was the number for a batch of Halifax aircraft assigned to 158 Squadron. Another aircraft, LV9017-F “Friday the Thirteenth” flew 128 missions during the war.

D-Day and the Halifax

This model Halifax and Horsa glider are painted with invasion stripes as used on D-Day.
On the evening of 5th June 1944 Handley Page Halifax bombers, adapted to be glider tugs, took off from bases around England. The gliders were released from their tug aircraft just after midnight. The first glider to land at the Caen Canal bridge, piloted by Staff Sergeant Jim Wallwork, landed at 00:16 just metres from the Bridge - the glider's nose crashing through the barbed wire of the German defences.

Wall to the left of large case

A place to live

In the 1950s Handley Page needed to provide more homes for their employees near Radlett. Working with the local council they built houses, bungalows and flats with the option to rent or buy.

Although these homes were built over 60 years ago, a handful are still occupied by their original families.

Housing was provided in the following locations:
Bricket Wood: Hunters Road, Juniper Avenue, Black Boy Wood and Claremont.
Frogmore: Radlett Road and Hampden Place.
London Colney: Telford Road.
Park Street: Orchard Drive, Dell Rise, and How Wood.
Radlett: Kitswell Way, The Ridgeway and Heyford Close
St Albans: Hopground Close.

Images:
1. Sign in Bricket Wood.
2. Construction on Handley Page housing in the 1950s.
3. Hopground Close in The Camp area of St Albans today.

Technical Training

Frederick Handley Page was passionate about education and the company had several different apprenticeship schemes. He also helped create sandwich courses for his apprentices, in conjunction with Northampton Engineering College and was involved with the foundation of Cranfield College of Aeronautics.

View Magazine

The View Magazine was produced for Handley Page employees and included articles about the work of the company as well as social opportunities. The Spring 1956 issue described construction of new housing for Handley Page employees, much of which is still standing in St Albans and the surrounding District today.

Timeline between two galleries

1885
Frederick Handley Page
was born in Cheltenham.

17 December 1903
The first controlled, powered
flight was achieved by Wilbur
and Orville Wright.

1906
Frederick Handley Page
graduates as an Electrical Engineer from
Finsbury Technical College and
joins The Aeronautical Society.

17 June 1909
Handley Page founds his own
private company for Aeronautical Engineering at
Barking Creek
-the first in the UK.

1912
Production moves to Cricklewood (later the site of
the Cricklewood Studios).

1915
Handley Page designs and
builds the O/100, a twin-engine bomber, for the Royal Naval Air Service.
1919
Handley Page converted O/400 bombers into planes for his own airline Handley Page Transport Ltd.

1920
Handley Page develops the “aerodynamic slot principle” to
prevent accidents caused by aircraft stalling or spinning. It was later adopted by all RAF aircraft.

1924
Handley Page Transport
merged with two other airlines to become the United Kingdom's
first national airline Imperial Airways.

14 March 1928
Handley Page Chief Test Pilot
Major Cordes is caught in bad
weather and forced to land in a field just north of Radlett.

1929
Cricklewood Aerodrome closes
but some production continues on
the site until 1964.

7 July 1930
Radlett Aerodrome is opened by
Prince George (later Duke of Kent).

1939 - 45
The HP Halifax was the only
heavy bomber used in all
campaigns of the Second World War.
It flew in 82,773 operations.

1942
Sir Frederick Handley Page
was knighted for services to
the war effort.

1948
41 Handley Page Halifax and
Hastings aircraft were used to send supplies into
West Berlin during
the Berlin Airlift.

1952
The Handley Page Victor had
Its first flight. It was developed
as a strategic bomber during
the Cold War.

1 June 1957
Pilot John Allam broke the sound barrier during a flight from Radlett Aerodrome. The sonic boom was heard from Watford to Banbury.

21 April 1962
Sir Frederick Handley Page dies.

February 1970
Handley Page ceases trading
but ex-employees worked with Scottish Aviation to continue work on their last aircraft, the Jetstream.

1982
Handley Page Victor aircraft
were used as aerial refuelling
tankers during the Falklands War.

2004
The RAF removed their final
Jetstream from service, ending a
run of 86 years that Handley Page aircraft had been in continuous
RAF service.

Tall case in East Keeper's Gallery

Blueprint of a fuselage (above)

Blueprint of door mechanism (below)

Every detail of an aircraft is vitally important, especially when it will be flying faster than the speed of sound. This door lock mechanism is for a Victor.

Handley Page and British Aerospace Jetstream

When Handley Page was closed down the development of their final Jetstream aircraft was transferred to Scottish Aviation which then became part of British Aerospace.
Variants of the Jetstream are still in use around the world. In 2019 70 Jetstream 31s were in airline service: 49 in Americas, 15 in Europe, 5 in Asia Pacific and 1 in Africa.
Jetstreams have even appeared on film including in the 1979 film "Moonraker" starring Roger Moore where British secret agent James Bond (007) is thrown out of the aircraft while it is in flight.

Handley Page Jetstream Airliner	
Crew	2
Capacity	16 passengers
Length	47 ft 2 in (14.37 m)
Wingspan	52 ft 0 in (15.85 m)
Engine	2 × Turbomeca Astazou XVI C2 turboprop

Model kits

Most of the models in this exhibition were made from model kits. After the Second World War there was a huge expansion in the number of models made by companies like Airfix in the UK and Revell in the US. These models are made from plastic injection-molded pieces and once they are constructed they can be decorated with paint and stickers.

Wall opposite tall case

Research at Handley Page

Handley Page built and tested a number of different research aircraft from the 1940s onwards. In the 1940s they built the HP75 to test out problems around aircraft without tails. Because of its unusual appearance it was nicknamed The Manx (named after the tailless cat). The first flight in June 1943 was terminated early when the canopy was lost in mid-flight, but the pilot managed to land the plane safely. In December 1945 the Manx's regular crew were killed flying the Handley Page Hermes prototype. The Manx had only accumulated about 17 hours of flight time over approximately 30 flights when flight tests were finally ended in April 1946.

Other research aircraft included the HP88, built to test a crescent shaped wing which was used on the later Victor aircraft, and the HP115 - a subsonic aircraft built to test problems with low-speed handling of Concorde.

Images:
1. This is Handley Page HP75 Manx radio-controlled model, seen at Ražňany airport in Slovakia, during an annual model exhibition (image courtesy of Jagermeister).
2. HP115 supersonic research aircraft.

Large wall case in East Keeper's Gallery

HP Victor and the sound barrier

On Saturday 1 June 1957 test pilot John Allam, supported by flight observers, Paul Langston and Geoffrey Wass were returning to Radlett in their Victor XA917 when the cockpit indicators registered a speed of Mach 1.1 – the aircraft had exceeded the speed of sound.

On arriving back at Radlett, the control tower operator mentioned that local residents had phoned in to complain about aircraft noise that day. Allam claimed the crew hadn't heard anything but the following day one of Allam's superiors mentioned he had heard the sonic boom whilst shopping with his wife in Watford and Allam admitted he had planned the whole thing before take-off to demonstrate the Victor's superiority over the Vickers Valiant and Avro Vulcan.

Because the Victor had seats facing backwards for their rear crew members, one of the flight observers became the first person to fly through the sound barrier backwards.

Images:
1. The HP Victor in flight.
2. Test pilot John Allam.

Handley Page Victor Strategic Bomber	
Crew	5
Length	114 ft 11 in (35.03 m)
Wingspan	110 ft (34 m)
Engine	4 × Armstrong Siddeley A.S.Sa.7 Sapphire turbojet engines, 11,050 lbf (49.2 kN) thrust each

John Allam's helmet

On 1 June 1957 test pilot John Allam took Victor XA917 out for a test flight during which the aircraft went faster than the speed of sound resulting in a sonic boom heard across Hertfordshire.

As a test pilot John wore this helmet to protect him, you can see how his soft flight cap attached to the inside of the helmet using the flaps at the top.

Unlike the movies of the day where pilots passing through the sound barrier suffered severe vibration, the Victor maintained stability without vibration throughout the event.

Operation Black Buck

During the 1982 Falklands War HP Victors were converted into tanker planes to fuel other aircraft. 14 Victor tankers were used during the seven Operation Black Buck missions. The raids, at almost 6,600 nautical miles (12,200 km) and 16 hours for the return journey, were the longest-ranged bombing raids in history at that time.

HP Hastings and Hermes

The HP67 Hastings was a British troop-carrier and transport aircraft made by Handley Page for the Royal Air Force. It came into service during September 1948 and at the time was the largest transport plane ever designed for the service. It was first used alongside HP Halifax aircraft, in the Berlin Airlift. Later, Hastings were used by the RAF during conflicts such as the Suez Crisis and the Indonesian Confrontation. Beyond its use for transport, several Hastings were modified to perform weather forecasting, training, and VIP duties.

A civilian version of the Hastings was the Handley Page Hermes. In August 1950 the British Overseas Airways Corporation (BOAC) started using the Hermes on their West Africa service from London Heathrow to Accra via Tripoli, Kano and Lagos, as services to Kenya and South Africa commenced before the end of that year.

Images:
1. Handley Page Hastings circa 1948-9.
2. Handley Page Hastings awaiting delivery to the RAF circa 1948-9.
3. Handley Page Hermes IV prototype at Colney Street circa 1948.

Handley Page Hastings Troop-Carrier and Freight Transport	
Crew	5
Capacity	50 troops or 35 paratroops or 32 stretchers and 29 sitting wounded
Length	81 ft 8 in (24.89 m)
Wingspan	113 ft 0 in (34.44 m)
Engine	4 × Bristol Hercules 106 14-cylinder two-row air-cooled radial engines, 1,675 hp (1,249 kW) each

Berlin Airlift – Halifax & Hastings

At the end of the Second World War, Germany was divided and its capital Berlin was jointly administered by the USSR (Russia), Britain, France and the United States. Berlin, one hundred and ten miles inside the Russian zone of Germany, was reached by agreed road, rail and river routes. When the Russians closed all surface routes to Berlin the RAF began Operation Plainfare to drop supplies into Berlin.
Between June 1948 and June 1949, seven civilian airlines operated some forty converted or modified HP Halifax aircraft in the operation and in November 1948 the new HP Hastings were used as well.

Worldwide travel in the HPR Herald

The Handley Page Dart Herald is a 1950s British turboprop passenger aircraft. The name "Herald" was chosen as it is easy to translate into French and Spanish.

The first prototype made its maiden flight from Radlett on 25 August 1955, however during the design period a new Rolls Royce Dart turboprop engine had shown proven success in their competitor’s Vickers Viscount. Handley Page responded by adapting their design and adding a Dart engine to create the HPR7 Dart Herald.

The first Dart Heralds to take passengers on holiday were on the Highlands and Islands routes and Jersey Airways. They were eventually bought by more than 30 airlines operating across the world from Canada to the Philippines.

Images:
1. The original four engine Herald in around 1955.
2. The two engine Dart Herald in the 1960s.
3. An Air UK Dart Herald landing in Newquay.

Handley Page Dart Herald Passenger Aircraft	
Crew	2
Capacity	56 passengers
Length	75 ft 6 in (23.01 m)
Wingspan	94 ft 9½ in (28.90 m)
Engine	2 × Rolls-Royce Dart Mk.527 turboprop, 1,910 hp (1,425 kW) each

HP Herald around the world

Operators around the world used the Dart Herald from its introduction in 1958. In this case you can see planes with the markings for Canadian company Nordair and the British Channel Express. If you flew to Jersey or Guernsey, you almost certainly flew on one of them.
The last ever Dart Herald passenger flight was operated under the Ryanair name in 1987.

Panel next to television screen

Jetstream and the end of Handley Page

In the late 1960s Handley Page designed the Jetstream. It was a small, streamlined aircraft as the company could not afford to compete with the larger aircraft of the British Aircraft Corporation and Hawker Siddeley.

The design had a distinctive long nose profile and the first production model Jetstream 1 flew on 6 December 1968. However, delivery and engine problems had driven development costs from original estimates of £3 million to over £13 million. Only three Jetstream 2s were completed before Handley Page went bankrupt, and the production line was eventually shut down in 1970.

Many former Handley Page employees continued to work on the Jetstream after the company went bankrupt under the British Aerospace name.

Images:
1. Jetstream first flight from Radlett 18 August 1967.
2. Three of the four prototype Jetstreams at Colney Street in 1968.
3. Jetstream final assembly at Colney Street in 1970.

This short film tells the story of the Jetstream with photographs of production and the finished aircraft.

Length 24:00

Outside East Keeper's Gallery

Newspaper article from 1976

Handley Page closed its doors in 1970, this article from 1976 was written to coincide with the release of a book about the company by C.H. Barnes. The article describes the end of the company and what happened to some of the workers. The book is now sadly out of print.

The site of Radlett Aerodrome in July 2018

The legacy of Handley Page

In 1968-69 Handley Page were in discussion with the Ministry of Defence for the conversion of the now redundant Mark 2 Victors. Unfortunately, although negotiations were complete, signing was delayed until at the end of February 1970, when the firm went into liquidation due to serious cash-flow problems.
The company's legacy continued as the Victor Mark 2 Taker aircraft were still in service with the RAF until 1993 and served with distinction in the Falklands and first Gulf War. The Jetstream was taken over by Scottish Aviation (later BAE Prestwick), with over 300 aircraft sold worldwide. When the company's service to the RAF finished on 22 March 2004, it marked the end of an 86-year relationship. Indeed, the RAF had used Handley Page aircraft ever since its formation on 1 April 1919. A version of the Jetstream remains in service with the Royal Navy, maintaining the tradition started in World War 1 with the O/100 in the Royal Naval Air Service.

Images:
1. A LoganAir Jetstream flying in the 1970s.
2. A Victor Tanker refuelling another aircraft mid-air.
3. Radlett Aerodrome today.