

The

Spirit of

North Weald

The North Weald Airfield History Series | Booklet 7



**North Weald enters
the Jet Age**

72 Squadron B Flight Vampire VZ250 / Z undergoing maintenance



North Weald and the Cold War

The Airfield enters the jet age

The heightened tensions at the start of the Cold War in the late 1940s and early 1950s heralded a final phase of development for RAF North Weald. The Airfield was handed back to Fighter Command in 1949 and two Royal Auxiliary Air Force Spitfire XVI squadrons moved in from Hendon – 601 (County of London) Squadron and 604 (County of Middlesex) Squadron. They soon converted onto the de Havilland Vampire F3 jet fighter.

As well as the two part-time Auxiliary squadrons 72 Squadron also arrived from RAF Odiham in March 1950. In 1951 two T2 hangars moved from former USAF bases were erected, new aprons created and the main runway lengthened with an Operational Readiness Platform (ORP) at each end as the squadrons converted to the Vampire jet

fighter aircraft. A new control tower was also built, and was completed in 1952.

During 1953 all the squadrons converted onto the more powerful Meteor F8 fighters. In December 1953, 111 Squadron replaced 72 Squadron. This went on to form the famous Black Arrows display team, equipped with the Hawker Hunter F6. It was the Airfield's last operational squadron, departing in February 1958.

Flying finally ceased in May 1958 when the RAF Historic Aircraft Flight departed. This unit was the forerunner of the Battle of Britain Memorial Flight and had transferred from Biggin Hill when that station closed.

North Weald was now too far from the likely axis of any Soviet attack to remain viable as a fighter station with the relatively short range of the jets then in service, which lacked air-to-air refuelling capabilities. The fighters were now located to the north and east.

The Auxiliary Air Force squadrons had already fallen victim to the Duncan Sandys defence cuts and were disbanded in 1957. ■

Meteor F8 with an all-blue tail flown by the CO of 72 Squadron, S/Ldr Clive Mason



Jim's first two Vampires – 'F' and 'G' in the Type A revetment*Converting on to the Meteor at the 'Old Dispersal' in 1952. The famous radio masts are visible in the distance*

Swift recall – 72 Squadron memories

Jim Barton, one of the Squadron's groundcrew at North Weald in the 1950s, remembers his first day...

So here I am, standing in the back of a canvas-covered lorry with about thirty groundcrew lads, and it's so dark in the pre-dawn blackness that I can't see the face of the lad that I'm almost nose to nose with, and I'm sure that our noses would have frozen together if they had touched. Boy it's cold this winter!

It's been a few months since I arrived here at North Weald from square bashing, and I really thought I would be spending the rest of my two years as a National Serviceman safely installed in the Station workshops as an Engine Mechanic (Turbine). It was an 8-to-5 job, working on the jet engines that had done so many hours, and needed to be serviced – a gem of a job.

"Ginge, you'll have to go down to 72 Squadron for a couple of days, as they are short-handed." Complete panic seized me, as I had heard that 72 Squadron had to be avoided at all costs! Enquiring why, I was told that they had to work over the weekends because of the two auxiliary squadrons also based here. I could write a book on the things I was told about the dreaded squadron.

They worked all hours, and they had their dispersal on a mud patch that was situated half way across the Airfield, and you can always tell 72 bods, if they are lucky enough to get to the cookhouse on time for meals, they stink of kerosene and they look scruffy and covered in mud, grease and oil. "But Sarge, I don't know anything about aeroplanes." "Aw, you'll soon pick it up," was his reply.

The lorry stopped at what seemed to be the middle of

A Flight NAAFI break, 1952

nowhere, and the world seemed to erupt! The lads suddenly became alive and all hell broke loose as they rushed for one of two lights shining from two huts, the crewroom and the Flight Office. I made my way to the Flight Office, the Chief looked up from behind his desk and said "You the new fitter?" "Yeah, Chief." Go and do a pre-flight on 'F', OK?" He handed me a torch and a tank key, for opening the fuel tanks on a Vampire. This was the start of on-the-job training!

By the end of the day, I could pre-flight, do a 3-day service, re-fuel, do a run-up of a Vampire (so the other trades could complete their own checks), and I could also marshal 'F' into the wartime bays that the kites were using. I could also see a kite off after helping the pilot strap himself in.

We just about caught the cookhouse open, and with a lot of pride, I walked in with rest of A Flight bods, stinking of kerosene, and looking scruffy, in a stained uniform, wearing seaboot socks and kerosene boots. For the first time in my eighteen years, I felt alive!

I was to spend the rest of my RAF days with 72. I enjoyed 72 Squadron so much that I signed on for an extra year! ■



At the end of World War 2, RAF North Weald became a Transport Command station equipped with Vickers Warwicks of 301 and 304 Squadrons flown by Polish crews. Then flying ceased altogether in April 1947, when it became the Aircrew Selection Centre.

In 1949, the Airfield was transferred back into Fighter Command. Two Royal Auxiliary Air Force squadrons arrived, flying Spitfires and soon to be converted onto jets. The North Weald Wing was reborn...

The Millionaires Squadron

No. 601 (County of London) Squadron, Royal Auxiliary Air Force

The Squadron was formed at Northolt on 14 October 1925 as part of the newly-formed Auxiliary Air Force. Flying began in early 1926 with Avro 504s, which were supplemented by DH9A light bombers the following year, when the Squadron moved to Hendon.

The unit was originally led by Lord Edward Grosvenor. It was known as the 'Millionaires Squadron' because many wealthy young men, who were already aviators, joined the part-time Auxiliaries as part of their social scene.

At the end of 1929, Westland Wapitis replaced the DH9As, and these were superseded by Hawker Hart light bombers four years later. In July 1934, the Squadron became a fighter unit, and later received two-seat Hawker Demons.

At the end of 1938 the Squadron converted to Gloster Gauntlet single-seaters, but then quickly began to receive twin-engine Bristol Blenheims in their place. These were fitted with a pack of four Browning machine guns under the fuselage and used as stop-gap fighters.

It was with these clumsy machines that the Squadron went to war in September 1939. By March 1940, Hurricanes were substituted. In the Battle of France, a detachment of these operated from French soil for a week.

During the Battle of Britain, No. 601 was based at Tangmere and involved in heavy fighting, before moving to Debden.

Tom Muirison



The losses were replaced by RAFVR and regular pilots and the Squadron lost its pre-war glamour and exclusivity.

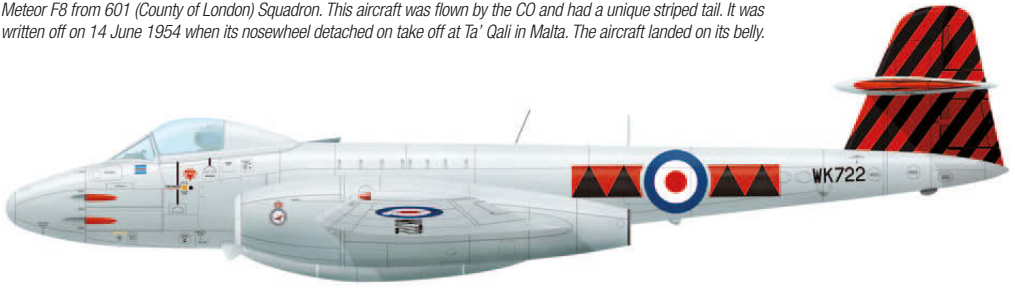
In early 1941, it began offensive sweeps over northern France which continued until August, when it was received the new Bell Airacobra fighters. These proved to be a failure, and were replaced by Spitfires in March 1942. The next month the Auxiliaries set sail for the Middle East.

Fighter sweeps were flown over the Western Desert, and following the Battle of El Alamein the Squadron moved west into Tunisia. After the end of the North African campaign it went to Malta to cover the Allied landings in Sicily. From there it moved to Italy on ground-attack missions until it was disbanded in August 1945.

On 10 May 1946, the Auxiliary Air Force began to reform. No. 601 was once again based at Hendon, and by October it had commenced flying Spitfires.

The Squadron moved to North Weald in March 1949 where it started converting to Vampire F3 jet fighters during November. Within three years the more capable Meteor F8s had replaced them. On 10 March 1957, the Royal Auxiliary Air Force was finally disbanded and No. 601 Squadron stood down. ■

Meteor F8 from 601 (County of London) Squadron. This aircraft was flown by the CO and had a unique striped tail. It was written off on 14 June 1954 when its nosewheel detached on take off at Ta' Qali in Malta. The aircraft landed on its belly.



Feeding the guns

Geoff Monahan remembers his time as an armourer at North Weald

In May 1953, I was posted to North Weald Station Armoury from 72 Squadron. Typical of the RAF, I had just finished a four week course at Kirkham for promotion to SAC (qualified to sign Form 700s) – not a ‘700’ in sight in the Armoury!

The Armoury was across the camp road, behind the Guardroom. We undertook maintenance work on 20mm Hispano cannons for 72, 601 and 604 Squadrons. They had to be stripped down, checked for wear and, if needed, have parts replaced before we cleaned, reassembled and returned them. All cannons had a history sheet and were marked with Squadron numbers and position on the aircraft, eg: 72 PU (72 Squadron Port Upper on a Meteor).

We had responsibility for the Station’s arms, officers’ personal weapons and for checking, weekly, Verey pistols – which fired flares – in the control tower, the Station Flight Oxford and the flying control caravan at the end of the runway.

We also took turns as duty armourer. Once, I was called out to render safe an ejector seat of a Meteor that had been damaged during a Battle of Britain flypast rehearsal, hit by another diving out of control from a higher formation. The damaged aircraft, whose nose was badly smashed and canopy broken, was led by a colleague to an emergency landing at North Weald. It was just as well the pilot didn’t try to eject, as the canopy was jammed; he would have been cut to ribbons!

In October 1953, my National Service finished. After settling back in Civvy Street in an office, I applied to join 601 Squadron RAuxAF. In early January 1954, I was interviewed by their CO, Squadron Leader McCarthy-Jones, and accepted.

An Auxiliary Squadron had exactly the same role as its regular counterparts, but was active only at weekends and its two-week air-firing camp every summer. The spirit was tremendous; probably 80%+ of personnel were volunteer auxiliaries. We were paid regularly for our attendance plus a travel allowance of 10 shillings (50p) per weekend.



Geoff witnessed Meteor WK722 force land at Ta' Qali

North Weald Airfield Museum

601 Squadron was located in a hangar on the far side of the main runway (now Hangar 2). Squadron offices ran its length outside, between it and the flight line. (Incidentally, our “safety direction” on the line would, I am sure, have seen St Andrew’s Church lose its tower if the guns had accidentally fired.)

Personnel came from a wide spectrum. I worked in an office, with one armament corporal who was a senior tax official at the Treasury. One chap drove a Green Line bus, there were four or five Fairey Aviation apprentices, and an ex-regular F/Sgt was an armourer’s assistant. As a F/Sgt he had TE Lawrence in his squad at RAF Calshot pre-war.

Pilots were in City jobs, advertising, commerce or had their own businesses. There were one or two ex-National Service pilots too. Air firing figured prominently in our routines, so we were always kept busy. The two-week camps were always abroad and I attended Ta’ Qali, Malta twice and Wunsdorf in Germany. They were busy times, but we did get some relaxation too. The briefing for Malta always ended: “... and 5000+ bottles of Coke,” – sixpence a bottle (2½p)!

I had two main highlights. The first when we were paraded at Buckingham Palace to receive a new standard from Prince Philip, our honorary Air Commodore. We had to attend drill evenings at the Duke of York’s headquarters beforehand. I was also privileged to speak to the Prince when he visited us at North Weald.

My other highlight was when 601’s armourers were invited to Martin-Baker at Denham to see how ejector seats were made. We had lunch with Sir James Martin and Bernard Lynch, the first live ejection guinea pig! Then we were shot in turn up their 60 foot test rig. I kept my lunch down, luckily!

I enjoyed my four years and nine months at North Weald, serving under four aces as Station or Wing Commander. ■



North Weald's part-time fighter pilots

The Royal Auxiliary Air Force's No. 604 (County of Middlesex) Squadron

No. 604 (County of Middlesex) Squadron of the Auxiliary Air Force was formed at Hendon on 17 March 1930 as a part-time reserve for the RAF. It was equipped with DH9A bombers. These were replaced by the Westland Wapiti in September 1930.

After being re-designated as a two-seat fighter squadron, it started flying Hawker Harts on 23 July 1934. Hawker Demons replaced the Harts a year later.

During 1939, the Squadron converted to Blenheim long-range fighters, flying day and night convoy patrols from North Weald with a detachment based at Martlesham Heath. It then moved to Northolt and Manston, and saw action against German Junkers 52 transports at the Hague in Holland.

In July 1940, the Squadron took up nightfighting full-time and relocated to Middle Wallop. It patrolled the south coast and gained valuable experience with the early radar sets.

Cannon-armed Beaufighters started to arrive in September, along with improved airborne and Ground Controlled Interception (GCI) radars. It was with these that F/Lt John Cunningham started building up his tally to become a nightfighter ace with 20 victories. After the war he joined de Havillands and became their Chief Test Pilot.

Early in 1943 decreasing enemy night raids allowed some of the Beaufighters to be used for intruder operations over enemy airfields in northern France.

The Squadron converted to Mosquitoes in February 1944, and joined Second Tactical Air Force to provide cover for the D-Day landings. In August it moved to airfields in Normandy, but was back in the UK in September for three months. From January 1945 until its disbandment on 18 April 1945, the Squadron operated from bases in northern France.

In May 1946, No. 604 reformed at Hendon as part of the newly reconstituted Royal Auxiliary Air Force, and was



initially equipped with Spitfire XVI's. The Squadron returned to North Weald and then converted to Vampire F3 jet fighters in November 1949.

These were replaced by Meteor F8s during 1952, the Squadron taking up residence in the new hangars and fighter pans on the western side of the Airfield. Lord Tebbit was one of the pilots serving on the Squadron at this time. The Meteors continued to be flown until the Auxiliaries were disbanded once again in 1957 as a result of the Duncan Sandys defence cuts. ■



From fighter to unmanned target

One of 604 Squadron's Meteors ended its days on missile trials...

Gloster Meteor F8, WK784, was built by Armstrong Whitworth at Baginton and delivered to the RAF on 17 July 1952. It served with 604 (County of Middlesex) Squadron at North Weald, and was flown by the Squadron Commander S/Ldr T Turnbull. The tail was painted in the Squadron colour of yellow for recognition purposes, following the fashion of the time. It was one of the aircraft from the Squadron which took part in the Queen's Coronation Week Display at Heathrow in 1953.

In early 1961 it was allocated for conversion to a U16 remote-controlled target drone for use in missile trials along with many other obsolete F8s. The work was done by Flight Refuelling at Tarrant Rushton in Dorset, and involved the installation of radio link equipment, an autopilot and other instrumentation in an extended nose section. The four cannon were removed and cameras fitted in jettisonable wing tip units. The aircraft was finally shot down by a missile over Cardigan Bay on 27 September 1962. ■

Jimmy Salandin and the UFOs

A very close encounter over Southend in 1954...

Flight Lieutenant 'Jimmy' Salandin was a 'weekend' pilots serving with 604 (County of Middlesex) Squadron at North Weald. He reported for duty on 14 October 1954, and at 4.15 pm went flying in his Meteor F8 jet fighter.

Climbing to the south in perfect weather conditions he saw two other Meteors flying in formation high above at 30-40,000 feet over the North Foreland leaving long vapour trails. He continued to watch the two aircraft while occasionally checking his instruments.

He had reached 16,000 feet over the outlying districts of Southend. Then, "through the middle of the trails I saw three objects which I thought were aeroplanes, but they weren't trailing." One of the objects was silver, another gold. Salandin watched these two until they disappeared, at the 9 o'clock high position to his port side.

After checking his instruments he looked in front of him and saw the third object heading straight towards him, which "was saucer-shaped with a bun on top and a bun underneath, and was silvery and metallic. There were no

portholes, flames, or anything. The third object could not have been far away because it nearly overlapped the windscreen. A Meteor's 37-foot wingspan just fills the windscreen at 150 yards."

The UFO avoided a head-on collision at the very last second by swerving off past the Meteor's port side. "I tried to turn round to follow, but it had gone"

Badly shaken, Salandin flew around quietly for a few minutes to regain his composure, and immediately reported the sighting by radio to North Weald. After landing he related further details to Derek Dempster, 604 Squadron's intelligence officer, who, co-incidentally, became the first editor of *Flying Saucer Review* the following year.

A report was sent to the Air Ministry but nothing further was heard about it. Salandin was annoyed, too, when he realized later that his gun camera had been loaded all the time, but he didn't have time to press the button. ■



North Weald Airfield Museum

Spitfire LFXVI RW394 joined 601 (County of London) Squadron in July 1945. It is shown here in its racing scheme for the Cooper Trophy in August 1949 at Elmdon



601 Squadron's air racing Spitfire... and how tragedy struck 604 Squadron in a similar race two years later...

The Cooper Trophy was originally presented by W/Cdr Geoffrey Cooper, the MP for Middlesbrough West from 1946-51 and a former Royal Auxiliary Air Force pilot. Only Auxiliary Air Force Squadrons were eligible to compete. The first race was held at Lympne in 1948 and was a high-speed map-reading competition. The course was disclosed to the pilots ten minutes before take-off.

The second competition took place at Elmdon (now Birmingham International Airport) and was a straightforward handicap air race. This was held on the Sunday of the Royal Aero Club's first National Air Races after World War 2 held over the August Bank Holiday weekend in 1949.

No 601 (County of London) Squadron's entry was Spitfire LFXVI RW394. This was painted specially with a red band bearing the race number 5, which was also repeated on the upper port wing. The aircraft was flown by S/Ldr Hugh 'Cocky' Dundas, the Squadron's CO and famous World War 2 fighter ace.

There were six competitors – a Vampire, three Spitfire Mark 22s and two Spitfire Mark XVI's. A Spitfire 22 of 502 (Ulster) Squadron came first, with the Vampire in second place, unsurprisingly flying the fastest lap! The two Spitfire XVI's came fourth (Dundas) and fifth (Yule of 612 Squadron in SL718).

Another interesting race that weekend was for the Kemsley Challenge Trophy and featured some of the latest military types – the Hawker P1040 Sea Hawk

Vampire F3 VG700 of 604 (County of Middlesex) Squadron was lost taking part in one of the qualifying heats at West Malling for the 1951 Cooper Trophy race



Spitfire LFXVI RW934 on the flight line at Elmdon in 1949

prototype, a Vampire F3, a Sea Fury T20 trainer, the Spitfire TR8 prototype G-AIDN, a Blackburn Firebrand and a de Havilland Hornet along with a Spitfire Vb. This race was won by Neville Duke in the Hawker P1040.

The Cooper Trophy race was held again the following year as part of the RAF Display at Farnborough over two laps of 36 miles. Eight squadrons competed, after eliminating heats were held earlier in the year. The race was won by a Meteor from 600 (City of London) Squadron.

In 1951, No 604 Squadron took part in the second of the Cooper Trophy qualifying heats at West Malling on 20 May. Its CO S/Ldr Keith Lofts was killed flying his Vampire, VG700, when the aircraft stalled and spun in on a turn after he had tried to cut inside two other aircraft and the top nose cowling detached, striking the cockpit. The Trophy race itself was held at Hatfield on 23 June as part of the National Air Races. ■

Winch launch

614 VGS and Air Cadet gliding...

Air Cadet gliding has a long history, and was one flying activity that did continue at the Airfield after the last operational squadron moved out and the Airfield was put under care and maintenance.

614 Volunteer Gliding School (VGS) came to North Weald from RAF Hornchurch when that station closed in 1962. It had been formed in 1955 from the amalgamation of three schools – 142 VGS, 146 VGS and 147 VGS.

Due to its closeness to London the VGS became the show school and flew many VIPs. Its pilots performed aerobatic displays including the Battle of Britain At Home Day and airshows at Biggin Hill.

Jillie Vandenberg



The Slingsby T-31 Tutor was the standard Air Cadet glider for many years

The School remained here for three years, moving on to RAF Debden when the Airfield was handed over to the Army. It remained there until 1982.

614 VGS then moved to Wethersfield, where it is still operational, although now designated as a Squadron rather than a School. It has survived the recent Air Cadet reorganisation, which has closed many other historic gliding units. ■

Remembering the Essex Gliding Club

John Buckels recalls many years of gliding from North Weald...

Civilian gliding started at North Weald in the 1960s when the Essex Gliding Club was formed. Air Cadet Gliding had been operating at the site for some time before.

In the 1970s the Essex Gliding Club was probably at its prime operating one tug (a brand new Super Cub that was actually flown from the USA), one motor glider and about 45 gliders. The club was supported by approximately 250 members.

Launching was by aero-tow and wire, using 3,500 feet of piano wire. Summer courses were run from May to October, so there was gliding practically every day.

The Gliding Club had almost the sole use of the whole of North Weald Airfield there being no other aircraft operators at the time and only a handful of industrial tenants.

The Club used what is now Hangar 4 before it burnt down and so built its own hangar, which is now the Air Ambulance Hangar. They rented the whole of the Control Tower which was the centre of social events and also the Gliding Club's maintenance facility.

In the 1970s and 80s there was little in the way of controlled airspace to affect gliding. Stansted airspace was at 3000 feet amsl, and they had little or no traffic. Gliders were

Airfield Archives



Gliders at an Airfield Open Day in 1980

Airfield Archives



allowed to enter anyway, in VMC, without further ado! Gliding therefore blossomed at North Weald and numerous long distance flights were possible.

Alas this was not to last. During the 1990s power flying increased, wire launching had to stop and EasyJet and Ryanair were conceived. Stansted became busy and controlled airspace soon followed. The Stansted exemption was withdrawn and gliders were limited to 1200 feet, with a small exception to climb to 2000 feet overhead the Airfield.

The die was cast and so the Essex Gliding Club purchased part of the old Ridgewell Airfield where they now operate most weekends. Sadly, this was the end of the golden era of gliding at North Weald. ■

Treble One Squadron was formed at Dier-el-Belah in Palestine on 1 August 1917 as the first fighter squadron in the region. It flew a variety of types – Bristol Scouts, M1Cs and F2B Fighters, DH2s, Nieuport 17s and SE5s – claiming 57 victories against its Turkish opponents for the loss of just two pilots killed, one prisoner and three wounded.

The squadron reformed on 1 October 1923 at Duxford, initially equipped with a single flight of Grebes, with a flight of Snipes being added on 1 April 1924 and a third flight, composed of Siskins, in June. In January 1925 the Squadron was wholly equipped with Siskins, which were retained until January 1931, when Bulldogs arrived. Gauntlets became the squadron's last biplane equipment in May 1936.

In January 1938 Treble One became the first Hurricane squadron, based at RAF Northolt. It flew as part of both 11 and 12 Groups during the Battle of Britain, commanded by Harry Broadhurst. Converted onto Spitfires in 1942, Treble One moved to the Mediterranean for the rest of the war.

It was disbanded in May 1947 and reformed again in December 1953 with Meteor F8s at RAF North Weald, re-equipping with Hunter F4s in 1955.

The following year, the Squadron provided the official RAF display team – named The Black Arrows – with the aircraft wearing a special all-black livery. The Black Arrows were the first team to fly with five Hunters, and their performances included a formation landing.

By the 1957 Farnborough Display, the team was bigger and caused a sensation with a formation loop and roll of nine aircraft – this had not been seen since before the war. New manoeuvres and formations were also added.



Air Ministry photo

Treble One was the last front-line squadron to operate from RAF North Weald, moving first to North Luffenham then Wattisham during 1958. At this time, The Black Arrows also introduced the bomb burst, where the aircraft broke formation at the top of a loop, trailing smoke, to pull out in different directions.

The most famous routine by the Black Arrows was the loop of 22 Hunters at the 1958 Farnborough Airshow in front of 110,000 people. This is the greatest number of aircraft ever looped in formation, and is still a world record. The team also received the RAeC's 1959 Britannia Challenge Trophy for 'the most meritorious performance in the air during the year.'

The Squadron converted to Lightnings in 1961, then Phantoms in 1974. It was flying Tornado F3 fighters from RAF Leuchars in Scotland until its disbandment in March 2011.

In 2009, former Black Arrows Hunter XG194 was moved from RAF North Luffenham to Wattisham. When restored, the fighter will carry the markings it wore when the team's CO, Sqn Ldr Roger Topp flew it, while operating from RAF Wattisham. ■

The world's biggest formation loop by 111 Squadron's team The Black Arrows

*Air Commodore Roger Topp AFC** describes leading the 22-ship loop at the 1958 Farnborough Air Show.*

"We ran in at 150ft, right to the end of the runway, where I initiated pull-up for the straight loop. When entering a formation loop from level flight it is not easy for the pilots to keep station because of summer turbulence, but once we got 'G' on, the formation settled down. At the top of the loop I relaxed the back pressure on the stick, flew almost inverted at around 120 knots, and paused until in my mirror I saw the wings of the fourth aircraft in the stem. When those

behind topped the rise I started easing down. Descending with 'G' lessened the effect of the 'bumps', and at the bottom we flew a second tighter, neater, loop. I then shed six aircraft and barrel-rolled to port the remaining diamond sixteen in formation before shedding a further seven. The diamond nine then looped before four bomb-burst away, leaving a standard box five, which I could fly like one aeroplane. We performed a variety of formation patterns as tight and with as much 'G' as I liked, with the spectacular Prince of Wales feathers finale to finish." ■

Treble One's ground crew recall The Black Arrows and RAF North Weald

We eavesdrop on the filming of a new documentary about the team

Seven former members of the ground crew from 111 Squadron gathered at the Airfield on Monday 22 November 2010 to film their part in a documentary 'The Story of The Black Arrows – in their own words' by Ian Stark, whose uncle was one of the pilots. What follows is a kaleidoscope of just a few of the memories they told over several hours of conversation...

Two of the participants – John Marshal and Tony Godwin – had joined when Treble One reformed in 1953. John's job was to receive all the new aircraft for the Squadron.

Tony was an airframe mechanic and put in charge of stores and 144,000 gallons of Avtur jet fuel, not only for Treble One, but also the two Auxiliary Air Force Squadrons 601 and 604 as well. "They were happy years, good years," he recalled. He also remembered an aircraft breaking the sound barrier and smashing every window in the nearby Kia-Ora Café.

Alan Falkner was an armourer. He not only dealt with the 30mm Aden cannon packs, which were self-contained units and could be quickly detached from the aircraft for replenishment, but also the smoke system for the Hunters. The diesel tanks for the smoke were carried in the space normally occupied by the ammunition.

In those days air-to-air gunnery was still an important skill. Meteor target tugs towed large fabric drogues. Each Hunter pilot's ammunition was painted a different colour, so it was possible to see what hits they had scored after a sortie.

Malcolm Wright worked as an air radar fitter with the Squadron. He recalls "how good a team of people it was." Russell Clelan, another radio technician, reckoned the Squadron "set a stamp on us for the rest of our lives."

This is a theme which the ground crew emphasised: "111 was unique." "Communications were very good." "They were all very young men, but everybody cared." "It was a fantastic squadron – down to two bosses, Topp and Latham."

Because the Squadron was a front-line fighter unit as well as the RAF's official aerobatic team, the pilots had to be exceptional in their own right, even those recently joined from training units. Nevertheless, they were "always very generous in their compliments to their ground crews." Andrew



John, Russell, Alan, Malcolm, Peter, Andrew, Tony and Ian in conversation



Ockenden "witnessed some incredible flying," and acted as support for the team at three Paris Airshows.

Peter Jones served a 5-year apprenticeship at de Havillands before joining the RAF. He enjoyed his time on the Squadron, but was annoyed by one thing – the old-fashioned class attitudes when its standard was presented by ACM Sir Harry Broadhurst in April 1957. Two large marquees were positioned by the tower for spectators. One was marked for "Airmen and their Women", the other for "Officers and their Ladies."

A flying display followed the formal parade. All went well until the Number 5 aircraft flown by Mike Thurley landed hard on the infamous 'bump' on Runway 02 and bounced. He tried to go around, called "coming through", and was knocked out. The now porpoising aircraft snapped its nose wheel and hurtled down the runway in a shower of sparks. It cartwheeled off the end to the coincidental accompaniment of the band playing Lonnie Donegan's "It's a hard road dead or alive!" As the Hunter broke up, the ejector seat partially fired and Thurley was thrown clear still attached to it. He suffered two cracked vertebrae, and was taken to St Margaret's Hospital in Epping.

It wasn't all work of course. In the winter they played ice hockey on the apron outside Hangar 3, and remember the King's Head with affection. About every six weeks the officers and ground crew would have an evening there and mixed freely. Beer was free for the airmen, which was appreciated.

Dances were held at the village hall. The main gate was shut at midnight, but they discovered a hole in the fence nearby. So had the Service Police, who lay in wait for the late night revellers and admonished them. Strangely, this handy hole was never repaired!

This documentary 'The Story of The Black Arrows – in their own words' is available at www.classicmachinefilms.com ■



Roger Topp's Hunter XG194 has been restored and can now be seen at the Wattisham Station Heritage Airfield Museum.



Squadron Leader Roger Topp, commanding officer of No 111 Squadron along with other pilots from 'The Black Arrows' sign autographs for excited schoolboys at the 1958 Schoolboys Own Exhibition at Olympia, London.

Roger Topp

Inspiration for the Black Arrows formation aerobatic team...

Roger Topp was born on 14 May 1923. He joined the RAF in 1943 and was sent to Canada for flight training. When he returned to England in 1944 there was a surplus of pilots for powered aircraft, so he transferred to the Glider Pilot Regiment instead.

On 2 March 1945, he took part in *Operation Varsity* – the airborne crossing of the River Rhine – flying a Horsa glider. In 1947 he joined 98 Squadron in Germany, later becoming a flight commander and the instrument flying examiner for his Wing, operating Mosquitos.

He was awarded the Air Force Cross in 1950 and attended the Test Pilot's course at the ETPS. He remained at Farnborough with the Royal Aircraft Establishment, testing armaments including guided weapons and Aden cannon.

He was also a demonstration pilot on the Canberra bomber, then new to service, flying before the Emperor of Ethiopia and the Shah of Persia during their visits to Britain. In 1954, along with another test pilot, he shared 100 hours of flight testing on the Comet airliner at Farnborough following its disastrous fatigue failures. He was awarded a bar to his AFC in 1955.

Returning to operational flying in January 1955, he took over 111 Squadron at North Weald, which was then equipped with Gloster Meteor F8s. By May, the first Hawker Hunter F4s were on the Squadron's strength.

On 8 August 1955 he broke the 'Northolt-to-Turnhouse' speed record previously set with a 111 Squadron Hurricane in 1938. In the Hunter, which reached speeds of 717 mph, the 332 mile supersonic flight was completed in 27 minutes and 52 seconds. The Hunter was WT739 / R. It would take 32 years to break this new record with a Phantom.

He was enthusiastic about aerobatics, which led to the formation of the Squadron's five-ship display team. This

performed both in the UK and overseas. By the end of 1956 the uprated Hunter F6 had replaced the F4, helping to improve its aerobatic capabilities as well.

The Team then won the Fighter Command aerobatics competition, which allowed it to represent the RAF at every major air-show during 1957. The aircraft were specially painted in an all-black gloss finish.

Following an impressive five-ship display at the 22nd Paris Salon, a French journalist reported on Treble One's superb flying and referred to the team as '*Les Fleches Noirs*'. 111 Squadron's display team would henceforth be known as *The Black Arrows*.

At the September Farnborough Air-Show, the *Black Arrows* displayed a Diamond Nine-Ship in place of the previous five aircraft formation. More developments were to follow.

On 19 February 1958 the Squadron left North Weald for North Luffenham followed quickly by a further move to RAF Wattisham, where it continued to perfect its formation aerobatics as well as other training. Roger Topp was nearly at the end of his tour with the Squadron, and decided on his masterstroke, which was agreed with the AOC-in-C of Fighter Command Air Marshal Sir Thomas Pike (himself a former Station Commander at North Weald).

At the Farnborough Airshow in 1958 the public were treated to the spectacle of 22 Hunters, in close formation, which pulled up into a full loop. This was repeated in a second loop. The record still stands. As a result of the Team's success he was awarded the second bar to his Air Force Cross.

He commanded RAF Coltishall, and as an Air Commodore was Commandant of the Aircraft & Armament Experimental Establishment at Boscombe Down from 1970-72.

On his 90th birthday he was reunited with his Hunter XG194 at Wattisham in May 2013, where it was restored for display. He joined us at North Weald for many of our community events and sadly died on 6 March 2020 of complications following a stroke. ■

Upgrade centre

Eric Hayward was with the Hawker Contractors Working Party (CWP) at North Weald in the 1950s...

I was based at North Weald initially as part of a Contractors Working Party (CWP) in early 1956. We were carrying out a major repair on a Mark 4 Hunter, WV264/A, from 111 Squadron. After completion of this aircraft, Hawker's took over one of the hangars to establish a CWP Mod Centre for Hunter aircraft to undertake major modifications outside the range of RAF base capabilities, but not warranting the return of the aircraft to the factory.

By the end of 1956, we had a base staffed by about 100 plus employees, and were the responsible unit for sending out small working parties for repairs and mods to many stations in East Anglia. The source at this time of Mark 4 aircraft arriving was from 229 OCU Chivenor and squadrons based in Germany.

Only aircraft post-Mod 228 were received – those fitted with four wing pylons. Mod 228 was a major mod and required removal of wings and return to the factory.

By 1958, Mark 4s were still being received back from German-based squadrons, and were replaced in Germany with Mark 6s, whilst our modified Mark 4s were being sent on completion to Chivenor, Pembrey and other OCUs.

In 1958 the decision was taken whereby the RAF needed ground attack aircraft, and a contest was held between Folland Gnats, Jet Provosts and Hunter aircraft. Two of each type flew on trials in the UK and North Africa.

The Hunters won, and subject to certain modifications to improve them in this role, were modified and known as FGA9 (INTERIM) for initial issue. These subsequently became full FGA9s when the mod state was finalised.

Alan Allen Collection



Alan Allen Collection



The main differences between the Mark 6 and Mark 9 were:

- Capability to carry 230 gallon inboard drop tanks;
- Avon 207 engines;
- Additional oxygen bottles to cover the extra range now available;
- Tail braking parachute installation;
- Improved cockpit air conditioning for Middle East operations.

There were 36 INTERIM aircraft, later modified to full Mark 9s. During 1958-9 the Hunter Mod Centre was moved to Horsham St Faith (Norwich), and most of the INTERIM aircraft were modified there.

During the time the CWP was operating from North Weald there were often as many as 30-40 Hunters on the Airfield awaiting upgrades. Hangar 1 was utilised, with Hangar 2 and Hangar 4 being used for storage.

North Weald was designated as No. 2 Fighter Command Modification Centre from 11 March 1957 to 1 June 1958, and then the Fighter Command Modification Centre from 1 June to 15 October 1958. ■

Alan Allen Collection



Eric Hayward died in July 2011. This article is based on correspondence he had with Alan Allen.

The Control Tower

A Grade II listed building from the final expansion period in the early 1950s...

The seven Type 5223a/51 control towers were built to a standard 1951 design featuring a central, two-storey tower surrounding a steel frame with an octagonal steel-framed and glazed visual control room (VCR) on top of the flat roof. North Weald's Tower is now a Grade II Listed Building along with two others at Greenham Common and Upper Heyford. The one at Mildenhall has been demolished. The other remaining examples are situated at Brize Norton, Fairford and Biggin Hill, which has been much modified.

The Tower has single-storey wings to the north and south, with an additional, slightly lower wing to the north. The entrance is on the east side. The building is built of light brown brick, with a plinth of dark red brick, laid in stretcher bond with concrete floors and roofs.

The central building has three bays on the east and west elevations. The east side has a projecting central bay housing the stairwell which is lit by a large window. The original Crittall windows have been replaced with similar metal units. The glazing to the VCR remains largely original, four cracked panels being removed in 2013. The flat roofs of the tower and principal wings still have the original metal railings.

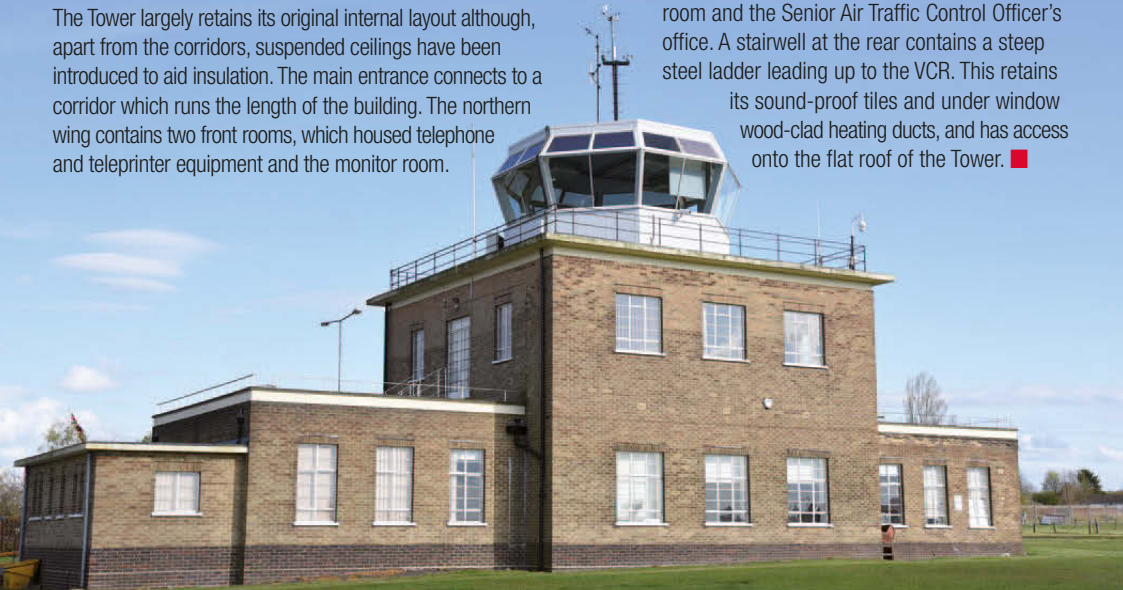
The Tower largely retains its original internal layout although, apart from the corridors, suspended ceilings have been introduced to aid insulation. The main entrance connects to a corridor which runs the length of the building. The northern wing contains two front rooms, which housed telephone and teleprinter equipment and the monitor room.



At the rear of the wing was a rest room and female toilet. The front half of the main tower was the radio equipment room (now the Hunter Room), with the officers' toilet, signals workshop and staircase to the rear. The left wing contained ancillary rooms accessed from outside. The main medium voltage switchgear room was accessed from the rear via a steel door, with a roofless transformer enclosure with steel gates containing switchgear and a transformer alongside. The small wing to the south housed a ventilating plant room and pyrotechnics store.

Inside, concrete stairs with metal banisters and a brass handrail lead to the first floor, which was largely occupied by the radar control room (now the Hurricane Room). Double doors allow access onto the flat roofs of the north and south wings.

The other first-floor rooms were used as a rest room and the Senior Air Traffic Control Officer's office. A stairwell at the rear contains a steep steel ladder leading up to the VCR. This retains its sound-proof tiles and under window wood-clad heating ducts, and has access onto the flat roof of the Tower. ■



604 Squadron Meteors lined up on the Apron. The Radio Station masts are visible in the background



Keeping track

John Hamlin remembers working in the Tower at North Weald...

Fresh from spending my two years of National Service at RAF Moreton-in-Marsh, I joined the Royal Auxiliary Air Force at North Weald in January 1955. My 'trade' was Operations Clerk, now known as Air Traffic Assistant, and at North Weald I worked in the Tower but was assigned to 604 Squadron for administrative purposes.

The present Control Tower was then only a couple of years old, and had been built to a standard postwar design, mainly for Fighter Command airfields. An Ops Clerk's work consisted largely of maintaining close contact with the Operations Room at Kelvedon Hatch, from where the squadrons based at North Weald were vectored onto any airborne targets. Apart from 601 (County of London) and 604 (County of Middlesex) Squadrons, which flew Meteors at weekends, 111 Squadron flew the then-new Hunters from North Weald during the working week.

At the time, I lived with my parents in Surrey, so initially I travelled by train via London to North Weald station, which was then on a steam-operated extension of the Central Line. This was tedious, and by the autumn of 1955 I had saved enough money to buy a Vespa scooter, which made life easier.

One of the qualified air traffic controllers, also a 604 Squadron member, was Flt Lt Cusworth, whose civilian job was as an estate agent at Southend. On Saturday evenings he often took two or three lads in his Triumph Roadster car, which sported two conventional seats and two 'dicky' seats at the back, to either the King's Head in the village or the Thatched House in Epping for a couple of beers. He eventually became SATCO at Southend Airport.

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Black Arrows display team Hawker Hunters from 111 Squadron

It was at that time the practice of the RAuxAF squadrons to go to Summer Camps, often overseas. The 1955 Camp was held at RAF Wunstorf in Germany, to where the ground personnel were flown in a Valetta of 30 Squadron. At Wunstorf I spent the days in the Control Tower doing very little and the evenings sampling quantities of German beer! Our accommodation was in former Luftwaffe barracks, which most people considered were much more comfortable than the H-blocks at North Weald. While there, someone organised a weekend trip to Hamburg, where we stayed in a good hotel and visited some less salubrious parts of the city.

In 1956 the RAuxAF squadrons were kitted out in khaki drill (KD) uniforms to wear at Summer Camp in Malta, but the Camp was cancelled due to the Suez crisis. Curiously, I was never asked to return the KD uniform, and wore bits of it at home for several years!

Then, in February 1957, came the bombshell — the RAuxAF was to be disbanded due to a perceived opinion that technology was moving ahead at a faster pace than part-time aircrews could cope with, apart from the rising costs of the force. So, without much fuss, the RAuxAF disbanded on 10 March 1957, allowing local residents to enjoy quiet weekends for a change! One thing sticks in my mind about RAF North Weald — the absolutely awful food in the airmen's mess! ■



A job well done!

The Royal Observer Corps Stand-down Parade and Airshow at North Weald in June 1945...

The Royal Observer Corps (ROC) can trace its roots to the First World War and the requirement for a warning system to bolster UK defences against bombing raids by Zeppelins and later Gotha bombers. A system of around 200 observation posts and observers was organised. Initially these posts were manned by British Army personnel, who were in turn replaced by Special (Police) Constables, and were coordinated on an area basis with telephone communications provided between themselves and the anti-aircraft defences.

In 1925, the RAF's newly constituted Air Defence of Great Britain command led to the need for a parallel Raid Reporting System, with representatives from the Air Ministry, Home Office and the General Post Office. This was to provide the visual detection, identification, tracking and reporting of aircraft over Great Britain, and was later known as the Observer Corps.

The Observer Corps performed sterling service during the Battle of Britain by tracking German raids inland as the Chain Home radar stations only looked out to sea. The Observer Corps was subsequently awarded the title 'Royal' by King George VI in April 1941, in recognition of service carried out by its personnel during the Battle of Britain.

On 12 May 1945, when it was confirmed that the Luftwaffe had ceased combat operations, the ROC stood down. In recognition of the contribution made by its personnel in the allied victory, the Air Ministry held a massed ROC rally and air display at RAF North Weald, from Saturday 23 to Monday 25 June 1945.

Over 1,800 ROC personnel were invited to attend, with at least two observers representing their respective post or centre. On Sunday 24 June, the parade formed into a huge square and the new ROC Ensign was presented by Lord Beatty, Under-Secretary of State for Air, and dedicated at a special service. The Ensign was borne by Observer Lieutenant Pollock VC, accompanied by Chief Observer BJ Phillipps and Observer CE Farrow.

Lord Beatty, on behalf of the Secretary of State, paid tribute to the unflinching devotion to duty which the Corps had shown, and also "Charged every member, both male and female, to make it his or her duty to see that the honour, devotion to duty and efficiency of the Royal Observer Corps remained second to none among His Majesty's Services."

The ROC then undertook their first ever uniformed march-past to the accompaniment of the RAF Band, Lord Beatty, taking the salute.

The very first post-war airshow in the UK began when four squadrons of Mosquitoes, escorted by six squadrons of Mustang III and IV fighters, flew over at about 2,000 feet. These were followed by one of the new jet Meteors, a Short Stirling dropping supplies and a Halifax towing a Hamilcar glider, which landed. Next came three squadrons of Czech Spitfires (the Wing was based at North Weald in 1944), a Dakota towing a Horsa glider, six more Meteors and a Hawker Tempest. To finish, a Sikorsky Hoverfly R4B (the first helicopter used by British armed forces) displayed its capabilities.

There were many aircraft on static display as well, which were open for the ROC personnel to inspect. These included a Mosquito, Lancaster, Flying Fortress, Liberator, Wellington, Warwick, Stirling, York, Beaufighter, Dakota and Walrus amphibian. These also took to the air for their own flypasts.

However, in only a few months, the ROC was again called upon to meet the challenges posed by the Cold War and the growing threat of nuclear attack. It was finally stood down in 1996. ■



Douglas Bader waiting to start his personal Spitfire

Douglas Bader and the first Battle of Britain flypast

This historic event was led from North Weald in September 1945...

The first RAF commemorative flypast to mark Battle of Britain Day took place on 15 September 1945. RAF North Weald was the central focus of this.

Group Captain Douglas Bader, who commanded the North Weald Fighter Command Sector, led the flypast with eleven of his colleagues in Spitfires, taking off from the Airfield in front of Lord Dowding and many other dignitaries. He was flying his personal Spitfire RK917 coded DB, which later served with the South African Air Force.

The Operations Record Book of HQ RAF 11 Group described the event as follows: '12 Spitfire IXs preceded the various formations, flying over the route some two minutes before the other Squadrons. These 12 aircraft were piloted by G/C Bader, G/C Turner, G/C Carey, W/C Tuck, W/C Crowley-Milling, W/C Lofts, W/C Ellis, W/C Wells, W/C Drake. followed by Mustangs, Tempests, Typhoons, Meteors, Mosquitoes and Beaufighters.'

Passing from North Weald the various elements of the flypast



Douglas Bader and Sir Hugh Dowding

followed the Spitfires in salute over St Paul's Cathedral and the centre of London, viewed by large crowds. Seventy other RAF stations also held 'At Home' Days. ■



Entrance Bungalow

Crown Copyright



Fixer Plotting Table

Crown Copyright



Main Plotting Table

Fighter control

The bunker at Kelvedon Hatch was the Metropolitan Sector Control Room for North Weald...

The underground bunker at Kelvedon Hatch was built in 1952-3 as part of the RAF's Rotor programme, which aimed to improve Britain's air defence radar network against the perceived threat from Soviet nuclear bombers. The whole Rotor project consumed 350,000 tons of concrete and 20,000 tons of steel across 66 sites.

Kelvedon Hatch was one of four Sector Operations Control Rooms constructed for Fighter Command, and came under the aegis of RAF North Weald. It was known as SOC-R4, and designed to provide command and control of Fighter Command's Metropolitan Sector, fed by a cluster of refurbished wartime Chain Home early warning and Ground-Controlled Interception radar stations. It was 125 feet underground with an entrance set inside a guard room disguised a bungalow. A 100-yard tunnel led into the lowest level, which had an additional two floors above.

Its construction involved the digging of a very deep hole; the three-story concrete bunker was built in the hole and when finished the removed soil was replaced on top so that the bunker was literally buried under 75-feet of countryside. The whole process involved the removal and replacement of 40,000 tons of earth. It had its own borehole for water, generators and filtered air conditioning and supposedly would protect against a near miss by a 20 kiloton nuclear weapon.

Early each morning two RAF buses ran from North Weald with watch-keepers for MSOC Kelvedon Hatch.

One task was to help locate friendly aircraft by using radio fixes to plot their positions. There were five direction finding stations attached to the Sector: Silverstead near Biggin Hill in Kent; Pett on the cliffs near Hastings;

Monkton near RAF Manston in Kent; Whittlesford near RAF Duxford in Cambridgeshire; and Wix fixer between Colchester and Harwich in Essex.

The procedure was for an aircraft wanting to know its position to transmit by RT "Warmtoast (the Sector Ops callsign) *Ivan 23* (aircraft's squadron callsign and number) *Request Fix.*" Whilst the aircraft was transmitting the five fixer stations would swing their DF aerials, take a bearing on the transmission and pass the bearings obtained down the landline to the operators at the Sector Ops Fixer table.

They in turn would pull out the cords from the fixer compass roses on the table in front of them aligning the cords with the bearing provided by the fixer. Where the cords intersected showed the position of the aircraft. The Fighter Controller watching this from the gallery would pass by radio to the aircraft the aircraft's position either by grid reference or as a bearing and distance to a familiar reference point like an airfield or town. The whole process took no more than 30 seconds from the initial call by the aircraft asking for a fix to being given its location.

In the mid 1950s, the Decca Type 80 radar was introduced. This improved version was able to combine the tasks of

both the early warning and interception radars at ranges of up to 250 miles. It meant that fewer stations were needed to provide a comprehensive air defence screen, which could also be controlled by the radar stations themselves – now designated as Master Radar Stations. As a result, Kelvedon Hatch was no longer required, and after only a few years of service, was put under care and maintenance.

The bunker later became the United Kingdom Nuclear Warning and Monitoring Organisation's Metropolitan Sector HQ and then the regional Home Office bunker for London, known first as a Sub-Regional Control (1967), and subsequently as a Sub-Regional Headquarters (1973) and finally a Regional Government Headquarters (1985). In 1992 the existing



Plotting Table for nuclear strikes

landowner bought it, and has made it into a tourist attraction – the 'Secret Nuclear Bunker'. ■

Operation Pegasus

How the BBC made broadcasting history at North Weald in 1950

Operation Pegasus made history. It was the first televised airborne outside broadcast, which was carried out by the BBC on Saturday 29 September 1950 with a second flight the following day. Both sorties were set up and flown from RAF North Weald.

The camera and broadcast equipment were carried in a Bristol Freighter, G-AIND, which had its side door removed so that cameraman, Duncan Anderson, could film while the aircraft cruised over London and the local Essex countryside, escorted by two Royal Auxiliary Air Force Spitfire XVIs. Several engineers were also on board to operate the equipment, along with a commentators Peter Dimmock and Charles Gardner.

The BBC engineers had many problems to solve to make this historic flight a success including vibration, radio reflections from the aircraft itself as it turned and banked, and the broadcast waves suffering interference from the revolving propellers. They also had to install a power unit for the very high-frequency camera and transmitter. The problems were finally solved with only one day to spare, after a number of rehearsal flights.

The aim of the broadcast was to fly down the Thames from Hampton Court to the estuary, showing famous landmarks such as the Houses of Parliament, Westminster Abbey, and the Tower of London. Air-to-air sequences also took place over Essex with airliners of the day. On the Sunday, a 'Pageant of the Air' was staged for the camera featuring the RAF training aircraft, specially based at North Weald.

These first, faltering steps opened up a whole new vista for broadcasting live events from the air, and are worth remembering. Sadly, footage of the two broadcasts does not survive, but there is a short archive film of one of the rehearsal flights which can be viewed at:

www.bbc.co.uk/archive/aerialjourneys/5303.shtml ■

Autograph, sir?

A youngster puts three Battle of Britain aces in their place...

In September 1949, Johnny Kent, a Flight Commander of 303 (Polish) Squadron at Northolt during the Battle of Britain and now Chief Test Pilot at the Royal Aircraft Establishment, Farnborough, joined Douglas Bader and Bob Doe at North Weald for the Battle of Britain display where they were interviewed by Richard Dimpleby on BBC Television for a feature called *The Royal Air Force at Home*.

He described the scene in his book *One of the Few*: "It was the usual drill, the three of us lined up alongside a Hurricane and the question was put: 'Which aircraft won the Battle of Britain, the Spitfire or Hurricane?' One said it was the Spitfire and the other said it was the Hurricane, while I said 'Both!' – for which I was gently chided by Douglas in his newspaper column.

After the interview we were all standing chatting when a small boy appeared and walked straight past Bob Doe, right past me, past Douglas and up to Richard Dimpleby and said 'Kin I 'ave your autograph, sir?' Remarkably, a photograph was taken of this incident unbeknownst to us, and it appears in the book about Douglas Bader, *Reach for the Sky*; it is appropriately captioned *Sic Transit Gloria!*" ■

Jet engines and RAF North Weald

The three types of engines that powered jets at the Airfield

The de Havilland Goblin

The Goblin jet engine was designed by Frank Halford and was the second British gas turbine to fly. It powered the de Havilland Vampire.

The design used a centrifugal compressor providing air to sixteen individual flame cans, with the exhaust powering a single-stage axial turbine. The prototype engine was first installed in a Gloster Meteor during March 1943, the Goblin-powered Vampire flying in September. The production engine produced 3,000 lb of thrust and was fuelled by kerosene. It was further developed into the more powerful Ghost, which was used in the Venom fighter-bomber.

The Rolls Royce Derwent

The Derwent was a centrifugal compressor turbojet with ten flame cans. It was a similar format to the Goblin, but smaller in diameter. The engine was originally developed by Rover as a simplified version of Frank Whittle's design. The project was subsequently taken over by Rolls Royce, who solved the production and quality problems that had held up its initial manufacture.

The first Derwents produced 2,000 lb of thrust, and were later updated to 2,400 lb in the Mark IV. A scaled-down version of the later Nene was designated the Derwent V, which produced 3,500 lb of thrust. Derwents powered all the versions of the Gloster Meteor.

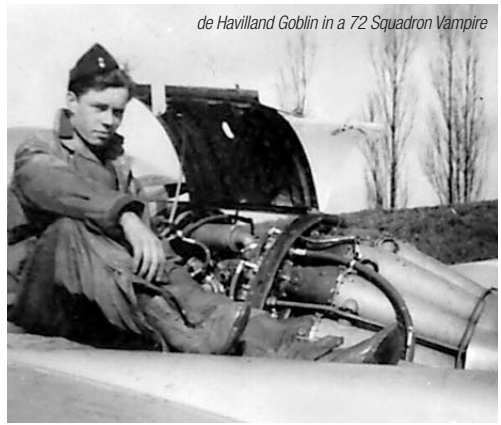
The Rolls Royce Avon

The Avon was the first axial flow jet engine designed by Rolls Royce. Development started in 1945 and the first prototype was built in 1947. Starting with an eight-stage compressor, this was progressively modified up to a 15-stage compressor in its final form.

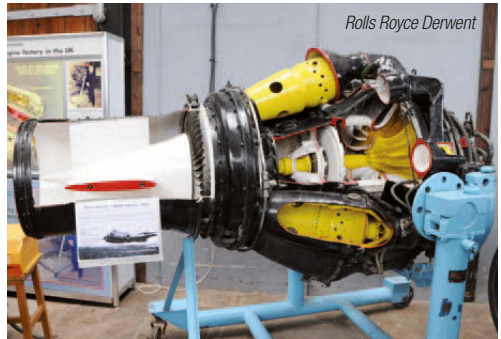
The Avon became one of the most successful jet engines of the post-war period, finally ceasing production in 1974. It powered thirteen different aircraft types, including the Valiant V-bomber, and remained in RAF operational service until 2006 in the Canberra PR9.

The original version, the RA3/101, produced 6,500 lb of thrust and was used in the English Electric Canberra. The

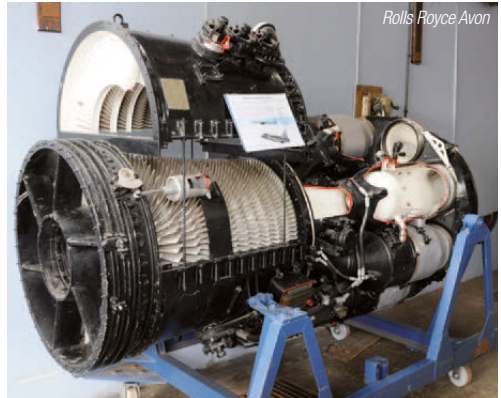
Jim Barton / 72 Squadron



de Havilland Goblin in a 72 Squadron Vampire



Rolls Royce Derwent



Rolls Royce Avon

engine had considerable development potential, being updated to 10,000 lb of thrust for the Comet airliner and Hunter F6, while the final output topped 16,360 lb in afterburner mode on the English Electric Lightning, giving this fighter the ability to climb directly from take off to 36,000 feet in less than three minutes.

All three engines powered aircraft which were based at RAF North Weald – the Vampire, Meteor and Hunter. ■



Meteors of 601 and 604 Squadrons lined up on the Hanger 2 Apron with their pilots

Jet aircraft at RAF North Weald

The three types of jets that flew at the Airfield

The de Havilland Vampire

The de Havilland Vampire F3 was the first jet fighter based at the Airfield. The type equipped 601 and 604 Squadrons in 1952. They were also joined by 72 Squadron, which transferred from RAF Odiham flying the FB5. The aircraft was powered by the de Havilland Goblin engine, giving it a top speed of 578 mph and a service ceiling of 42,800 feet. The Vampire was armed with four 20mm cannon and could also carry eight 3-inch rockets or two 500 lb bombs.

The type was widely exported, and many were built under licence. The Airfield also had the two-seat training version, the T11 on strength. One survivor from the Station Flight is at the Bournemouth Aviation Museum.

The Gloster Meteor F8

The Gloster Meteor was the standard RAF post-war jet fighter, first entering service in July 1944. The version used by squadrons at North Weald was the F8. It was powered by two Rolls Royce Derwent 8 engines giving it a top speed of 600 mph. The Meteor was armed with four 20mm cannon and could also carry two 1,000 lb bombs or sixteen 3-inch rockets. The aircraft was fitted with a Martin Baker ejector seat.

The type served with 72, 111, 601 and 604 Squadrons at North Weald. The two-seat T7 version was used by the squadrons, not only as a trainer but also as a target tug.

Jim Barton / 72 Squadron

72 Squadron Vampire FB5



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111 Squadron Hunter of the Black Arrows



The Hawker Hunter F6

The Hawker Hunter F6 was the last operational fighter type to operate from RAF North Weald, equipping 111 Squadron. It was a very successful design and widely exported, serving with 21 different air forces.

The aircraft was powered by a Rolls Royce Avon 203 jet engine, giving it a speed of 715 mph at sea level. It could go supersonic in a dive. It was armed with four 30mm Aden cannon in a special detachable pack for easy replenishment. The four hard points under the wings could carry a variety of bombs, rockets or drop tanks. Retired from its fighter role in 1963, many Hunters were then converted to FGA-9 standard for ground attack.

111 Squadron became famous as the *Black Arrows* display team, which started life at North Weald. Their 22-ship formation loop at the 1958 Farnborough Airshow is still a world record. ■

Out with a bang!

Ejector seats are life savers

Ejector seats which help aircrew get out of a stricken aircraft have been in existence for many years. The first in 1910 was bungee assisted. A compressed air designed was patented in 1916. By the 1920s a dischargeable chair had been tested. This basic concept developed into the type of seat we see today.

Operational seats were developed independently in Germany and Sweden during World War 2. The first designs were powered by compressed air, but later explosive charges were used.

The higher speeds being achieved by jet aircraft made ejector seats essential for escaping in an emergency. Early seats used a solid propellant charge to eject the pilot and seat by igniting the charge inside a telescoping tube attached to the seat. Later seats used rocket packs to improve performance and can be activated in stationary aircraft on the ground – the zero-zero configuration.

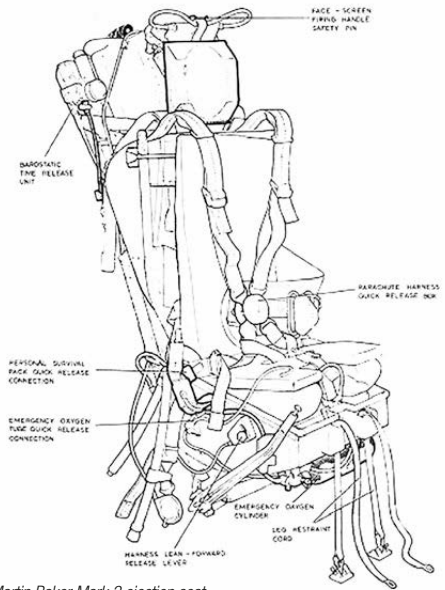
Martin Baker began researching ejector seats in 1944 following a request from the Air Staff. The concern at the time was the effect of large G forces on the human body. In January 1945 a 200-pound dummy was explosively ejected on a test rig. Shortly afterwards a volunteer, Bernard Lynch, was fired up a similar rig with no ill effects. The tests continued with larger explosive charges to increase the height of the ejection.

In order to lessen the G-forces a second charge was introduced to reduce the acceleration. The first airborne test from a Gloster Meteor jet using a dummy was carried out in June 1946, with Bernard Lynch carrying out the first live test on 24 July.

Martin Baker Mark 1

The first live emergency ejection by a British pilot using a Martin Baker Mark 1 seat was on 30 May 1949. 69 lives were subsequently saved by this type of seat. Meteor F8 fighters at North Weald were fitted with the Mark 1 seat. The ejection sequence was as follows:

- Face screen seat firing handle pulled;
- Two ejection gun cartridges fire and seat moves up guide rails;
- Oxygen supply tripped;
- Static line fires drogue gun after seat has risen by 24 feet, 24/22 inch diameter then 5 feet diameter drogues stabilise and slows the seat down;



Martin Baker Mark 3 ejection seat

- Pilot unfastens seat harness and pushes clear of seat;
- Pilot pulls ripcord on personal parachute.

Martin Baker Mark 2

The Martin Baker Mark 2 seat was the first fully automatic design. 332 lives were saved by Mark 2 seats. It was used in Hawker Hunters. The ejection sequence was as follows:

- The pilot pulls the face screen seat firing handle;
- Two cartridge ejection gun fires and the seat moves up the guide rails;
- Emergency oxygen tripped;
- As seat rises, static line initiates time-delay which fires drogue gun after 1 second;
- As seat rises, static line initiates time release unit and 24/22 inch diameter then 5 feet diameter drogues stabilise and slow the seat down.

Above 10,000 ft

- Barostat prevents operation of time-release mechanism.

Below 10,000 ft

- 5 seconds after initiation of time-release unit, plunger releases scissor shackle to separate the drogue from the seat;
- Transfer pull to canvas apron positioned between parachute and its container release face blind;
- Canvas apron tightens and tips pilot forward out of seat;
- Parachute withdrawal line, attached to apron, pulls parachute pack closure pins and apex of parachute from pack;



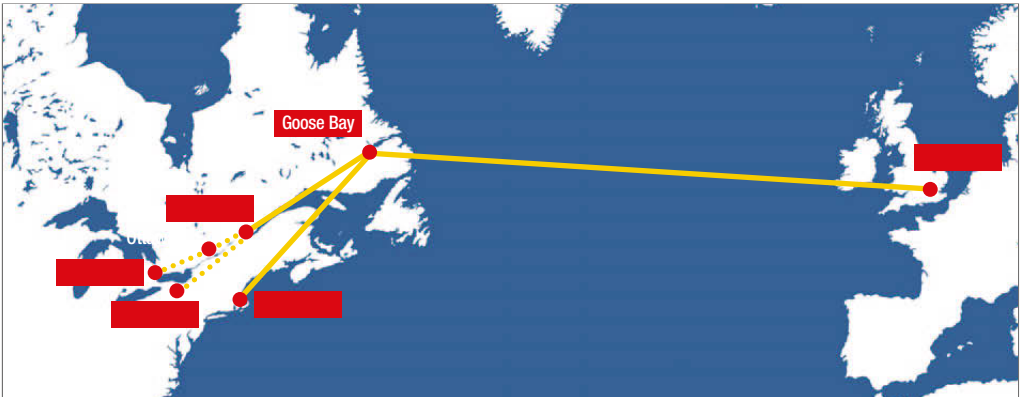
- Parachute deploys, drogue and apron still attached;
- Normal descent;
- In the event of failure of time-release unit, aircrew pulls D ring on parachute harness. This pulls slide disconnect pin which disconnects withdrawal line from parachute;

- Pulling D ring also removes canvas flap from second D ring;
- Aircrew pulls second D ring to operate.

Martin Baker Mark 3

The Martin Baker Mark 3 seat was an improvement of the Mark 2, providing better performance at low level and with a greater height for the ejection trajectory to clear tail fins of larger aircraft. It entered service in 1955. 255 lives were saved with this type of seat, which was used by Vampire T11 trainers and Hawker Hunters.

The latest seats include the Mark 16 which is used on the Eurofighter Typhoon and the F-35, and the Mark 17 which is a lightweight seat designed for small trainers. ■



A deadline to meet

North Weald's role in Queen Elizabeth II's Coronation...

The Coronation of Queen Elizabeth II took place on 2 June 1953 at Westminster Abbey. The event was televised by the BBC. Kinescopes of this historic event were sent to Canada and the USA. The idea was to get them across the Atlantic the same day. This is where RAF North Weald became involved.

Sycamore helicopters from 275 Squadron, normally tasked with search & rescue duties, were temporarily detached to the Airfield for ferrying the recordings from the BBC studios at Alexandra Palace to Heathrow where three Canberra PR3s of 540 Squadron from Wyton were waiting to fly the material to Canada in three stages through the day.

The codename was *Operation Pony Express*. The recordings were flown 2,480 miles across the Atlantic to Goose Bay by the Canberras, which left London Airport at 13.30, 15.15 and 18.20. Each aircraft took just over five hours to make the flight, with the recordings being flown a further 800 miles to Montreal by an RCAF CF-100 fighter and two of the refuelled Canberras. At 16.15 local time, a full recording of the BBC Programme was broadcast by television stations in Ottawa, Toronto and Montreal.

Two US television networks, NBC and ABC, also took this programme via a television link from Montreal to Buffalo. CBS broadcast its own recording of the BBC programme, flown across the Atlantic by the Canberras and then on to Boston by P-51 Mustangs. Over two million people in Canada and 85 million in the USA were able to watch the Coronation.

Meteors F8s from the North Weald Squadrons also took part in the RAF Royal Review at Odiham, where they were part of the static display. ■

Write off or repair?

RAF post-war repair categories...

Accidents happen in any environment, and aviation can be particularly unforgiving. The RAF developed a series of categories to describe the extent of damage to an airframe and how it would be repaired, parted out or scrapped.

1 The aircraft is repairable within the aircraft custodian's capabilities.

2 The aircraft is repairable within the aircraft custodian's Forward Maintenance Organisation's capabilities, or the maintenance capabilities of any Forward Organisation to which it may be allotted.

3 (PROV) The aircraft is repairable on site but the work is considered by the aircraft custodian to be beyond their Forward Maintenance Organisation's capability.

3 (SER) The aircraft is repairable on site but the work has been confirmed as beyond the aircraft custodian or their Forward Maintenance Organisation's capability and will be done by a Repair Organisation (RO).

3 (DEPTH) The aircraft is repairable on site but the work has been confirmed as beyond the capacity of the aircraft custodian, their Forward Maintenance Organisation and the relevant Repair Organisation. The work will be done by a Depth Maintenance Organisation.

3 (FLY) Post-categorisation, the aircraft may be flown (or may have temporary repairs effected so that it can be flown), if necessary under special conditions, either to another site for repair or until a suitable date can be arranged for repair at its normal base.

4 (SER) The aircraft is repairable but it is considered to need special facilities or equipment not available on site. The repair will be carried out by an RO at an MOD facility.

4 (WKS) The aircraft is repairable but it is considered to need special facilities or equipment not available on site. The repair will be carried out at a contractor's works.

4 (FLY) The aircraft is not fully repairable on site but may have temporary repairs effected so that it can be flown, if necessary under special conditions, to the appropriate repair organisation. This category tends to be a one flight only return to works.

5 (PROV) The aircraft is considered beyond economic repair.

5 (COMP) The aircraft is beyond economic repair, or is surplus, but is recoverable for breakdown to components and spare parts.

Jim Barton / 72 Squadron



A 72 Squadron Vampire VZ206 / R jumped its chocks during an engine run. The aircraft survived only to be written off after a belly landing at Valley following an engine failure in February 1954



Meteor T7 WW453 at the Jet Age Museum, Staverton

5 (GI) The aircraft is beyond economic repair, or is surplus, but is suitable for ground instructional use.

5 (SCRAP) The aircraft is beyond economic repair, or is surplus, and is fit for scrap or disposal only.

5 (MISSING) The aircraft is missing from a flight.

A North Weald example, Meteor T7 WW453 / Z

Meteor T7 WW453 was built by Glosters in May 1949, and delivered to 203 Advanced Flying School, based at RAF Driffild. Seven months later it was transferred to 604 (County of Middlesex) Squadron at North Weald.

It was involved in a flying accident in October 1950 and declared Cat 4. Three days later it was reassessed as Cat 3 and a team from Glosters arrived to make repairs on site. These were completed by the beginning of February. It was damaged again in July 1952 and declared Cat 3 for a second time, being repaired by Glosters at North Weald between August and the beginning of November. In June 1954 it was loaned to Ta' Qali in Malta and damaged there at the end of September and returned to Glosters in the UK for repair.

The following July it went to 20 MU at RAF Aston Down where it was stored. It was transferred in March 1957 to the Aeroplane and Armament Experimental Establishment at Boscombe Down, and later used by the Chemical Defence Establishment at Porton Down. It subsequently became the Gate Guardian for RAF Innsworth. It is now on display awaiting restoration at the the Jet Age Museum, Gloucester Airport, as part of its collection. ■