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# editorial

At the British Aviation Preservation Council (BAPC) meeting held at the Newark Air Museum on May 9, the National Aviation Heritage Committee, formed in 1996 by the BAPC and chaired by John Berkeley, issued one of the most important documents ever to be produced in the UK in respect of our aviation heritage. The 'National Aviation Heritage Register' lists the preserved airframes held in museums and collections in the UK - nothing new there, you may think, surely this kind of information is available from other sources such as Ken Ellis's excellent 'Wrecks & Relics' volumes. However, the importance of this document is well summarised in John Berkeley's introduction to the Register, in which he outlines its three key purposes:

1. To promote improved standards of conservation and protection for preserved airframes, taking into account their national significance.

2. To provide an authoritative source of information on preserved airframes to assist funding agencies to identify priorities for preservation.

3. To establish baseline data by which improvements in the conservation and protection of preserved airframes can be monitored and reviewed against the milestone targets in the National Aviation Heritage Strategy.

Aeroplanes are, by their very size and nature, amongst the hardest of artefacts to preserve but, to quote John again, "Aviation is a field in which Britain's world-class achievements are of special importance; our accumulated aviation heritage is one of the finest in the world, the result of a unique combination of national, voluntary sector and private initiative. However, it is self-evident that not everything can, or should be, preserved." Thus this document takes a hard look at the current situation with such 'preserved' aircraft by looking at such factors as their historical significance, rarity, condition, current level of care (such aspects as are they outdoors or indoors) and quality of conservation. Whilst such work, and the advice that goes with it, is of inestimable value, without doubt one of the major facets of this document is that it is a national strategy from a well-respected national organisation; as such its status is recognised by bodies like the

National Lottery and other funding organisations. At a time when there is, seemingly, little shortage of money for 'good causes' (although many would doubt the value of some of these 'good causes'), it is vital that aviation preservation is in a position to make successful bids for funds - the National Aviation Heritage Register will be of enormous help in this regard. Such funds are required in order to ensure the long-term preservation of our aviation heritage. Congratulations

displays, open cockpits, special events, simulators, etc, although the costs are often high as such aspects as 'health & safety' are even more vigorously applied to anything that the public can touch! However, the growth of such interactive displays must be developed still further if museums are to compete with other attractions. FlyPast readers can help by making regular visits to museums in the UK - and encouraging friends and relatives to do the same.



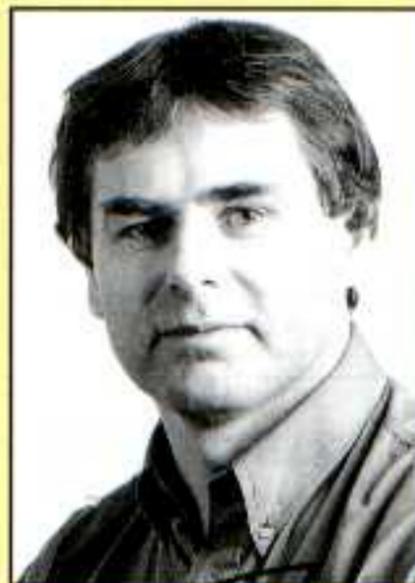
## FlyPast card

to John and the Heritage Committee for the hard work that has gone into this first edition of what is a world-leading document. A similar exercise has been underway for some while covering aero engines - again an area of technology where Britain led the world - and this too should soon be in print.

An advance note for your diaries - the next National Aviation Heritage Week is scheduled for Apr 24-May 3, 1999 and will include even more events and activities, again supported by FlyPast.

It was also pleasing to hear at the BAPC meeting that many aviation museums are reporting an increase in visitor numbers, a trend that is of vital importance as part of the long-term future of such museums. With an ever increasing number of recreational attractions, mainly theme parks and the like, most museums are facing stiff competition for the 'visitor dollar' and they have to devise new ways of attracting the public to their site; it is, of course, particularly important to attract the younger generations and family audience or, once again, the long-term future will be in doubt. As many funding agencies now require an 'educational' element to any bid for funds, this has prompted museums to look at their exhibits and the way they are presented. Thus, the growth of 'hands-on'

Within the next few weeks FlyPast, in conjunction with the Bank of Scotland, will be launching a 'FlyPast' Credit Card (see August issue for full details and application form). The FlyPast card will work in the same way as any other credit card but immediate benefits include an 8% APR reduction for the first 6 months, when it will rise to a still very competitive 19.9% (21.8% for cash advances), there is no annual fee and up to 50 days interest free credit. The FlyPast marketing department is planning a number of special reductions for purchases made using the FlyPast card.



*Ken Delve*

FlyPast PO Box 100, Stamford, Lincolnshire,  
PE9 1XQ, UK. Tel: +44 (0) 1780 755131  
Fax: +44 (0) 1780 757261.  
Email: ken\_delve@keymags.demon.co.uk

<http://www.keymags.co.uk>

## Editorial

Editor: Ken Delve

Co-ordinating Editor: Dave Allport

Assistant Editor: Robert Rudhall

Contributing Editor: Ken Ellis

Editor's Secretary: Pauline Hughes

FlyPast Club: Stuart Stephenson

Archive: Mark Nicholls

## Correspondents

Canada: Bill Jesse

Italy: Gregory Alegi

USA: Nick Veronico, Matt Olafsen

Australasia: Craig Justo

## Photography

Chief Photographer: Duncan Cubitt

Photographer: Steve Fletcher

## Design

Design: Mike Carr, David Robinson, Austin Smith

Lee Howson, Patrick Juggins

Chief Designer: Steve Donovan

## Production

Production Editor: Sue Blunt

Production Manager: David Sopher

## Advertising

Aviation Group Director: John Barker

Advertisement Manager: Simon Patrick

Advertisement Sales: Emma F White

Administration: Jo Cooke

Production: Jane Lowndes

## Marketing & Circulation

Manager: John Phillips

Mail Order: Joan Harwin

Subscriptions: Fiona Kelly

## Outside events

Peter Shaw

## Publisher & Chief Executive

Richard Cox



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position throughout the display and were definitely closed during the landing, the venting of the white vapour was almost certainly caused by a slight overheating which led to the relief valve operating towards the end of the routine.

The report concluded with an analysis of the accident. "In view of the findings of the detailed examination and the lack of positive evidence of a mechanical problem, a strip examination of the engine was not completed. Analysis of the video recordings of the aircraft's display suggested that the intermittent white exhaust trail occurred due to coolant discharge. The video recordings also indicate that the radiator cooling flaps were at the closed position from just after start-up to when the aircraft was lined upon the runway, but that they appeared to be open during the take off and initial climb. However, as far as could be seen throughout most of the display these cooling



**What are the chances of us seeing Black 6 back in the air again? (FP - Steve Fletcher)**

flaps would have remained shut on the ground until the engine warmed to its normal operating temperature following which, under the influence of the thermostat, they would open, albeit at a slower rate than normal. In a completely tight hydraulic system, with no internal leaking across piston and valve seals, normal pressure would eventually be developed at the actuators and the flaps would adopt the desired position against air loads. However, with a restriction through the rotary valve any such leakage would reduce the effective pressure in the actuators, and hence the flaps position against air loads, the level of reduction depending on the ratio between the rates of leakage and restricted flow through the rotary valve.

"However, any overheating of the cooling system during the final manoeuvre would not explain the smell of "hot oil and blue haze" in the cockpit, as a result of which the pilot elected to make a forced landing".

No decisions have yet been taken as to the long-term future of Black 6 - although it is understood that a great deal of discussion has taken place.



**The damage to Black 6 looks horrendous but now that the airframe has been examined it is not as bad as it might seem from photographs such as this. (Gavin Selwood)**

flaps appeared to be near to the closed position, there being no doubt that both were fully closed during the attempted landing, almost two minutes after the cessation of the coolant discharge. In the absence of cooling system leaks it was considered possible that the pressure relief valve had opened, under the influence of positive g, when the engine coolant temperature had been rising about normal towards the end of the display.

"Functional testing carried out on the primary engine cooling control components and a more general examination of the system, failed to reveal any significant defects indicating that technical malfunction

was unlikely to have been the cause of the overheating. Thus, if the selector valve had been set in the 'autom' detent throughout the flight, normal control of the cooling system would have been expected. However, if the 'as found' position of the cooling flaps rotary selector valve handle were its true position throughout the display (ie, aligned more closely with the 'autom' legend than when in the detent) and not been inadvertently knocked into that position during the accident or subsequent escape by the pilot, then the following sequence of events is indicated.

"With the selector valve nominally at 'autom' but not in the detent

(and hence the valve being displaced by about 16 ) fluid flow between the rotary valve to the thermostat would have been severely restricted during this flight as demonstrated by tests on the valve. If this were the case then it might be expected that the cooling

## **STOP PRESS!! CAF Coup!**

We have just heard from Dennis Bergstrom that the "Confederate Air Force General Staff" have acquired three warbirds from an unnamed Russian museum - the sale being made by the latter in an effort to acquire funds for its operation. The aircraft, all of which will be put back into the air, are a MiG-5, Lavochkin La-5 and a Yak-9 - a fantastic trio of Soviet World War Two fighters. We will carry a further report on this as more information becomes available.

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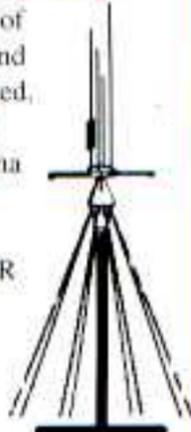
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## Canberra departs

THE SECOND OF two former RRE/DRA Canberras departed from Kemble Airfield, Gloucestershire, on April 8, reports **Peter J Cooper**.

The aircraft in question, B.6 (Mod) XH567 (N40UP) was built in 1955 at Preston and served with the Air Torpedo Development Unit and the Bombing Trials Unit before being seconded to the Royal Radar Establishment at Pershore Airfield in June 1961. Remaining at the RRE until December 1976, it was then transferred to RAE Bedford and subsequently passed into the hands of the Defence Research Agency (DRA). Flown to Boscombe Down in February 1994, the Canberra was placed into storage and eventually disposed of by auction, initially to the Aerolease Group.

After it was purchased by an American buyer, the aircraft was serviced by



**Pictured at the point of take-off at Kemble Airfield on April 8, this former RRE/DRA Canberra B6 (Mod) XH567 (N40UP) is now resident in the USA. (Peter J Cooper)**

Delta Engineering and Classic Aviation, before leaving Boscombe Down for Kemble Airfield as G-BXOD on November 20, 1997. Once at Kemble, where it was housed for the following four months, the resident Delta Engineering, along with Airpower, prepared the Canberra for flight and to meet the USA's Federal Aviation

Administration's airworthiness requirements. The aircraft was issued with its certificate of registration as N40UP on March 20 this year, the previous British civil registration having been cancelled on March 16.

After further preparations, plus a delay caused by adverse weather conditions, the Canberra left Kemble

on April 8 for the first leg of its long transatlantic journey to Iceland. However, unserviceability resulted in a diversion to the DERA airfield at Llanbedr, from where it departed the following day to Reykjavik. After flying via Gander (Newfoundland), Wilmington (Delaware) and Salina (Kansas) XH567 arrived at Victorville, California (formerly George AFB) on April 13. Upon the completion of some modification work the Canberra will be flown to Stockton, California, from where it will operate.

This aircraft and its sister Canberra WT327, now registered as N30UP, will continue to be operated by their new owner in the former RAE 'raspberry ripple' colours and markings!

## Church fund-raising

ST CLEMENT DANES Church, situated in The Strand, London, is in dire need of some help to prevent the building from deteriorating further. A 40th Anniversary Appeal was launched on June 1 to raise some £350,000, the sum deemed necessary to pay for urgent repair work on damage caused by traffic vibrations and by the subsequent penetration of rain and snow.

St Clement Danes Church is now the Central Church of the Royal Air Force, and was built by Sir Christopher Wren in the 17th Century. Destroyed by enemy action in 1941, it was restored by the RAF and re-dedicated in 1958. The interior of the church serves as a memorial to the men and women who gave their lives whilst in the service of the RAF. More than 125,000 names are recorded in the ten Books of Remembrance, starting in 1911 and coming right up to date with the Gulf War.

Known for its connection with the nursery rhyme 'Oranges & Lemons', the first few notes of which were used to introduce the Allied Expeditionary Forces radio network during World War Two, St Clement Danes Church is built on an island in the middle of one of London's busiest streets. Fund-raising Director, Philip E Beavan, told *FlyPast* that he is looking for anyone, from large corporate companies, right down to the concerned individual, who might be willing to help save this 'icon' of the RAF. Donations are most welcome and can be sent to: St Clement Danes Church, The Strand, London, WC2R 1DH, with cheques being made payable to 'St Clement Danes Church'.

## USAF 'row of fame'



**Latest addition to the 'row of fame' at the Dutch Air Force Museum at Zeist is this F-102 Delta Dagger '61032'. (Henk Duivenvoorden)**

ALMOST SEVEN YEARS after the disbandment of the USAF's 32nd Tactical Fighter Squadron (TFS) at Soesterburg Air Base in the Netherlands, and the departure of the Americans from the airfield, the squadron is finally getting its 'row of fame' in the Dutch Air Force Museum at Zeist, writes **Henk Duivenvoorden**.

The latest addition is an F-102 Delta Dagger '61032', while the F-100 Super Sabre '41871' is now virtually complete, save for its wheel bay



**The museum's F-86 Sabre '25385' is a former Portuguese Air Force example which now wears 32nd TFS markings. (Henk Duivenvoorden)**

doors. Both aircraft have been painted in USAF 32nd TFS colours and markings.

The North American F-86 Sabre, which has been in storage for a number of years has also joined the collection of American types on show. The 'row of fame' is now almost ready and features most of the aircraft types flown by the 32nd TFS during its years based at Soesterberg, including an F-15A Eagle! However, none of the aircraft on display is an

original 32nd TFS airframe. The F-86 is a former Portuguese Air Force example, the F-100 is the ex RAF Lakenheath gate guard and the Delta Dagger came to the collection from Greece. The F-15A did serve with the 32nd TFS, but as a non-flying instructional airframe!

The museum, situated near Soesterberg, is now on the look-out for a suitable F-4 Phantom to complete the line-up. Could a former RAF Phantom be a possible candidate?

**F-100 Super Sabre '41871' only needs its wheel bay doors to complete its restoration to static display condition. (Henk Duivenvoorden)**





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## Canadian museum

A NEW CANADIAN enterprise, the Toronto Aerospace Museum (TAM), is currently restoring three aircraft for eventual display at Downsview Airport, reports **Martin Keenan**. The collection is housed in a portion of the CFB Toronto, which was also a de Havilland Canada factory at one time, and is adjacent to the current Bombardier Aerospace facility.

The three aircraft undergoing restoration are a Canadair CL-41R

Canadian Armed Forces Snowbirds Air Demonstration Squadron. It started life as the second prototype CL-41, but was later modified into a prototype of a low-cost navigation trainer for CF-104 Starfighter pilots. The aircraft, which flew with the Canadian Civil registration CF-LTX-X, is distinguishable from standard Tutors by the addition of a pointed Starfighter radar nose assembly, forward-retracting nose undercarriage, and fuselage bulges behind the



**Grumman CSF-2 Tracker RCN 1600 formerly flew with VX-10 of the Royal Canadian Navy — colours it will continue to sport after restoration is complete. (Martin Keenan)**

Tutor, and a pair of former Royal Canadian Navy CSF-2 Trackers. The CL-41R is a unique variant of the jet trainer made famous by the

cockpit to accommodate the CF-104 electronics. This particular Tutor was a Canadair private venture and never carried a Canadian military

## Dolphin rebuild

THE ROYAL AIR FORCE Museum's Sopwith Dolphin C3988 is making visible progress in its restoration to static display configuration, writes **Ian Frimston**.

Based around a number of original metal parts, the reconstruction of the aircraft's fuselage is almost complete. Parts of the rear fuselage contain original wood, and the fin, although original, comes from another airframe.

Among the original portions of the rebuild is the engine cowling, which

is remarkably free from dents, even though the surface is showing its age! The identity of the airframe has been established from the maker's plate, found on the rear fuselage.

Sopwith Dolphins entered service with the RAF with 19 Squadron in January 1918, the manufacturer's plate of this particular aircraft bearing the year 1919. The team of engineers at RAF Cardington engaged on the restoration intend to complete the fuselage before starting work on the wings.



**Work on the fuselage of the RAF Museum's Sopwith Dolphin C3988 is coming along well. Built up from a number of original metal parts, the fuselage will be completed before work starts on the wings. (Ian Frimston)**



**Canadair CL-41R Tutor CF-LTX-X is undergoing restoration at the Toronto Aerospace Museum. The Starfighter radar nose which gave the CL-41R its distinctive profile has been removed from the aircraft. (Martin Keenan)**

serial, despite the aircraft being demonstrated and flown at the 1963 Paris Air Show, no orders were forthcoming and the CL-41R programme was subsequently cancelled. The airframe was eventually donated by Canadair to the École d'Aérotechnique du Collège Edouard Montpetit in Dorval, Quebec, and it has been undergoing restoration at the new museum since last May.

The two Tracker aircraft (RCN 1545 & RCN 1600) were both delivered to the TAM in the autumn. RCN 1600 has the distinction of being the 99th and last Tracker built by de Havilland Canada, spending most of its operational career serving with the RCN evaluation squadron VX-10, and it remains in these markings today! The museum plans to retain these colours when the restoration

is complete.

Tracker RCN 1545 also served with VX-10, as well as with VS-880 and VU-32. Neither of the two Trackers flew with the Canadian Forces after unification in 1968, instead both aircraft served as ground training airframes at CFB Borden, until they were struck off charge in 1993.

In addition to these three aircraft, the TAM wants to acquire other relevant airframes for its collection, including Avro Lancaster X FM104, currently displayed alongside Toronto's waterfront in the Canadian National Exhibition Grounds (see *FP* September 1997, p21). TAM has also started construction of a full-scale reproduction of the famous Avro Arrow, and other acquisitions are anticipated before the museum opens later this month.

## Dakota departs



**Former Martin-Baker Dakota, G-APML, pictured here at Coventry Airport in 1988, has recently been shipped out to Kuwait for use in a restaurant project. (David Stephens Collection)**

DOUGLAS DAKOTA, G-APML, once used by the ejector seat company, Martin-Baker, as a transport 'hack', has left the UK for pastures new. The aircraft, which has been owned by Atlantic

Airlines, for several years, is reported to have been dismantled and shipped out to Kuwait, where the nose and tail sections are to be positioned at either end of a restaurant!

## Stearman collision

A PAIR OF Boeing Stearman biplanes (N802RB & N806RB) of the Red Baron Aerobatic Team collided while flying in a formation display

routine at Kissimmee Municipal Airport, Florida, USA, on April 19. The two aircraft were destroyed in the post-crash fire, which also killed both pilots.



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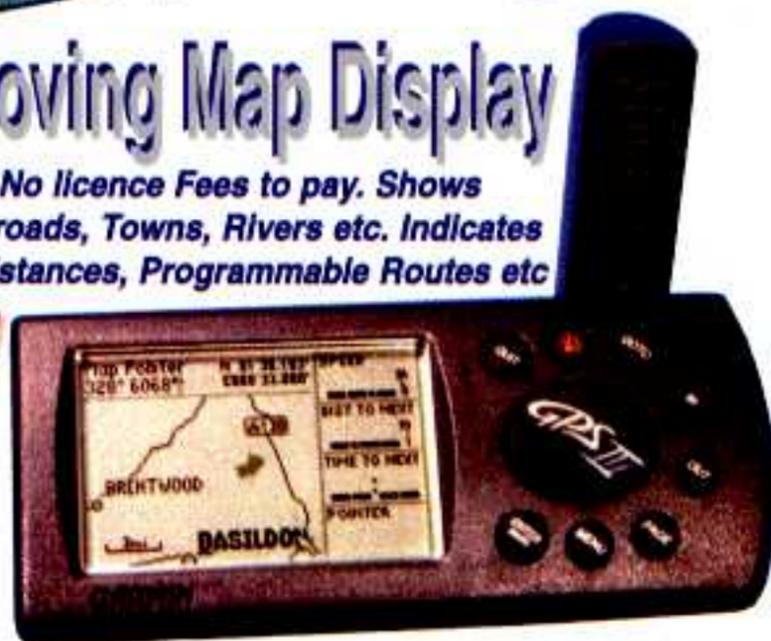


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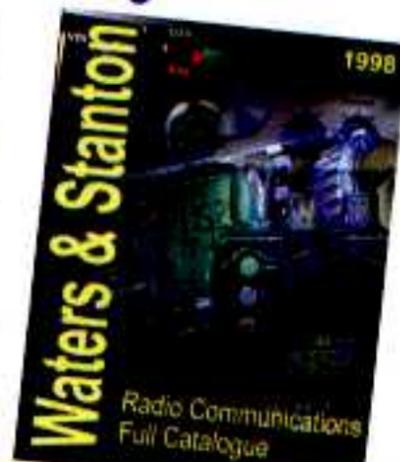
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## Spirit of Freedom arrives



Beautiful mural inside the rear fuselage depicting a Skymaster on finals to Berlin Templehof during the airlift, it is possible to have your photo taken against this artwork so look out for the aircraft during its UK visits. (FP - Duncan Cubitt)

THE EUROPEAN TOUR of the Berlin Airlift Historical Foundation's C-54E Skymaster 'Spirit of Freedom' got underway successfully on May 5 when the aircraft left Floyd Bennett Field, Brooklyn, New York. Routing via Westover Air Force Base in Massachusetts, Goose Bay in Canada, Keflavik in Iceland and Prestwick in Scotland the veteran aircraft arrived at North Weald in Essex on Saturday May 9 after a relatively trouble free transatlantic crossing. This in itself is a tribute to the hard work performed by the Foundation's engineers, especially considering the aircraft has over 26,000 flying hours under its belt. Manufactured by Douglas at Santa Monica with the construction number 27370 it was originally delivered

to the Army Air Corps as 44-9144 in March of 1944 and then transferred to the US Navy in May 1945, adopting the Bureau number 90414.

The 'Spirit of Freedom' took pride of place at the North Weald 98 airshow held on May 10 and was open to inspection by the public in return for a small fee (£2) per person or £5 for families. Anyone who took up this opportunity will have marvelled at the superb presentation of the interior which has been transformed into a mobile museum charting the history of the Berlin Airlift. Ranging from bags of flour and coal to a cabinet of model aircraft which took part in the airlift plus information panels and photographs along the cabin walls the result is

both educational and nostalgic. As if this was not enough the inside of the starboard rear fuselage has a mural depicting a Skymaster on finals to Berlin Templehof skating over the rooftops of the apartment blocks on the airfield approach.

The provisional schedule published in the June issue of *FlyPast* still applies with negotiations continuing for the aircraft to attend the Biggin Hill Air Fair on June 7, if this is not

thanks to the donation of 5,000 Hershey bars and 15,000 sticks of Wrigley's gum, and like 50 years ago these will be dropped with the aid of tiny parachutes. This will almost certainly be the last time a C-54 flies into Templehof since the airport is to close shortly, thus making this a significant and very evocative flight.

The effort that has gone into the visit of the C-54 to Europe is enormous and would not have been



The whole C-54 interior is a mobile museum providing a host of information on the aircraft and the Berlin Airlift, public are admitted for a small fee and a look in the cockpit is also included. (FP - Duncan Cubitt)

possible the Skymaster will leave Woodford and fly directly to Coventry.

Among the veteran aircrew accompanying the C-54 is Lt Gail Halvorsen, better known in the history books as the 'candy bomber' for his exploits dropping candy to the children of Berlin on finals to Templehof. June 25 will see a historic flight take place when the aircraft departs Wiesbaden in Germany for Templehof with Pilot Timothy Chopp, President of the Foundation, and co-pilot Gail Halvorsen at the controls. They will re-enact the famous 'candy bomber' runs by dropping candy once more,

possible without the help of a number of sponsors, such as Boeing, or the dedication by all the crew and support personnel. Fortunately the aircraft's tour has generated considerable media interest with a number of television companies filming flights into Berlin and of the tour in general. This all helps to remind us of the amazing effort the Berlin Airlift was so if you get the chance to see the aircraft during one of its airshow appearances take time out to thank the crew, Timothy Chopp the Foundation's President and Edwin Ide Vice President for their dedication and hard work.

## Finnish Fishbed preserved



A cold but bright March 7 sees MiG-21bis MG-119, dramatically mounted on a pole, unveiled as a gate guard at Kuopio-Rissala Air Base in Finland, the same day the type was retired from service. (P. Karivalo)

THE MIKOYAN MiG-21 was retired from service by the Finnish Air Force on March 7 when the final example with HavLLv 31 at Kuopio-Rissala Air Base was shut down. The same day saw another example, MiG-21bis

MG-119, put on display as a gate guard at the base. A parachute in the colours of the squadron was draped over the cockpit and the aircraft was unveiled by Capt. Jouna Heikkinen, one of the last MiG-21 pilots.

## Saeta lost

HISPANO HA-200 SAETA N9108Q (formerly C.10B-89 of the Spanish AF) was destroyed in a crash at Xenia, Ohio on April 29 with the loss of both pilot and passenger. The aircraft was on a local flight from Greene County Airport to demonstrate the aircraft to three potential buyers. Its last registered owner was Sierra Warbirds Corporation of Truckee, California. Eyewitness reports state the the aircraft was attempting a modified 'split-S' manoeuvre but did not pull out of the dive portion in time and exploded on impact, an FAA investigation into the accident is underway.

## Sabena Lodestar

SABENA OLD TIMERS Foundation based at Brussels International Airport has successfully acquired Lockheed Lodestar N7001 which was previously owned by P. Fourticq writes *Yves Cartier*.

A team of technicians was due to begin dismantling the aircraft on May 12 and it was hoped to transport the aircraft from Creil, France to Zaventem in Belgium between May 18-21 in readiness for the 75th Anniversary of the Sabena Company.



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Bristol Wayfarer — one of the more unusual types to take part in the Berlin Airlift. (BAe plc)

# Operation Plainfare/Vittles

*When the Russians closed the land corridors to Berlin, the Allies had to supply a city of 2 million people by air — as Reg Moody explains, the Berlin Airlift remains one of the great achievements of air power.*

**T**HE VOICE OF a Texan pilot flying a Skymaster in a stream of aircraft flying into Berlin in June 1948, when he spotted an aircraft of unfamiliar shape ... "What's coming now, fella," he asked the busy controller, to be told it was a Wayfarer (a British civil aircraft).

"Did you say the Mayflower?" came the calm voice. "You guys are sure throwing in everything!" Typical of the abiding humour that joined the British and American pilots who bore the brunt of what was to become a transport miracle to keep over 2 million people alive, warm and fed entirely by air while they rebuilt their city, or at least the western part of it. To have failed could have changed the whole map of Europe or even started another conflict. At first it was thought impossible to airlift essential supplies — food,

coal and fuel — for so many people, but the operation ended up being compared to the Battle of Britain, which had turned the tide of the war eight years previously.

When the 'Western War' ended in 1945, the Allies of Britain, America, France and Russia, enjoyed a temporary friendship, although Churchill never really trusted the Russians. The Americans on the other hand, were anxious to acknowledge the suffering of the Russian people and the valour of their armies. When the peace lines were drawn-up, the adjustments of the boundary lines left Stalin dominating Eastern Europe, not only by taking back his territory and annexing parts of others, but by the setting up

of Eastern Germany (without four-power agreement) and which left Berlin totally encircled. Other formerly free countries, such as Poland, were given a puppet Communist government under Russian control. The German capital, which the other Allies refused point blank to desert, was to be ruled by a four-power Commission and the city split into Russian, American, British and French Zones, it also allowed free access by road, rail and air via designated corridors through Eastern Germany. An uneasy peace descended on the devastated countries which the American Marshall Plan began to rebuild.

Over the next three years, the Russians tried everything they could to remove the Western allies

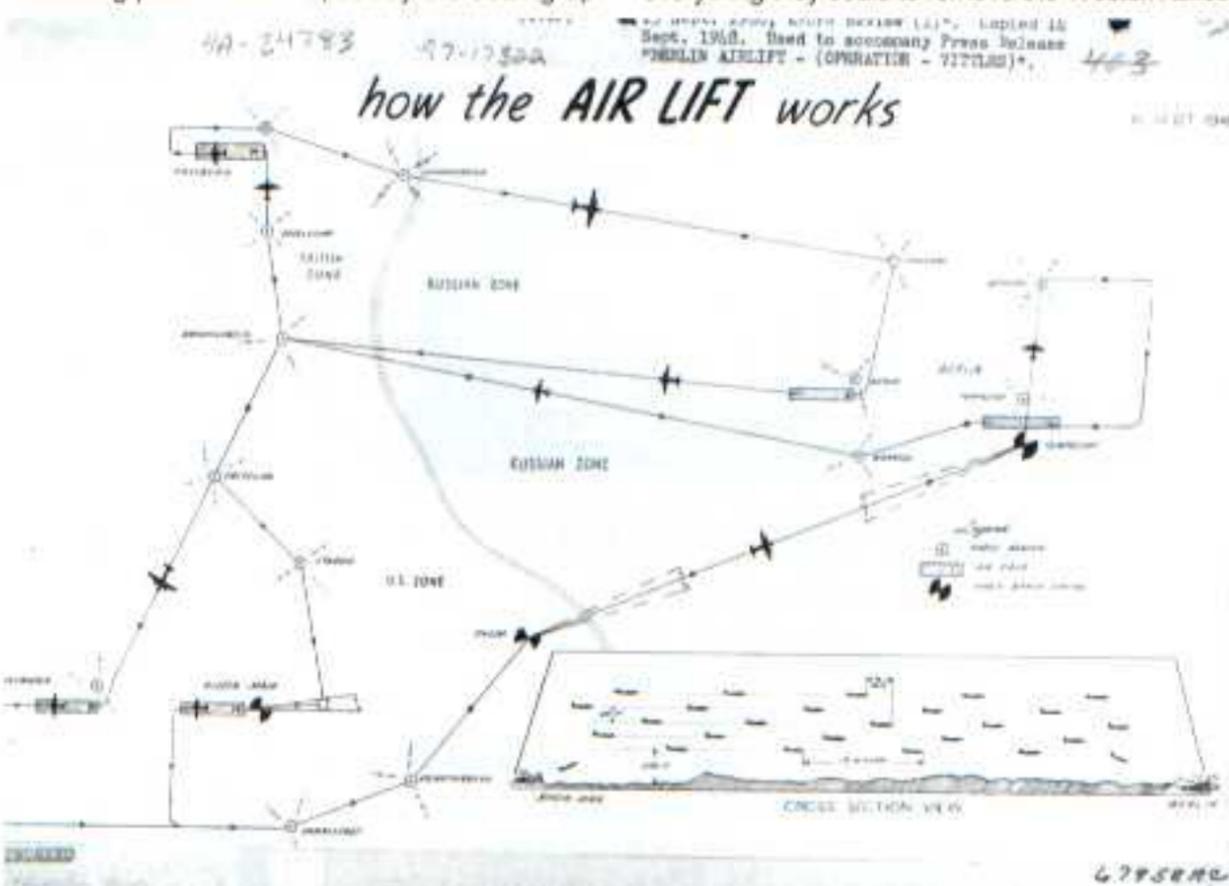


Diagram used to accompany a September 1948 press release, showing major airfields and aircraft routing. (FP Collection)



The Hastings began its operational career with the Airlift; here TG514 of 297 Sqn at Schleswigland 1948. (Andy Thomas Collection)

from Berlin so that they could absorb it into their planned Empire. The Allies, at meeting after meeting, showed great patience with Stalin, recognising that he had a case for building a vast buffer around his country to protect against a future Hitler who might arise from the ashes of Germany. By June 1948 he had failed to get his way, even when he brought in tanks and guns to threaten any move by the Allies to use the road corridors into the beleaguered city.

A crisis point was reached on June 24 when the surface blockade was completed. Forward planning had been going on for some time to meet this possible challenge, initially to ensure the Allied forces in Berlin were supplied, but it became all too clear that, although the first RAF crews from England were ordered to take 'kit for ten days', the Russian attitude had hardened and the fate of over 2 million German civilians now depended on their former enemies.

In a beautiful pine forest, near Hanover, lay an airfield built for German light bombers. These facilities were now being enjoyed by RAF fighter pilots, and engineers had given the former grass field long and solid runways. However, the fighter crews were moved out to make way for the arrival from England of the first of the many transport aircraft to occupy this airfield over the next 12 months.

In England, the C-in-C of RAF Transport Command received orders to draw up a plan for supplying Berlin by air. Initially, this was code-named 'Carter Paterson' but this later changed to 'Plainfare'; the Americans



USAF C-47s line up at Tempelhof to unload their precious cargo. (USAF)

used the name 'Vittles'.

At 0600 hours on Monday June 28 the first aircraft carrying flour left Wunstorf for the British sector airfield at Gatow and by the end of the day, 13 Dakotas carried in 44 short (American) tons of food. At this stage nobody expected that the operation would need to last for long, yet as Dudley Barker was later to record in the official publication 'Berlin AIRLIFT': "What in fact had just begun

was the greatest and largest air supply operation ever attempted, or ever likely to be attempted again".

Favouring the planners was the fact that both the Americans and the British still had large numbers of fully-trained transport pilots — even with the RAF run-down it was possible to 'invite back' others with skills not yet forgotten. Moreover there had been combined operations of many kinds and on many fronts during the conquest of Germany and Japan. Not on the scale about to be needed or crammed into so small an area, but the framework was there with experience to adjust and extend to this new challenge. It would also be supported by the very latest in air control equipment, and within Western Germany and Berlin itself there was unlimited labour.



Part of a load of flour aboard a USAF C-47, August 17, 1948. (USAF)

Very soon the combined control structure was in place with a joint organisation, overseen by an American commander with a British second-in-command — thus reflecting the share of the effort involved, the Americans clearly had the greatest contribution to make, with the larger and greater number of aircraft to carry the tonnage through the air. The RAF flew from the British Zone of Germany, the Americans from their zone and that of the British, where they operated from RAF-controlled bases. The British, whose zone was geographically nearer to Berlin, undertook the major part of the work on the ground, they also agreed to carry all German passengers, of which there were over 67,000 during the period of the blockade.

As the combined airlift got under way its shape changed to meet the need for maximum weight per aircraft each 24 hours — for this was a day and night operation. The shortest route was from the British Zone to Gatow, also in the British sector of Berlin and so it soon became clear that the larger capacity aircraft could increase the daily lift by flying into Gatow, thus increasing the number of journeys. As a result, American aircraft — such as the Skymaster with a capacity of ten tons — flew from the British Zone into Gatow.

One of the earliest decisions was, of course, to fly each aircraft in streams of equal speed capacity, this was to ensure that the flow would be one aircraft landing and one taking off at Gatow every three minutes throughout the 24 hours, an



Crew from the 48th TCS briefing for another trip to Berlin. (USAF)

air movement every 90 seconds — in bad weather this was extended to five minutes. Obviously a pilot arriving late would endanger the flow right back in his block and, on such occasions, he was likely to be ordered to exit the airfield without landing, taking his precious load with him. On the rare occasion when an accident blocked the runway (undercarriage collapses, for example) facilities were on hand to remove the aircraft and its load in minutes, while the controllers lost more of their hair.

In the beginning, only Gatow in the British Zone and Tempelhof in the American sector were available; a third airfield had therefore to be built in the French sector and this field, Tegel, was constructed in quick time by the Americans and French. This gave some relief to Gatow as a fair proportion of the British aircraft in the lift could be diverted to the new field and thus increase the total tonnage. The control of these tight streams of converging aircraft was only possible by the latest radio and radar and it was the RAF that possessed the best. With this equipment and the skilful RAF-trained controllers



Rhein Main was one of the primary bases used by USAF aircraft in West Germany to uplift material for Berlin; July 26, 1948. (USAF)

installed at Gatow, these constantly changing streams of aircraft could be fed into the three-minute schedule with remarkable accuracy and consistency.

The safety factor was enhanced by each

stream having a different height, relative to the aircraft to Gatow. Incoming pilots made their contact with Gatow air traffic through the Frohnau beacon. In good weather it was straight in from this beacon; in bad, weather air traffic control handed them over to Ground Control Approach located in twin caravans close to the runway. If all failed it was back through the exit corridor with no second tries. Here great help came from the now familiar, but then, the latest weather aid from the Royal Aircraft Establishment, the series of cross-bar sodium approach lights which aligned with the centre of the runway. Although there were few options at the Berlin end of this Air Bridge, there was greater availability at the start with a good selection of well equipped airfields. Early on a sort of musical chairs took place, as aircraft were moved about to allow for maximum control and load carrying. Wunstorf, Fassberg and Lübeck were soon playing key roles in the airlift.

Meanwhile, the Americans had obtained large numbers of Skymasters from around the world and a high proportion sought out the British

Zone for the short run to Berlin. By the autumn the Americans occupied the whole of Fassberg, with an overflow at Celle. Although administered and commanded by the RAF the joint effort went without a hitch or disagreement - and for a bonus the American aircrews discovered the quaint British habit of tea and buns at all hours, although they also managed to import their doughnuts, to the delight of the European crews. In the meantime, the much-moved civilian Dakotas found themselves at Fuhlsbüttel near Hamburg and this base soon became the home for civilian aircraft. At first Bristol Freighters, Haltons and Halifaxes, along with the Wayfarers were here. Other civilian types, the Tudors and Lancastrians, remained at Wunstorf. Finally another airfield, at Schleiswigland, was opened up to allow the RAF's latest heavy transport, the Hastings, to make its debut operational flights in the Airlift. The flying pattern had by now developed so that the inward flow of British Zone based aircraft used the northern corridor whilst those from the American Zone bases used the southern and centre corridors for the exit flights.

By this time the Germans knew the Russians had realised that the Western Allies would not forego their rights to share the administration of Berlin and to ensure free passage to it through the agreed surface and air corridors. Even the waterways were used, because until the worst of the weather froze the beautiful Havel Lake in



Senior officers at Lübeck study the map showing routes to and from Berlin — Lübeck was one of the RAF's main airfields during the Berlin Airlift having given up its fighter role to become a transport base for this operation. (Ken Delve Collection)

Berlin, was ideal for RAF Coastal Command Sunderland flying-boats. These were joined by civilian Hlythe flying-boats. In addition to the heavy loads they could bring, they were a breathtaking sight and morale booster for the hard-pressed Berliners, fearful that they might be left to the mercy of the vengeful Russians. When the British Prime Minister visited 'Plainfare' in March, aircraft still flew through snow and wind, in conditions that tested both aircrews and controllers. He was said to have been immensely impressed and stayed two days, flying through the foul weather in a York.

It is claimed that the health of the civilian population — suffering from the effects of a desperate war — actually improved that winter probably because the Allies were getting the right food to them, whatever the cost. Early on real coffee suddenly started to appear in the shops for the first time since 1939. This was because the load experts had decided that real coffee weighed less than the materials required for the making of ersatz variety. It was also calculated that it would be better to bring in flour — and the coal to bake it — rather than ready-made loaves, with their water content and increased space requirements, even though it would save on fuel. Every day experts came up with the means to shave off time or increase loads. For instance, the repair and rebuilding of a temporary bridge between Gatow and Berlin city centre could reduce the fuel used by heavy load carriers and this became a priority early in the operation.

One small act of mercy, however, nearly threatened the health of the city. A young man, suffering from a severe attack of polio but living in the western end of the Bridge, was thought

to need an iron lung to survive. Very few of these machines then existed but one was located in the American hospital within the Berlin Zone. It was decided to fly the sick boy into Berlin in one of the Yorks and he was met at Gatow by an American ambulance then rushed away, but died within the week. Unfortunately, the medical officer at Gatow had not been informed until the boy had left that the flour sacks on which he had travelled had been dispersed. The aircraft had also been met by members of the Press who, to their dismay were immediately put into quarantine and an angry doctor began to demand that the flour sacks be found and destroyed. For two weeks the Press crew had to report daily for medical checks but no outbreak occurred.

The Russians tried various tricks to obstruct the smooth running of this miracle operation, as it was fast becoming an embarrassment to them, not only in the eyes of their own people but also the rest of the world. A favoured and highly dangerous manoeuvre was to fly their own aircraft, usually fighters and often in squadron strength, in formation across the Allied corridors. This would result in a meeting of the four-power Commission at which the Russians would apologise and claim it was navigation error and that their pilots would be punished.

In May 1949, the Russian Government suddenly lifted the surface blockade as if it had never happened and life became normal again. By noon on May 11, the RAF had flown 49,733 flights to and from Berlin, the USAF 131,378 and civil aircraft 13,879. The RAF had airlifted 281,727 short tons, the USAF 1,214,339 and the civil aircraft 87,619. Both the RAF and the USAF had each flown about 30,000 backloaded freight (short tons) and the

civil aircraft approx 1,500. Nearly 70,000 German passengers from Berlin were carried by the RAF. The extraordinary enthusiasm of all who took part can best be illustrated by the occasion when, at one British base it was found that there were more loaded Dakotas ready than aircrew to fly them. Immediately scratch crews from among off-duty controllers and other qualified staff, rushed to the cockpits and five more flights were added to the day's total.

Much, of course had been learned which was to prove of vital use for the expanding air transport industry and. It had cost the British people about £8,000,000 (at 1949 prices)

Even in present-day terms this was a remarkable operation, which succeeded in delivering upwards of 4,000 tons of a vast variety of materials day and night for close on a year at a rate of touch-down that resembled the train arrivals on the London Underground at peak time. The satisfaction of all those who took part in the air and on the ground was akin to the winning of great battles, except as one pilot remarked no one was killed in anger. However, there were inevitably some accidents — the British (RAF & civil) and the Americans suffered less than ten each but, sadly, between them these accounted for nearly 50 fatalities.

*Next Issue: The August issue includes an American view of the Berlin Airlift. The Editor would be delighted to hear from anyone with material relating to the Airlift - aircrew or groundcrew - for an extended FlyPost column in Part Two of our Berlin Airlift coverage.*

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William Eslick spent most of the Berlin Airlift looking after Dakota engines at either Wunstorf or Lübeck. (via Dave Allport)

# Airbridge

*William Eslick recalls the long days and hard work involved in keeping RAF aircraft serviceable for the Berlin Airlift.*



**J**UST PACK ENOUGH gear for a week' was the order. Tool kits and servicing equipment were loaded. Everyone piled into the Dakotas, already stripped as freighters, en route for RAF Wunstorf near Hanover.

"What's going off?"

"The Russians have closed the frontier into Berlin."

"Can they do that?"

"They've bloody well done it."

"The rotten sods ..... here we go again."

The Berlin Airlift had begun.

Operations at Wunstorf began immediately, the aircraft had been refuelled and loaded by German labour under the supervision of the RASC and Gatow, Berlin was the destination, flying along a 10 mile (16km) wide air corridor, passing over Brunswick in the Eastern zone.

Obviously air traffic control seemed to know what it was doing. Of the ground servicing and refuelling essential work, nobody and nothing seemed organised into any logical sort of system. A sergeant applying a bit of common sense to this chaos, produced a blackboard out



RAF Lübeck was one of the main airfields from which aircraft departed en route to Berlin; here the 50,000th ton to be loaded at Lübeck is going aboard an aircraft. (Ken Delve Collection)

of thin air and chalked up some aircraft numbers requiring attention. This board and easel stood at the centre of the main hangar so it couldn't be missed. It gave some sort of guidance as to what work was outstanding, either refuelling

or trouble shooting.

Several squadrons of aircraft; aircrews and groundcrews all milling about created a fair bit of confusion. Squadrons kept their identities but the whole force was 'pooled'. Myself and a couple

of 'cronies' were soon grabbed to act as trouble-shooters on any technical snags arising — the usual mag drops and oil leaks etc. We became known as 'The Plumbers'.

The Dakotas carried flour, then sacks of grain; Berlin could grind its own flour. They carried coal to fuel the power stations so that flour milling and other industries could function in the blockaded city, and to build up stocks for the winter ahead. It was summer now, hot, but wet with numerous thunderstorms. We were grateful for the PSP (pierced steel planking) apron to keep down the mud. The only drawback was the 24-hour working day which was split into an awful shift routine. It was a bit difficult when awakened at 4.30am, from deep sleep, to arouse much enthusiasm for work. Fortunately, the shift change timing was soon reorganised into something more civilised.

This mixed bag of twin- and four-engined aircraft operating out of the same base led to some dangerous misloadings. The crews wouldn't necessarily know what was in the loaded containers. Sacks of flour, grain, or coal, were easily identified — the coal by its filthy sacks and clouds of gritty black dust everywhere. Also it was heavy, so two layers of coal sacks made up a Dakota load. Sometimes the goods were crated, giving no clue as what they contained. Even steel bars were carried, to maintain some sort of productivity in Berlin.

Crews would come back to the Mess saying "Thought there was something wrong with the

on board". The York crew flying the Dakota load apparently had no complaints!

One consolation was the supply of proprietary brands of spirits available in the Mess. Gordon's or Plymouth Gin cost eight shillings a bottle (40p). One NCO crew, comprising the statutory pilot, navigator and signaller, reckoned on taking a full bottle of gin with them on each trip. By the time they passed over Brunswick on the return leg, the bottle would be empty, to be tossed out over a particular Russian barracks.

Chiefie went out to have a look at something 'odd'. It was 'odd' all right. Long shoots of pale 'grass' were sprouting up through the joints in the plane's floor panels! The alloy floor panels were taken up, not without difficulty as most of them hadn't been up in years, many hob-nailed paratrooper boots had scuffed the slots out of the screw heads. It appears that the mixture of flour and coal dust had formed a nice thick layer of compost in which loose wheat and barley grains could take root. The wet boots and



Dakota IV of 46 Squadron at a very wintry Gatow, 1948. (Andy Thomas Collection)



Avro Yorks, here with 51 and 242 Squadrons, also operated out of Wunstorf. (Peter Green Collection)



The Dakotas proved of great value during Operation Plainfare, operating from Lübeck as here, and other bases; at least one crew was killed when their aircraft crashed in the Russian Sector. (Ken Delve Collection)

aircraft. It seemed down for power, wouldn't unstick from the runway. Managed to stagger into the air and keep full throttle on to maintain height. When set down at Gatow it flopped like a wet cow-pat. Found out we had a York load

On one particular humid day a rigger (airframe mechanic) came into the office after starting his daily inspection of a Dakota.

"Will you come and have a look Chiefie, there's something odd?"

hot greenhouse effect had set the grains shooting for the light. They grew around control cables, electric wiring, hydraulic pipes and anything else that was in the way. Something had to be done about it. The 'something' was to rotate each aircraft in turn back to Oakington. Here a modification was devised. All floor panels were lifted, the sludge cleaned out and each panel edge lined with a fabric loop containing Plasticine. When refitted the Plasticine-edged floor panels formed a tight seal.

The aircraft rotated to the UK were those due for major overhaul. Wunstorf couldn't cope with overhauls as well as maintenance under the intensive flying conditions. It was enough just to keep aircraft flying. With the limited facilities and labour, improvisation was the order of the day. Large jobs were done at Oakington — if the aircraft was capable of flying there. Aircraft returning to the UK were 'robbed' of anything fairly new or useful. Replacement parts, often only just functioning, were fitted in their place. Even engines would be 'pinched' if they only had a few hours running time. Clapped-out old things, leaking oil, would be fitted in their place, just to get back to the UK.



**With a peaceful river scene as a backdrop, aircrew relax in the aircrew buffet at Lübeck during Operation Plainfare. (Ken Delve Collection)**

One pleasant surprise was the quality of the former Luftwaffe NCOs' Mess where we dined; similarly, the barrack block living quarters. The Mess was decorated in Black Forest style. Plenty of wooden carvings at the bar and dining room, heads of stags and other trophies of the chase were mounted above the bar. The cutlery was heavy nickel silver. German waitresses served meals on spotless linen. Nobody had bothered to remove the Luftwaffe emblem of a winged Swastika from above the barrack room entrance. The basement had been the air raid shelter and was fitted out as a laundry. The top floor was robust enough to house a gymnasium. The equipment was still there, and intact.

One of the most useful bits of equipment in the hangar was the Kubelspritz. This was the German equivalent of a British stirrup-pump, used for putting out incendiary bomb fires during air raids. Dakotas, like any other aeroplane, would suffer oil leaks. The first thing to establish was from which particular flange joint, connection or component, the oil originated. Which part of the anatomy of the engine was faulty. With slipstream-blown oil everywhere it is usually impossible to define accurately. First you must wash down the offending engine with petrol and the Kubelspritz was just the job for this, producing a fine spray, or a neat jet as required. Once washed down, after allowing a few minutes for the petrol fumes to evaporate, the engine was given a short, sharp run-up — not too long or the oil would be everywhere again — this way the source of the fault could usually be spotted. The call would often echo around the hanger "Who's got the 'effing' Kubelspritz?"

The misloading of York and Dakota cargoes couldn't be allowed to continue indefinitely. Someone was going to be killed before too long. The remedy was to move the Dakotas about 30 miles (48km) north to Celle, an airfield close to Luneburg Heath.

Air and groundcrew packed their bags and flew up to Celle. The airfield was just a clearing in a dense pine forest. It was a novel experience, walking to work, to the hangars, threading a woodland path between fir trees, listening to the rattle of busy woodpeckers already at their labours. Summer was drawing to an end and the trees blotted out whatever little light was left. Suddenly it seemed to be autumn. The airlift

showed no signs of ending.

The Dakotas had been operating at Celle for five days and nobody had received any mail. "Bet it's all in the mail rack down at Wunstorf" was the general opinion. I came off shift at midday, had a quick lunch in the Mess and went back to the airfield. I joined the first NCO aircrew that knew me well and flew off with them to Berlin. At Gatow, we crossed the Tarmac to the York operational area and joined a crew heading off back to Wunstorf. At Wunstorf I searched the Mess mail rack and picked up all the letters addressed to NCOs who were now at Celle. I had a beer at the Mess bar, walked back to the airfield and picked up a York returning to Berlin. We were buzzed by three Russian Yak fighters while in the legitimate 10-mile wide air corridor over East Germany. The Yaks just flew close across the nose, first from left to right, then right to left. Hoping the York would take evasive action and stray out of the corridor so that they could legitimately shoot it down. The York pilot just ignored the threat and pressed on with his steady course. You can't throw a York about when it's carrying a load of coal anyway. It's a

bit like a double-decker bus with a full load of passengers, not an aerobatic machine by any stretch of the imagination. The Yaks lost interest and vanished. At Gatow, I picked up the first Dakota heading back to Celle and stuck the letters in the Celle Mess mail rack. Robbie knew where I had been, but nobody else needed to know. None of the crews I had flown with asked what I was about, and I probably wasn't listed on any of the four crew manifests I had joined. I was about my own business and old enough to take care of myself. An 'ask no questions' policy existed, where as one NCO I asked a favour of another.

The Americans were beginning to make their large transport capacity felt! The first time a four-engined Globemaster landed at Celle everyone laughed as it missed the turn off from the runway. Suddenly to everyone's amazement it backed up! This was the first example of reversing-pitch props to be seen. The first few Americans appeared in the Mess — the advance guard of a full invasion. There were still the scheduled services flying out of Oakington and sometimes the crews would stop overnight at Celle. Civilian airlines were getting in on the act. Freddie Laker for example, flying Avro Tudors. I was soon off again northward, this time right up to the Baltic, hard against the eastern boundary of St Hubertus, another ex Luftwaffe field - RAF Lübeck.

First impressions; sensible hangars — any aircraft could be wheeled in or out without disturbing all the others. The doors were like a tipped over roll-top desk and actually opened the full length and part of one end. When fully opened the hangar became only two and a half sided. Not too much call for that! Cooler weather was fast approaching and it was better to keep the doors closed. The heating system really worked too. Nobody sat on the steam heating pipes, the fins were too fine and sharp and the things were really hot. One nice touch was the building of an 'Uncle Tom' type log house NAAFI right inside one end of a hangar. The German workmen used only sharp adzes to fashion the close fitting logs. The whole thing was up in a day. It didn't alter the quality of the tea, however. Still the stewed variety, I never ever found a tea leaf in the bottom of a NAAFI



**A very valuable load being placed on a Dakota - tobacco; note the armed guard! (Ken Delve Collection)**

cup, only a fine brown, dusty-looking powder.

One of my first jobs was a Dakota engine change. Nothing special about that except that the German crane driver didn't seem to be able to control his rubber-tyred mobile machine to any degree of accuracy. At one point, in moving forwards into position, the new engine was swinging like a pendulum in 20ft (6m) arcs over the stricken Dakota. If it comes off now, thought I, there'll be Hell to pay. Grasping the wildly swinging engine and calming its urge to destroy itself and the Dakota, we got it into a reasonable position, directly above its mounting points. We lowered away gently, but the engine was coming down in six-inch jerks! Fine when it's still six feet away from final position, but heart stopping when the final few inches are to be in half inch and even quarter inch increments. At one point the engine was resting on a fuel pipe and a piece of rubber hose whilst the crane chain was quite slack!

It was the most finger-risking engine change I had ever done. Amputation at the wrist as a ton of engine came down fast was a distinct possibility. It appeared to me that the crane driver was more used to changing gun barrels on Tiger tanks.

There was plenty of transport heading into the town of Lübeck. One had only to wait at the

fire-bombing raid during the strong March winds of 1942 destroying most of the old wooden buildings. The Ratskeller (Town Hall) and the medieval Holsentor were fine examples. The town had been walled and the northern outlet was the Burgtor. It seemed incongruous to see 20th century tramcars passing through its ancient arches. The River Trave formed the eastern boundary and just across the water lay the Russian Zone.

Engaged in my usual 'trouble-shooting' role I had a small gang of airmen and corporals to gainfully

One wall of Tech Control was covered with a huge blackboard listing every aircraft on the Station. Each day a different coloured pastel chalk would be used to avoid confusion. Today's daily inspections, as they were reported completed, might be listed in pale green. Tomorrow, a different colour, whereas yesterday's, being in light blue gave an immediate indication of being out of date and unavailable for operations for that reason. Gradually, as each Flight rang in with an update, the blue changed to green. Long-term unserviceability was denoted by red chalk, routine inspection work by brown.



**The load control unit at Lübeck looks remarkably peaceful in this shot but was hectic most of the time. (Ken Delve Collection)**



**May 24, 1949, and the Lübeck marks the 50,000th passenger from Berlin to pass through its hands. (Ken Delve Collection)**



**A number of civil operators took part in the airlift; here a Dakota of Kearsley Airways at Lübeck. (Ken Delve Collection)**

guardroom for the next available 3 ton truck or car, usually the ubiquitous Volkswagen. The dropping off point, and pick-up for return, was the bridge at the south end of town. Lübeck was still a fine old example of a Hanseatic port. A lot of ornate Gothic architecture still remained, in spite of a vast

employ. Soon my second three-month stint was up. It was mid-December and cold, Lübeck was situated on a latitude similar to Newcastle in England, but it felt like it was in the Arctic Circle. Time to return to Oakington and a spot of Christmas leave. Within 24 hours of returning from leave I decided January in an England not yet fully recovered from wartime austerity, was not for me. If one's going to be cold, then it might as well be where there are some compensations. I was soon back in Lübeck.

I was assigned a new job — luck was with me. This was a cushy number. Not out on the freezing Tarmac prodding about in the innards of recalcitrant Pratt & Whitney engines, but in a warm office in Tech Control. Tech Control was linked to the Flying Control by intercom and tower conversation with aircraft was broadcast. A landline telephone switchboard linked up with each servicing Flight around the airfield perimeter. Whoever was on duty could pass on information to each Flight as required.

aircraft en route outward in yellow, inbound aircraft pink. In addition, cumulative flying hours were recorded to supply an instant read-out of long-term availability. Naturally with communications coming in from the tower, and the Flights every few minutes, the blackboard was constantly changing. Whoever was nearest to the board picked up a chalk and made the necessary alteration. The blackboard was an invaluable instant reference. We were aghast, dumbstruck, when an engineering officer stated that he didn't think the board was worth the trouble it took to keep it up to date. He said he didn't obtain information from it easily. When he picked up a wrong coloured chalk to make an alteration the solution was obvious. He was colour blind!

I was in Tech Control when PI Thomas called in on approach from Berlin, flying on the correct heading in poor visibility some 10 miles from the runway. That was the last call received. The Dakota crashed into woodland in the Russian zone, dead in line with the runway, 4 miles short. For once the Russians allowed the RAF crash trucks straight in. There were no survivors. Was the radar set four miles out of correct reading? Or was the pilot's interpretation 4 miles out? Those are unanswered questions.

It was obvious that the airlift was at long last drawing to its close. After ten months of siege the Russians were relaxing their frontier controls. They were not fully lifted, but some trucks were allowed to pass through Checkpoint Charlie. My final three months were up; I had no desire to extend for a further 'tour'.

The airlift had been operating for almost ten months — ten active and interesting months for me. From mid-summer, through autumn and winter, now it was spring again.

Sure enough in a couple of weeks the airlift ended. The planes and crews returned to their British bases. Meanwhile, Freddie Laker and such-like charter airlines had gained enough credibility to finance more ambitious projects





Armour-plated RP-63C (43-10959) was typical of the series. Differing from a standard P-63A in aft cockpit windows, plus large steel baffles protecting Pinball's exhaust stacks. (USAF photo)

# Shoot the attacker - but don't shoot him down!

**A**S WORLD WAR Two became a diabolical final exam for new aircrews, the US Army Air Forces grew concerned over the efficacy of bomber gunner training programmes. While gunners and gun emplacements were necessary for bomber survival, USAAF flexible gunnery training lacked authenticity. In an effort to give gunners the best possible training, a variety of moving target ranges were devised.

And yet, no modelling (ball turret gunners sometimes practised following toy trains on serpentine tracks inside training buildings lined with turrets) could replace actual combat scenarios. A bold proposal advocated using manned aircraft, with toughened skins, as targets to be fired upon by new gunners shooting live ammunition of a special design. The realism was compelling; the mock attackers would execute real pursuit curves and imitate Axis fighter tactics against bombers carrying student gunners over American ranges. The students would take aim and fire at their attackers; the frangible bullets would disintegrate upon impacting the thick skin of the special flying targets. The AAF began development of a lead-and-plastic frangible bullet in mid-1942.

The twin-engine Douglas A-20 attack bomber was initially favoured for the role of aggressor. A section of A-20 wing was clad in armour made of Duralumin, and early in 1944 it survived static firing tests. Next came the plating of a complete A-20 for live fire and flight testing in Florida. But the bomber was obviously handicapped by all the added weight of the armour, and successful though the actual firing trials were, the AAF decided any production target aircraft should be more like the Messerschmitt Bf 109 in traits. During this phase of the frangible bullet programme, the relative availability of P-63s versus Mustangs and Thunderbolts made the Kingcobra a likely choice.

Bell took more than a passing interest in the frangible bullet programme when its P-63 was selected to be the armoured target. The typical



RP-63C-2 (43-11074) — note horizontal vanes in wing root cooling inlet to prevent bullets entering, plus inner main wheel landing doors — both designed to prevent damage. (Peter M Bowers Collection)

Bell enthusiasm was an asset. As originally envisioned, the RP-63s in this programme were armoured to protect them from gunners firing during a classic pursuit curve, with plating to protect pilot and aircraft from bullets in a cone radiating 30° from the RP-63s' line of flight. Gunnery students were expected to stop firing before the RP-63 made its break from the pursuit curve, but in eagerness, some students literally shot down RP-63s with a well-placed frangible bullet in a vulnerable part of the target Kingcobra.

By August 1944, the prototype RP-63 flew, followed by a production order for 95 RP-63As. The whole notion of placing sensors under the skin plates, allowing hits to be counted and also heralded by a blinking light in the RP-63's propeller spinner, gave rise to naming one of the three prototypes 'Pinball', the name that eventually became equated with the whole programme.

For RP-63A-11 through RP-63C-2 variants, the hit tallying equipment relied on 109 pick-up units to electronically record hits by frangible bullets. A test of the system could be performed on the ground by striking any of the sections of armour-plated skin that contained an active

pick-up sensor. According to an RP-63 Erection and Maintenance manual: "In addition to recording such hits the system also visually indicates hits to pilot of target airplane, and gunners who are firing at target airplane, by means of lights which flash as hits are made." The manual described the mechanics of hit sensing: "Pick-ups are of the Magnetostriction type and consist of a permanent magnet core which is wound with a stator coil... Vibration caused by impact of bullets on armour plate to which pick-up is attached, causes stress variation in the permanent magnet. These stress variations produce changes in magnetic flux causing the lines of force to move across the coil, thereby inducing an alternating current of low voltage in the stator coil. Voltage

*Frederick A Johnsen  
recounts the use of  
Bell RP-63 'Pinball'  
Kingcobras as aerial  
targets for bomber  
gunners.*

of current generated is proportional to rate of change in stress, therefore, amplitude and frequency of vibration governs intensity of the signal generated. Voltage thus generated is applied to a mixer unit and amplifier through a shielded cable and junction box." Mechanics were cautioned not to disassemble pick-up units, because they were calibrated at the factory, and disassembly could degrade this. The complex hit sensing and recording system relied on vacuum-tube technology of the era.

An AAF manual described the pick-up unit installations: "Provisions are made for attaching a pick-up unit to each section of removable armour plate and to the aft fuselage and empennage skin. In most cases the units are attached at right angles to the plate. Holes are drilled in the airplane skin, to provide room for the pick-up unit."

Concurrent with the creation of RP-63 Pinballs, Duke University refined .30-calibre frangible bullets to an operationally-successful degree, although some feed and trajectory problems would continue to nag the programme.

Part of the reason Pinball Kingcobras could

withstand being shot at was that the frangible bullets were small .30-calibre rounds instead of the more massive .50-calibre size in nearly universal use aboard American bombers by the time Pinball came into being. This necessitated modifying gun turrets and flexible waist mounts to take smaller .30-calibre machine-guns, which had to be fine-tuned to permit rapid and continuous feeding of the unusual frangible rounds.

The original production run of RP-63As was augmented by 200 RP-63Cs, and capped off by the creation of 32 RP-63Gs. Where regular P-63 variants deleted inboard mainwheel well doors, the Pinballs used doors to completely enclose and protect the tyres. Early RP-63As were vulnerable to bullet ingestion in the dorsal carburettor scoop. Ideas to prevent this included facing the scoop to the rear, although RP-63As continued to be built with forward-facing carburettor inlets. The RP-63G introduced a flush opening in the fuselage for the carburettor.

The heat-treated 24ST aluminium alloy plating that protected Pinball aircraft and pilots varied in thickness in response to the nature of impacts likely to be received on various parts of the

structure. Plating thicknesses were revised on G-models, probably as a result of service experience gained with older Pinballs. The cockpit windows, including windscreen, doors, and overhead curved panels, consisted of armoured glass in Pinballs, with thicker frames between windows than on unarmoured P-63s. Rear canopy glazing was replaced by aluminium armour plate on Pinball aircraft. RP-63As and 'Cs used built-up propeller spinners of differing laminations and thicknesses for additional protection.

The forward fuselage and wings of RP-63s were protected by armour plate attached by screws or ubiquitous aircraft Dzus fasteners. Armour panels that screwed onto the structure over existing skin relied on floating nut plates mounted to reinforcements in the original skin; the floating nut plates made installation and alignment of the armour plating easier. Some access doors were replaced with Dzus-fastened armour panels. The empennage and aft fuselage of RP-63s were built with flush-riveted heavy 24ST Alclad skin .091-inches thick, with heavier plating screwed to the leading edges of the vertical fin and horizontal stabiliser.

Exhaust stubs were protected by angled steel shrouds attached with Dzus fasteners. Labyrinth steel baffles at the cooling inlets in the wings were supposed to prevent frangible bullet fragments from damaging the delicate cooling system (although this was a source of problems for RP-63s).

Control surfaces were also armour skinned for protection. The array of armour plate on RP-63As and RP-63Cs provided protection within 30 degrees of head-on for the Pinball; RP-63G-1 versions were additionally protected from broadside hits. And in case an ambitious student gunner continued firing at a Pinball flying away from the gunner, aluminium armour .25 inches (6.4mm) thick was installed behind the pilot's head, augmenting the thick skin that replaced the aft cabin windows.

The unnamed RP-63s carried an N-3C gunsight which gave the Pinball pilot a realistic view of his quarry when making pursuit attacks. The absence of a 37mm cannon and two .50 calibre machine-guns in the nose of Pinballs demanded substitution by a cast iron ballast block in the nose, behind the reduction gearbox. On RP-63A-11 through RP-63C-2 versions, the ballast block

weighed about 430lbs (195kg); when RP-63G-1s were fitted with radio equipment in the forward fuselage compartment, the ballast block was reduced to about 362lbs (164kg).

By the end of April 1945, student gunners at Las Vegas Army Airfield in the starkly beautiful Nevada Desert were shooting frangible bullets at Pinball RP-63s, according to a contemporary history from Las Vegas AAF, "but the results were not very satisfactory. About 5 percent hits were recorded. However, it was undetermined whether the error was in the number of hits or whether the hit counters used were not operating sufficiently to record all of the hits made."

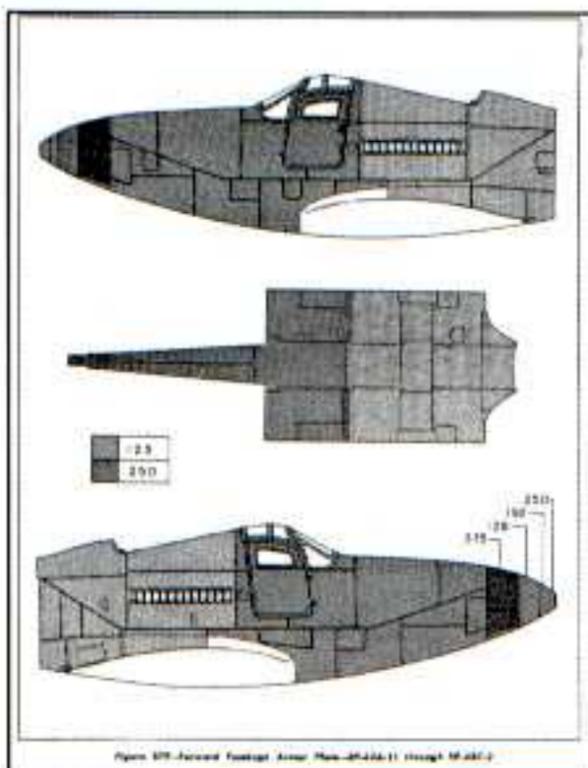
Most vexing to the Pinball programme was the incidence of frangible bullet fragments finding their way into the cooling system of the RP-63 by way of the wing leading edge-mounted inlets.

But by July of 1945, the research division of the USAAF Central School for Flexible Gunnery at Laredo Army Airfield, Texas, noted in its monthly project status report: "All RP-63s have been grounded throughout the Training Command and Training Air Forces. However, the Research Division has received special permission to use ten of these aircraft solely for experimental purposes. The grounding of these aircraft is the result of the effects of small fragments of the frangible projectile lodging in the air coolers of the RP-63s."

Even as the RP-63s were grounded, work continued to upgrade the bombers used in training Pinball gunners. B-29s, with central fire control and remotely-sighted turrets, were being phased in to the Pinball programme instead of the B-17s and B-24s originally intended. For July 1945, the USAAF Central School for Flexible Gunnery reported: "The greatest portion of the work being accomplished by the Frangible Bullet Section during [this month] is directly concerned with the modification of B-29 equipment." The report continued: "All positions except the upper forward have been installed and tested on the B-29. Considerable difficulty has been encountered in the charger mount." Substitution of chrome moly steel for cold-rolled steel in some of the charger parts appeared to correct the problem. By that time, not only Laredo had a frangible-firing B-29; Las Vegas, Harlingen, and Second Air Force each possessed a B-29 so modified.

But the war was nearly over; although Strategic Air Command showed interest in RP-63 training in the immediate postwar era, the window of opportunity for Pinball Kingcobras was closing as the jet age dawned with new bombers, new capabilities and new potential adversaries. Pinball remains as one of the most unorthodox, and potentially realistic, gunnery training plans ever devised. If its execution was beset by problems, its concept smacked of Yankee ingenuity.

Several Pinballs were retired to static display, including examples once visible at the University of Utah in Salt Lake City, the Fresno, California, airport, and Lackland Air Force Base, Texas. As of writing, only the Lackland example remains on display; the former Fresno pedestal queen may form part of a Kingcobra display elsewhere.



Drawing from RP-63 'Erection and Maintenance' manual showing extra armour plating on forward fuselage. (Bill Miranda Collection)



Hordes of Pinballs filled the ramp at Laredo Army Airfield, Texas, in 1945. Marks on the national insignia of 42-6911 show strikes by frangible bullets. (Air Force Historical Research Agency)

(Portions of this article are taken from the forthcoming book, 'P-39 Airacobra/P-63 Kingcobra', in the Warbird Tech Series from Specialty Press.)





*Help!* is a FREE service to readers offered on a space available basis, and sadly, there is a very long waiting list. Please keep your appeals **SHORT** and write clearly, printing names and addresses in capital letters. (Please note that we are unable to publish photocopies of pictures.) Send to: FlyPast Help!, PO Box 100, Stamford, Lincs, PE9 1XQ.

LAC HALL, James, 1013239, RAFVR, served with 110 Squadron, died November 11, 1943, buried Gauhati War Cemetery, India — details of service and death required for family history. T S Boyd, 94 Hillend Road, Clarkston, Glasgow, G76 7XT.

**Pakistani Air Force Canadair Sabre Mk6 s/n 1815 is being restored for the Western Canada Aviation Museum and in order to present its service history as part of the display details are needed of the aircraft's first operator, the Luftwaffe. Dave Lennox, Winnipeg, Manitoba, Canada, R3R 2C1. E-mail: bdwlenox@escape.ca**

RAF Foxton Moor (Market Harborough) — researcher seeks information, unwanted pictures, maps and site plans from anyone who served here from the time the base became operational in May 1945. Ms Camilla McGowan, 31 Loughton Road, Lubenham, Mkt Harborough, Leics, LE16 9TE.

**WANTED: info/photos/drawings regarding construction/interior of Horsa Mk 1 Glider urgently needed for exhibit. Frode Sæland, Norwegian Industrial Works Museum, Vemork, N-3660 Rjukan, Norway. E-mail norskindustriarbms@telnett.no**

Fairey Gannet AEW3 — I require any information about this Royal Navy carrier plane for a Duke of Edinburgh Award in model construction. Gregory Walker, 17 Bishops Walk, Bexhill-on-Sea, East Sussex, TN40 2SP.

**LANCASTER NX622 restoration, RAAF Association Museum in Perth — we need to find Indicator Type 162 H2S (Main Screen) and**

**Indicator Type 182 H2S (Fish Pond). Glenn White, 31 Raywood Road, Whitehills, South Mandurah, Perth 6210, Australia.**

West, Fg Off Reginald, 151264, Navigator 236 Sqn RAFVR. KIA June 23, 1944. I would like to contact anyone who knew him. Keith Jones, 'Keiann', 121 Walsby Drive, Church Milton, Sittingbourne, Kent, ME10 2TU.

**Corsair (Mk 1) — as part of a college course I am building a model of this WW2 fighter bomber in clay and am looking for pictures, plans, details of panelling and squadron markings, etc — can anyone help? Graeme O'Malley, 9 Maree Place, Kirkcaldy, Fife, KY2 6PP.**

Newark Air Museum urgently needs to locate a main undercarriage wheel for a Shackleton Mk.3. External diameter 48in (1,220mm) and rim diameter 15in (380mm). Contact Newark Air Museum, Winthorpe Showground, Newark, Notts, NG24 2NY.

**Harper, F/Sgt R, only survivor of 622 Sqn Stirling EF128 Gi-D, shot down Nov 18/19, 1943, at Lachalade (near Verdun), France, on a raid to Mannheim, became POW 8094 at camp L3. People of Lachalade would like him to attend a ceremony there. Bernard Pauzié, 19 rue Basse, 51150 Vraux, France.**

SEEKING relatives or any information on following and their aircraft: Gilbert Wright downed at Plouguin (Brest area), July 26, 1942, helped by French Resistance, then taken PoW; Sgt J Clark, 218 Sqn Wellington survivor, downed at Lanrivoire (Brest area), and James Alexander Short of 152 Sqn downed in Brest area, July 24, 1941. Details needed for a tribute exhibition planned for August. Gildas Saouzanet, 1 Résidence des châtaigniers, 29840 Lanildut, France.

**BAMBURGH Radar Station — seeking information and photos of the site and staff for local museum project. J D Walton, 3 Megstone Close, Seahouses, Northumberland, NE68 7XY.**

DOES ANYONE know the purpose of a strange device — like a lighthouse on wheels — that the RAF positioned in a field near the village of Chapmanslade in Wiltshire during the war? It had a revolving red light on top which lit up the nearby cottages during its three-year stay. The village was on the route German aircraft took to bomb Bristol, Bath and the Midlands and it was also 3 miles from the Warminster Army base. A sergeant and two airmen looked after the engine-driven device — they lived in a shepherd's hut, also on wheels, and had a Lewis gun on a tripod for protection. Brian G Macken, 26

Windsor Crescent, Frome, Somerset, BA11 2EA.

**INFORMATION — anecdotes and photos — please relating to the history of Bovingdon Airfield in Hertfordshire, 1941-1972. I am particularly interested to meet with anyone who was there during the war years. Mike Humphrey, 239 Great Hivings, Chesham, Bucks, HP5 2LP. E-Mail: MIKE@planesathivings.demon.co.uk**

SGT Reginald Vaughan (540181) — trying to locate anyone who served with him in 2 Squadron 1940, Shaibah 1941, 27 EFTS & 21 SFTS 1943 and 651 AOP Sqn, Shallufa 1952. John Vaughan, 25 Wife of Bath Hill, Canterbury, CT2 8PQ.

**LANCASTER W4929 of 1661 HCU which crashed September 5, 1943, at Fan Foel, South Wales — flight details, photos of aircraft, etc required. Jason Holloway, 71 Roger Street, Treboeth, Swansea, SA5 9AR.**

Wing Airfield, Bucks — I have recently moved to Wing and would like to know more about the airstrip featured on the FlyPast map, and the part my village played in the air war. A Downie, 1 Warwick Drive, Wing, Leighton Buzzard, LU7 0PH.

**I HAVE interesting news for any ex-members of 1 Fighter Wing, Australia, 1942-44. Spitfire squadrons, 54, 452 and 457, RAAF. Gordon Barrow, 7 Charlotte Grove, Smallfield, Surrey, RH6 9AR.**

Cully, Sgt Leonard (1802431), navigator on Beaufighters with 27 Sqn South East Asia Air Force. Officially reported MIA January 9, 1945. Unofficially reported (source unknown) that aircraft and two bodies were washed up and bodies buried on a small island north of Ramree. Further information appreciated. David Walpole, 17 George Lane, Loddon, Norwich, Norfolk, NR14 6JZ.

**544 SQN 1943 — contact sought with any member of the squadron in late 1943, but especially anyone who remembers Wg Cdr Steventon, Flt Lt Alan Pilcher or Fg Off Donald Robins. Gary Mennell, The Officers' Mess, RAF Boulmer, Alnwick, NE66 3JF.**

CAN anyone solve the confusion concerning three Halifax crashes in the vicinity of Arden Hall, Hawnby, North Yorkshire? They were JD174 on July 14, 1943; EB181 on September 28, 1943; and LL178 on March 18, 1944. Two crash sites are known but unpublished information on the third would be much appreciated. E J Barton, 12 Mill Lane, Camblesforth, Selby, North Yorks, YO8 8HW.

**Project Saucer — does anyone have any information regarding**

a round-winged aircraft (UFO shape) which flew between 1944-45 under the aforementioned codename. I Bushell, 42 St Kilda Avenue, Cambridge, CB4 2QA.

INFORMATION, anecdotes, photographs (will return) wanted relating to Lt Col Elwyn G Righetti, 338th FS, 55th FG, USAAF, KIA April 17, 1945, north of Dresden, Germany. Richard Smith, 43 Mountbatten Road, Bungay, Suffolk, NR35 1PP.



**Jaroslav Sibrava — seeking information on any Czech pilots who may have served with him during WW2, and especially in the Battle of Britain. He flew Spitfires and Hurricanes and achieved the rank of Squadron Leader. He may be known by another name. Allan Sibrava, 1 Warra Street, Cooma, NSW, 2630, Australia.**

**RESEARCHER seeks information/photos on Lincolnshire bomber airfields and would like to contact ex-personnel. Justin Bagg, The Orchards, Gull Road, Guyhirn, nr Wisbech, Cambs, PE13 4ER.**

47 SQN RAF — researching into its history and seeking information, especially regarding ops in Far East, 1944-45 and Air Echelon in Egypt/Palestine with Wellesleys, 1942-43. O T Clark, The Cottage, The Street, Tibenham, Norfolk NR16 1QA.

**Roy Wilson — killed in flying accident on completion of training in Southern Rhodesia June 6, 1945. RAF service no, rank and station unknown. Can anyone supply details? R E Wilson (cousin), 111 Farriers Corner, Westlands, Droitwich Spa, Worcs, WR9 9EX.**

Stirling LJ838, which crash landed at RAF Ford (Hampshire) at 02.28 on June 6, 1944, D-Day — does anyone have a photo? John P Bond, 43 Charlwood Road, Luton, Beds, LU4 0BT.





George Sulmer's T-34A (53-4107/N45GS) on a T-34 training sortie out of Lakeland. (FP - Steve Fletcher)

# Sun'n Fun



*The annual EAA Fly-In at Lakeland, Florida, brings out a variety of historic, antique and classic aircraft, some of which are making their first public appearance.*

**F**OR THE SECOND year in a row 'unseasonable weather' in the central part of the USA had an adverse effect on the number of aircraft attending the Sun 'n Fun event — traditionally the first of the major fly-ins. The phenomenon known as El Nino caused severe weather, prompting many to stay at home with their valuable aircraft — not a good idea to risk a \$1 million P-51! Nevertheless, a reasonable selection of aircraft did make it to Florida, and amongst those were a number of gems.

A preliminary stroll around the aircraft parking areas revealed two main characteristics: firstly, the number of combat warbirds was perhaps the lowest for many years; and, secondly, the proliferation of ex East European jets — there were ten-plus L-39s present in a jet line that had few 'home grown' types, a single F-86 and a single T-33. A number of the L-39s were brought down by John Morgan from Pride Aircraft, Rockford, Illinois (see Jet Shop, FlyPast February 1998), some were still wearing their original

Eastern Bloc schemes but others have gone through the complete restoration process including a re-paint into other schemes, one of the most impressive being the F-14 prototype scheme adapted by NX139PM (owned by Paul Mullins). John told FlyPast: "The L-39 market is very active and we are presently working on aircraft 8, 9, 10 & 11. It may well be that the supply of these aircraft is drying up as various air

forces realise that they are still a viable advanced trainer. We have managed to obtain a further batch of 18 aircraft, but this may well be the last of the 'big' acquisitions."

With many aircraft it is artistically fatal to paint them in incorrect schemes, the L-39, however, is one of those that adapts to other schemes quite well — as long as the aerodynamic lines are treated with respect; any aircraft can be ruined



P-40N 'Project'; the aircraft is 43-24362 and was flown by F/O Earl Goodyear when it was involved in a mid-air collision with P-40 44-7306 on March 24, 1945. Goodyear was killed in the accident and the remains of his P-40 landed in a swamp near the Swanee River - from where it was recovered by Hal Thompson in 1992. (FP - Steve Fletcher)



The VC-131 has been immaculately restored inside and out; the cockpit is now back as it was in the aircraft's heyday. (FP - Steve Fletcher)



One of the undoubted stars of the static park was VC-131 54-2809/N131CW from the Classic Wings Corporation at Vero Beach. (FP - Ken Delve)



by unsympathetic treatment. L-39 prices range from \$300,000 (£187,500) to over \$500,000 (£312,500) and a number at Sun 'n Fun were for sale. Indeed, it seemed this year that a fair proportion of the aircraft that were parked on the field were for sale, with perhaps the most unusual example being Pembroke XF736, N2629W, looking somewhat tatty in a 'Middle East' two-tone brown camouflage scheme. This ex RAF aircraft was on offer for \$60,000 (£37,500)

Even P-51s were in shorter supply than usual at this year's Sun 'n Fun - but there a number of excellent aircraft on show, such as Lou Shaw's 44-73704/NL6168C. (FP - Steve Fletcher)

which included a 'trailer load of spares' — a good deal for anyone looking for an unusual warbird. Close-by was ex German Navy Do 28 NS3Y, also for sale at \$150,000 (£93,750). Meanwhile \$450,000 (£281,250) would buy you A-37 Dragonfly 67-14510/N91RW, an aircraft that had only flown 36 hours since completing a 'ground up' restoration that cost the owner almost twice that much.

Thunderbird Aviation brought two F-104s (N104JJ and N104RB) to the show and in the absence of such types as MiG-29, F-4 Phantom and English Electric Lightning flying on the US register (although all of these types are 'on the way'), the Thunderbird Starfighters remain the 'hottest' private jets around. The jet presence was a very notable feature of Sun 'n Fun '98 and without them the combat warbird element would have been poorly represented; it is reported, however, that there are certain parties within the FAA (Federal Aviation Authority) who are becoming concerned about private jet operations in the USA — although no official comments have been forthcoming.

Back on the concrete apron that traditionally hosts the World War Two warbirds, most attention was being paid to Frank Borman's P-63 Kingcobra 42-69021/N163FS. Former astronaut Frank Borman was well known for his P-51D Su Su II (an ex Oshkosh Grand Champion) and even whilst the Mustang was under restoration by Square One Aviation in California he had acquired this ex USAF — and ex Bendix racer — P-63. Once again the work was carried out by Square One with its usual attention to detail. Those parts that could not be found, were manufactured, with the help of detailed plans acquired from the National Air and Space Museum, Washington. The aircraft is fitted with original instruments and gunsight and



Another of the 'new boys' was Catalina N96UC (44-8375), an aircraft with a long - and in places mysterious - history. (FP - Ken Delve)

certainly looks good both on the ground and in the air. When asked what he thought of the P-51, and P-63, Borman was reported to have said "the P-63 flies well and handles better than a P-51 — but going into combat, I'd rather have a P-51". Not surprisingly, this aircraft walked away with the Grand Champion warbird award.

Whilst fighter warbird numbers were low, there were others worthy of close attention — FM-2 Wildcat N18P from the Cavanaugh Flight Museum, Texas is a beautiful example of this Navy fighter (and took 'Best Fighter' award) and amongst the low turn out of P-51s were two notables, Cavalier Mustang 44-13257/NL51DL, complete with camouflage scheme and wingtip tanks, and Lou Shaw's P-51D 44-73704/NL6168C in Korean War period finish, bearing an FF-704 code and toting rockets under its wing.

Two Skyraiders, two TBMS, a splendid P-47 in nothing more than a polished metal finish, an NA-50 (in essence a single-seat fighter version of the T-6 trainer) and a selection of P-51s that changed on a daily basis, and that was it for the World War Two fighter park. A pretty good selection by any standard measure but a poor showing for Sun 'n Fun.

What perhaps brought this home to the regular visitor was the small number of warbirds that took part in the airshow during the afternoon. The flying element of Sun 'n Fun usually runs from around 2pm to 5pm and ends with a 30-40 minute warbird session, the other displays being solo or team demonstrations by a variety of types — including on one day the USAF's F-16 solo display from Shaw AFB, a notable change from the usually more sedate and far quieter routines. The warbird show was a great disappointment on most days.

Nevertheless, there were more than enough fascinating aircraft around the field to keep any avid enthusiast occupied for a couple of days. One of the highlights was without doubt VC-131D 54-2809/N131CW brought in by Classic Wings Corporation from Vero Beach. The aircraft had been built by Convair's San Diego factory in 1954 and went on to serve with the USAF and ANG as an executive (VIP) transport from 1954 to 1985. Retired to AMARC's desert boneyard it languished there for about ten years with few prospects of any future flying career. In the mid-1990s Barry Holm and others were looking

around for an aircraft to restore, as he told FP: "We were looking for an A-26 but could not find one that was really suitable. That made us sit down and think about what aircraft were already in the warbird community and what other types might be worth looking at; that led us to the VC-131 at AMARC."

The aircraft had already been acquired by a Mexican dealer who only wanted the engines, and so in late 1996 Classic Wings took on the now engine-less airframe, fitted new engines and had the aircraft restored by Western International Aviation at Tucson, Arizona. The restoration process took around 18 months, much of the work being on the interior which had been all but gutted.

"The aircraft was in reasonable condition overall but the interior was a mess, we had to find the right components and put it all back together. Having decided that the interior should represent the various roles that the C-131D had flown, we wanted to have training, MEDEVAC and VIP stations. Finding the navigator and bombardier training stations proved to be one of the hardest tasks and it took about six months to locate suitable components — on a T-29 wreck in Germany."

The interior is certainly impressive and for a small fee visitors are invited up the rear steps to walk through the fuselage — past the training

stations and cargo area, the floor-to-ceiling canvas stretchers, the plush seating compartment and private area for the General — complete with its wooden desk — and up to the beautifully-restored cockpit. The aircraft made its post-restoration flight early this year and, according to its pilot, is a delight to fly. It is certainly a delight to see and congratulations to Barry and Classic Wings for rescuing and restoring an aircraft type that would otherwise not be around for us to appreciate. Classic Wings is interested in hearing from anyone interested in becoming a partner or sponsor with this aircraft (contact Barry Holm — Fax [001] 561 569 5365).

A little further down the line sat PBY-5ACF 44-8375/N96UC, another relatively 'new boy' on the American warbird scene. The aircraft began its military career in 1945 with the US Coast Guard's VPB-6 but by 1951 it was at NAF Seattle in 'preserved storage'. Two years later it was sold to Trans-Alaskan Airlines for \$3,600 (£2,250) and registered as N4937V. In 1954, however, it was sold no less than five times and by December was in Paraguay, as ZP-CBA, with the Lineas Aereas de Transporte Nacional. With the blisters and turret removed it was converted to passenger use and used by the FAP's military transport organisation, TAM. At some time in the 1960s it went into storage at Asuncion, only to be brought back into use a few years later for SAR and passenger use, returning to storage once more in November 1979. The Catalina went into major overhaul in 1988 to emerge as the Paraguayan President's No 2 aircraft. It served in this role until January 1993 when it was sold to Frank's Aircraft of Fort Worth and moved to San Juan. In April 1994 it was sold on to its present owners, Universal Associates, and after a period in Puerto Rico moved to Tamiami in February 1997. Owner Charles Largay, who flew PBYs and PBNs in World War Two and with the US Navy Reserves, bought the Catalina for use as a 'sightseeing' passenger aircraft and it has been given a standard transport category for up to 22 passengers. As Chief Pilot Julius Barney told FlyPast: "The aircraft is low time, having only 4,900 hours, and despite having the blisters and turret removed, there are many original military features — the hardpoint for the tail gun is still there, for example. We plan to put blisters back on the aircraft and are actively seeking the fixed portion [any offers?] as we have the movable element. In due course we may also



The jet park was dominated by L-39s (see front cover and centre) and only one F-86 was present, albeit a colourful example of the great Sabre. (FP - Ken Delve)

create a dummy turret that can be put in place for airshow appearances. As part of that 'military appearance' plan we have acquired a few bombs and would like to find a Mk 13 torpedo."

The restoration process was extensive and included re-wiring and pipework, plus a rebuild of the left engine and a top overhaul of the right engine. The flight engineer's station, in the wing mast, has been restored, as has the cockpit — the only modern instrument is the HSI. The Catalina now carries a generic 1942 PBV scheme of two-tone blue with the red meatball still in place in the centre of the national insignia and the red/white banding on the tail.

"The Catalina flies like a truck," Julius told us, "a real handful, not easy and enjoyable like

Lindbergh, Amelia Earhart, Howard Hughes and even German fighter ace Ernst Udet. The aircraft was seriously damaged in a 1977 crash, subsequently being rescued and restored by the current owners, Roy Wicker and Barbara Kitchens.

Grand Champion Antique was PT-17 Stearman N4401B, the Reserve Grand Champion award going to a delightful Spartan Executive (N17667).

A number of replicas also featured here and one of the most impressive was Pietenpol Air Camper N3513, built in 1964 using original plans — the originals having been constructed in 1929. Allan Wise has owned the aircraft for 26 years and has logged over 1,600 flying hours with it. As he explained: "It cruises at a stately 65 mph with its 65hp continental engine

flying is seen as something that is open to everyone (a realistic idea as aircraft are far cheaper to obtain and operate in the US than in Europe). Thus, a large part of the show area is given over to General Aviation, including ultralight, home-builts and microlights. Workshops are held every day covering almost all aspects of building and maintaining aircraft; a wide range of sales booths offer just about everything any aviator or would-be aviator could possibly need. The ultralight (etc) area is a show in itself, with its own runway, parking areas, sales tents and commentator and for much of the week is the busiest part of event.

If you are still looking for something else to do then there is the on-site museum with its fine



**The Cavanaugh Flight Museum's Wildcat taxis out to take part in the afternoon warbird show at Sun 'n Fun. (FP - Steve Fletcher)**

the DC-3s I used to fly, but delightful in its own way. Even when trimmed out it is rudder intensive and you have to fly it all the time. We do not, at present, operate it from water as we want to keep it away from the corrosive effects of salt water — but maybe in the future we will give it a try". This Florida-based PBV turned up at Sun 'n Fun with no real intention of entering the judging — but walked off with the Judges' Choice Navy Amphibian award.

As usual, trainer types were present in considerable strength — Gerry Walbrun's T-6D N3173N taking the best T-6 award and Fred Vanderwitt's T-34A N34BY taking the best T-34 award. Other types present in reasonable numbers including O-2s, L-19a and T-28s, although the much smaller than usual selection of the latter came as something of a surprise.

The Antique and Classic section was also rather thin on the ground but did include a number of outstanding aircraft. A 1933 Warner Scarab-powered Davies Di-W (NC13576) was one of a number of relatively rare aircraft on display in this area; the aircraft had been built in 1933, one of only 45 such Di-W airframes, with various engine options. This particular aircraft had won a number of races in its early days but had also been flown by a number of aviation notables — Charles

and flying low and slow I can see forever".

Sitting talking to Allan brought out another great aspect of such shows, that of meeting veteran aviators with stories to tell. Allan had flown B-24s out of New Guinea during World War Two, operated C-54s during the Berlin Airlift and went on to fly T-6s in the Korean War as part of the 'Mosquito' unit, the 6147th Tactical Control Squadron. This unique unit was represented at Sun 'n Fun by Jim Greerson's T-6G, as LTA-579, an aircraft that attracted the attention of a number of other Mosquito veterans — (see FlyPast October for the T-6 Mosquito story).

Indeed, the opportunity to meet up with veteran air and ground crew from World War Two through to Vietnam is one of the great aspects of a show such as this — you simply have to 'lurk' by any aircraft and before long statements like "I remember the problems we had with the ... on these in Korea" or "The last time I flew one of these was over Japan" begin to fill the air; this is a great opportunity to talk to a range of fascinating individuals who with their stories add the REAL histories of the various aircraft on display.

All of the above is only part of what Sun 'n Fun is all about and in many respects it is the other elements that make such shows special. The United States is a very 'air-minded' culture and

**Sun 'n Fun '99 is scheduled for April 11-17.** Other EAA Fly-ins scheduled for 1998 include:

|               |              |
|---------------|--------------|
| Longmont, CO  | 27-28 Jun 98 |
| Arlington, WA | 8-12 Jul 98  |
| Marion, OH    | 12-13 Sep 98 |
| Castle, CA    | 25-27 Sep 98 |
| Newcastle, DE | 9-11 Oct 98  |
| Evergreen, AL | 9-11 Oct 98  |
| Phoenix, AZ   | 8-11 Oct 98  |
| Abilene, TX   | 15-18 Oct 98 |

collection of aircraft and other displays. If you want to escape from Lakeand for a while then an absolute must to visit is the Fantasy of Flight attraction a few miles to the north (on the I-4) at Polk City. Slightly further afield is Tom Reilly's museum and restoration workshop at Kissimmee, another of the 'must see' locations for any enthusiast.

Although Sun 'n Fun was once again badly affected by the weather, and warbird attendance was low, there was still more than enough to keep an aviation enthusiast occupied for two or three days. The mass vanishing act of aircraft on the Thursday confirmed that those wanting to view warbirds should go to the first four days of the show in order not to be disappointed.

# WHAT'S



# NEW



DKR 75) shows an example of the venerable 'Dak' which served with the Danish Air Force in 1971 and was rigged for para-dropping members of the Special Forces. This is the first in a series of prints which show post-1945 Danish military aircraft, and the colour scheme



Duncan Cubitt at the 1985 Mildenhall Air Fete. The **Vulcan Phonocard** (Vulcan Restoration Trust, limited edition of 1,000) is reasonably priced at £8.55 inc postage (and comes complete with its own individually-numbered presentation folder) — proceeds will go towards the continued upkeep of XL426 at Southend.

Fassburg Flyer'.

The models (which are not toys) are all to a common 1:144 scale, and feature working propellers, removable undercarriages and display stands. The USAF 'Dak' retails at £19.99 and will grace anyone's desk!

## Bookshelf

**The B-17 Flying Fortress Story** (Arms and Armour Press, 320pp, illus, hbk, £35) by Roger Freeman with David Osborne is a monumental work, which many will see as the 'definitive' book on the B-17. With the emphasis firmly on the design and production of the famous bomber, the coverage of this aspect alone is, to say the least, comprehensive. But the area that will have Fortress fans clamouring for a copy is the war



## On the wall

In this, the 60th anniversary of the Spitfire entering service with the RAF, it is pleasing to see that its less famous sister, the Hawker Hurricane has not been forgotten, as is so often the case. Mark Postlethwaite has captured the rugged shape of the Hurricane in '**Duxford Scramble**' (Sidewinder Publishing, limited edition of 300, 24x18in, £50 & £75 depending on number of signatures). The print depicts Douglas Bader in his famous 'LE-D' getting airborne and leading aircraft from 242 and 310 Squadrons out of Duxford in September 1940. Spitfires of 19 Sqn, from nearby Fowlmere, are already climbing out to meet the enemy. One can almost hear the throb of the Merlin engines! The prints are signed by a number of Battle of Britain pilots and groundcrew.

## Danish 'Dak'

This year sees the 50th anniversary of the Berlin Airlift, so it is very apt that this print of a Douglas Dakota has been released. **Douglas C-47A K-686** (Ole Rossel Industrial & Graphic Design, 27x20in,

worn by this particular Dakota is a welcome change from the usual drab camouflage seen on most aircraft of this type.



## Vulcan Phonocard

Phonocard collecting is literally 'taking off' these days, with an increasing number being offered for sale. The Vulcan Restoration Trust, which is currently preserving Avro Vulcan XL426 in taxiing condition at Southend Airport, has launched itself onto the Phonocard market with a fine rendition of its aircraft captured by *FlyPast's* Chief Photographer



## Corgi Classics

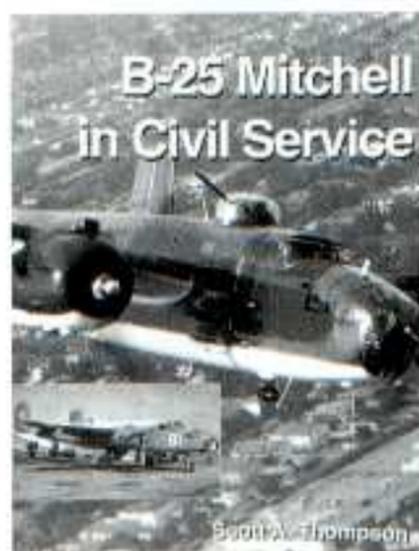
Many *FlyPast* readers will be of the age to remember the splendid die-cast metal aircraft models issued many years ago, Comet, Viscount et al. Now a new series of finely detailed military and civil aircraft models has been launched by Corgi, the well-known maker of model cars, etc. The '**Corgi Classics**' series will include such gems as BEA Dakota, KLM Constellation, BOAC Avro York and Trans Canada Air Lines' Avro Lancastrian among others. The military section will feature the Battle of Britain Memorial Flight's Avro Lancaster, while two models are devoted to this year's anniversary of the Berlin Airlift, Skyways Avro York and USAF Dakota. The 'Dak' chosen by Corgi depicts C-47A 43-15208, which was delivered to the military in February 1944, serving in the Berlin Airlift as 'The

history listing of every B-17 that took part, all 12,731 of them! This portion of the book runs from page 70 right through to page 319 and contains an incredible amount of detail.

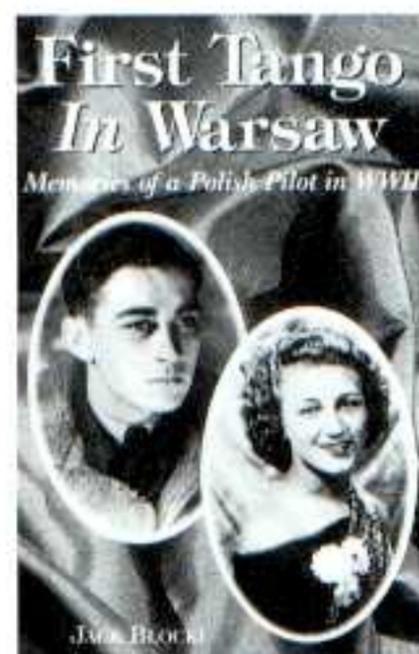
Other areas of the aircraft covered include changes, alterations and modifications made to the B-17 during its production, an overview of



the redoubtable Wright R-1820 Cyclone engine, B-17 performance figures and postwar Fortresses. Once again, the author has well and truly 'delivered the goods' and this tome will surely go down in history as one of the great books on the B-17 Flying Fortress!



**B-25 Mitchell in Civil Service** (Aero Vintage Books, 136pp, sbk, £14.95) by Scott A. Thompson. Those who like their warbirds on the larger side will already be cherishing Scott's 'Final Cut', the story of the postwar B-17s. Scott has a keen eye for detail, an academic approach to presenting source material clearly and his works always read well. Here are details of executive conversions, research and development B-25s, air tankers and — of course — of their 'new' working life as warbirds. There is a tribute to Paul Mantz and his airborne cameraships, and lashings of material on B-25s in films, including the 'full monty' on that outstanding movie, 'Catch 22'. Lavishly illustrated, the book includes detailed appendices and individual histories of the aircraft. A superb piece of work — one wonders which type is next for Scott's treatment?



**First Tango in Warsaw** (Square One Publications, 184pp, illus, hbk, £14.95) by Jack Blocki is a very readable story of an amazing man

— the life of a true survivor. Told with skill and humour, the reality of events as they happened are vividly recalled. The author (a Pole by birth) trained to become a Sergeant Pilot and was soon flying sorties over Germany in Vickers Wellington bombers. He later went on to fly Liberators and Dakotas.

**Coolham Airfield Remembered** (published by the author, 150pp, illus, sbk, £12.95) by Paul Hamlin looks back at the history of Coolham Airfield near Horsham in West Sussex. This temporary Advanced Landing Ground was originally built for the use of RAF Fighter Command during Operation Overlord, D-Day, June 6, 1944. One of seven such



**COOLHAM AIRFIELD REMEMBERED**

Memories and accounts of a former D-Day fighter station and landing ground

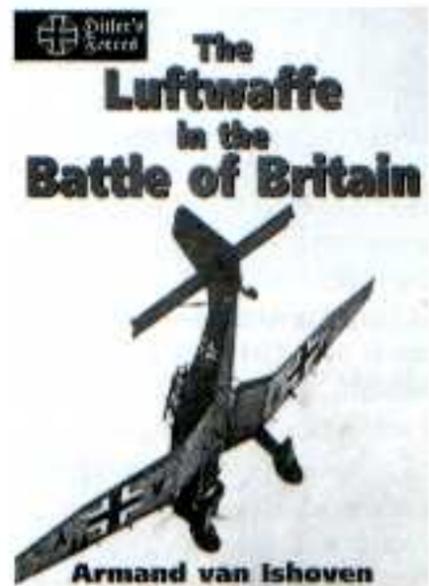


landing grounds constructed in Sussex to support D-Day, it was also used by American bomber crews who successfully made emergency landings at the airfield. Previously unpublished photographs complement the text, which encapsulates the spirit of the era.

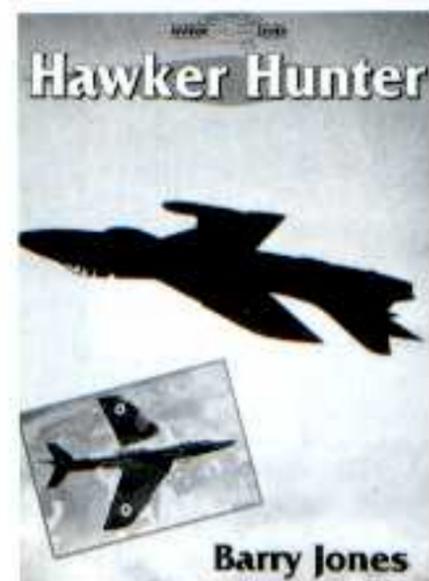


**The History of 73 Squadron** (Tutor Publications, 281pp, illus, sbk, £15) by Don Minterne is part two of this author's history of 73 Sqn, and takes the reader from November 1940, when the squadron was moved to Egypt, through to September 1943, and operations in

Italy. During this period 73 Sqn was equipped with the Hawker Hurricane and it's good to read a book which features this trusty, but often overlooked, British fighter. Taking a day-by-day look at the squadron's activities, the story will continue into the 1950s and 1960s in the forthcoming part three.

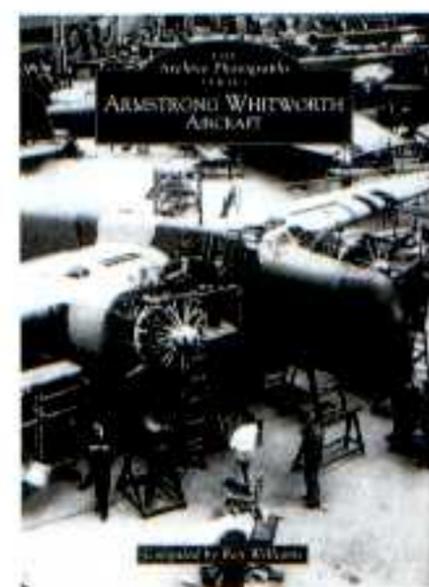


**The Luftwaffe in the Battle of Britain** (Ian Allan Publishing, 128pp, illus, sbk, £14.99) by Armand van Ishoven is a welcome reprint of the title first published in 1980. The author, an authority on the Luftwaffe, has managed to put together a scintillating selection of photographs to illustrate all aspects of the German air arm's involvement in the conflict over England during 1940. The text includes accounts of what it was like to fly such aircraft as the Ju 88 and He 111, as well as profiles of those famous German ace pilots, Werner Molders and Adolf Galland. The attacks on RAF airfields as well as the City of London are also well documented.



**Hawker Hunter** (Crowood Press, 160pp, illus, hbk, £25) by Barry Jones is a fine account of a fine aircraft. The old adage of 'if it looks right, it will fly right' was well proved by the Hunter. The last of the graceful military jets, the Hunter served with distinction in many air forces, not least the Royal Air

Force, of which it was the staple fighter of the late 1950s and '60s. Looking at the type's design and entry into service, the text is littered with a mouth-watering selection of photographs, which will keep even the most enthusiastic Hunter buff occupied for hours! Overseas production, export variants and Hunters used in trials work all come under the author's magnifying glass!



**Armstrong Whitworth Aircraft** (Chalford Publishing, 128pp, illus, sbk, £9.99) by Ray Williams looks at the aircraft company which will always be remembered for the World War Two Whitley bomber, but as this book ably shows, Armstrong Whitworth made much more than just Whitleys! The company originally branched out into aeronautical engineering as far back as 1913 to build aircraft for the War Office and airships for the Admiralty. Initially building the BE.2a, BE.2b and BE.2c, the factory soon moved to designing its own aircraft and the name Armstrong Whitworth adomed many different types. Into World War Two and the ubiquitous Whitley entered service, perhaps the company's most famous product. The Albemarle, a twin-engined bomber/target tug aircraft was the first tricycle undercarriage aircraft to be operated by the RAF.

Postwar the company went on to build the Gloster Meteor and Hawker Sea Hawk, as well as its own distinctive Argosy transport aircraft.

**Reviews by Robert Rudhall and Ken Delve. Contact addresses for the products in What's New are listed in our July Factsheet. Please send an SAE or two IRCs to: July Factsheet, FlyPast, PO Box 100, Stamford, Lincs, PE9 1XQ, UK. We regret we cannot take telephone enquiries related to the products reviewed.**

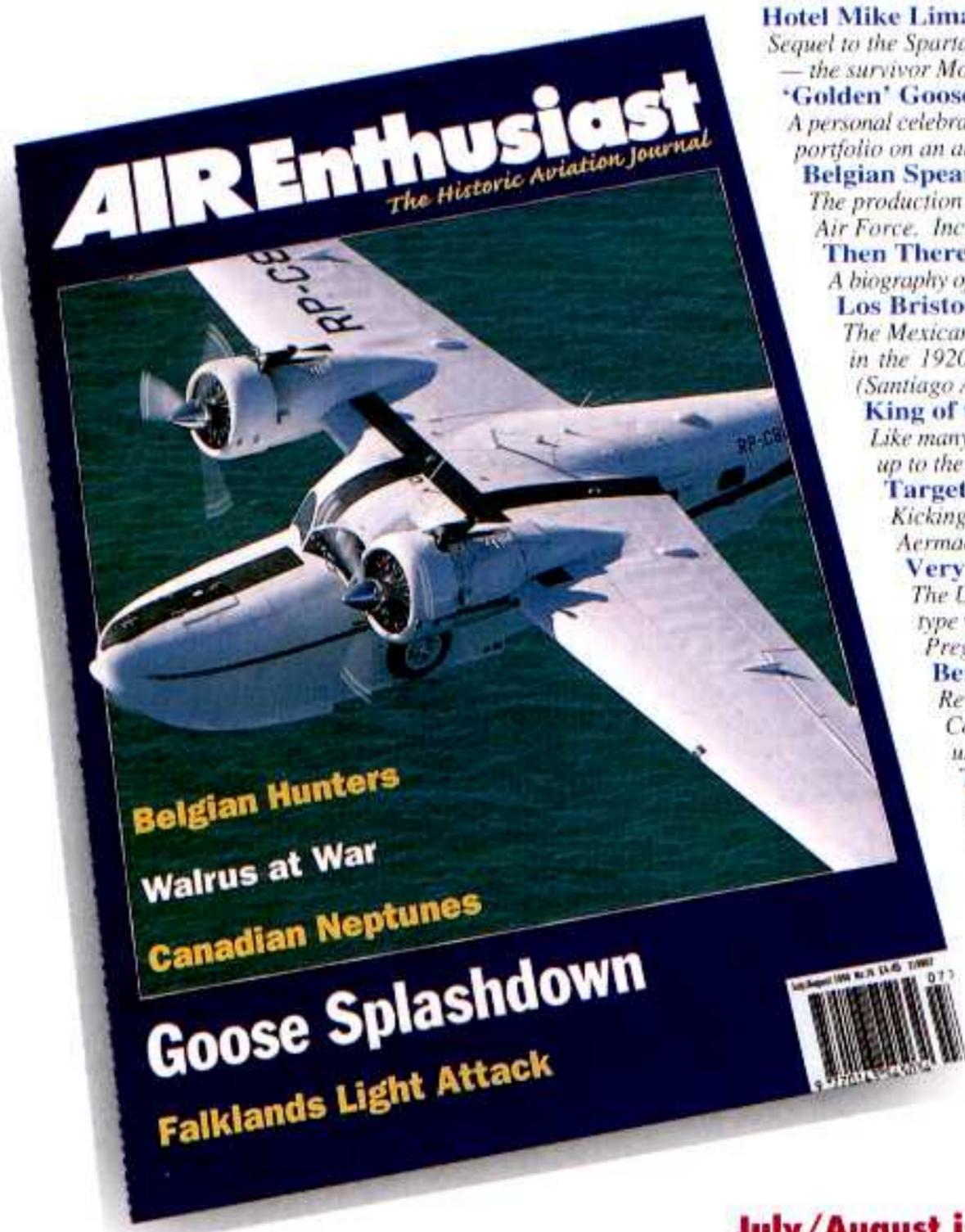


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Edited by Ken Ellis

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OFFER ENDS 31ST DECEMBER 1998

**I**N MARCH 53 years ago a city in neutral Switzerland was bombed. Since that day I have periodically pondered whether it was really a mistake or intentional. At every reunion of the guilty party — the 466th Bomb Group — I have attended in recent years there has always been a debate over what happened that day. In discussions with Lt Colonel 'Jake' Jacobwitz, who was leading the bomb group that day, he swears — "it was a mistake".

Thirty years ago when my duty in the US Air Force was Chief of Operations of the North American Air Defense (NORAD) Command Center located in Cheyenne Mountain, Colorado Springs, Colorado, I learned that one of the Intelligence Officers on the staff was with the 8th Air Force Intelligence section responsible for selecting targets during World War Two. Over a cup of coffee one day I asked him about the Basel bombing - informing him that I was on that mission. His only comment was, "that is need-to-know classified information", even though my security clearance was TOP SECRET. I was surprised I did not receive a more direct answer — after all it was now 1967. Whenever an answer to a question is evasive, it always makes me believe that the truth is being withheld.

During the past year there has been considerable information released by the international news media raising serious questions about Switzerland's neutrality during World War Two. There have been accusations that the country stored Holocaust gold for the Nazis and reports of Allied personnel being able to evade and seek refuge in Switzerland. These factors, and having seen German troops there, I feel my opinions of 53 years ago have much justification and merit.

### March 5, 1945 - News Release

#### - New York Times

"US Bombers drop explosives and incendiaries on Basel, Switzerland. There were casualties. Basel being evacuated. Swiss radio charges attack was deliberate; identified the incendiaries as British. 8th Air Force announces bombers mistook Basel as a German target."

### March 6, 1945 - News Release

#### - New York Times

"Lt General Spaatz conferred with Swiss High Command, Berne, on prevention of further bombings."

### March 9, 1945 - News Release

#### - New York Times

"The Swiss Government announced that four of its nationals were killed and many injured, and extensive damage was caused when planes of undetermined nationality bombed Basel, Switzerland".

"A broadcast communiqué stated that large fires were started by incendiaries dropped, rails were cut and 50 freight cars destroyed and the freight station damaged by high explosive bombs".

(Note: It was later reported that the US Government paid \$70 million in reparation.)

### Diary - Mission No.5

March 4, 1945: 0330hrs wake-up, 0400hrs breakfast, 0500hrs briefing, 0620hrs take-off,



B-24 'Paper Doll' (42-94799) of the 466th BG at Attlebridge, the aircraft that Donald Goede was flying on this mission. (Donald Goede)

# The Day Basel was Bombed

*Donald H Goede recalls the day when the 466th BG bombed a rail yard in Switzerland.*

estimated time of return 1415hrs. Target: jet airfield in south-western Germany near Freiburg. Flak expected to be light. Aircraft assigned 'Paper Doll'. Bombing by radar, not visual due to the lousy weather over England and all of Europe. Have known other missions scrubbed when weather was much better. Bomb load ten 500lb M-17 incendiaries. Total aircraft on mission, twenty-eight. Formed over France. Clouds made us change forming altitude from 12,000ft to 17,000ft. There was a break in the layers of clouds at that altitude. One flight climbing to bombing altitude went into a layer of clouds with seven aircraft in formation and came out with four. Expected to hear mission scrubbed. Lt Colonel 'Jake' Jacobwitz, Commander of the 786th Squadron, was in the lead aircraft and Colonel Ligon, 466th Group Commander, was flying Deputy Lead. Approaching the briefed 'identification point' (IP) to start bomb run on target over the radio came "that is not the IP". Radio silence went out the window. Transmissions between aircraft jammed the air questioning the IP and the bomb-run towards target. Earlier one formation had broken off and went home with their bombs and the formation of four aircraft picked Offenburg as a target of opportunity. Nine aircraft followed group leader to target.

#### De-briefing:

Target bombed was not a jet airfield but a marshalling yard. There was an uncertainty whether it was Freiburg, Germany or Basel, Switzerland. The critique was extensive. Intelligence was waiting for reports and photos from reconnaissance aircraft to confirm target and damage.

#### Evening - March 4, 1945:

Announcement over the Public Address System (PA): "All crews on today's mission report to Operations Briefing Room". On the dais was Colonel Ligon, Lt Colonel Jacobwitz and the Group Intelligence Officer. Colonel Ligon dropped the 'bomb'. "Gentlemen, today we bombed Basel, Switzerland, by mistake." There was a brief moment of silence and then an exchange of comments amongst the crews member of "I told you so" and "Oh God, no".

The briefing was then turned over to the Intelligence Officer. The curtain covering the map wall and projector screen opened. The projector was turned on revealing the target bombed. It was a marshalling yard. All bombs from the nine aircraft were within a 1,000ft circle of the centre of the target — 100% results. The explosions that followed the bombs confirmed that the rolling stock in the marshalling yard contained ammunition and the aerial photos identified German troop train cars in the target area.

When the Intelligence Officer presented the results and facts of the bombing, the mood of the assembled aircrews did a 180 degree about face. Neutral Switzerland was not so neutral after all. German ammunition and troop trains were being routed through Basel. The question then and now — was the bombing of Basel Switzerland a mistake? Or — because of intelligence information compiled by the Allies revealing Switzerland's violation of neutrality — did we bomb Basel under the pretence that it was a mistake caused by the weather. Then and now my conscience does not bother me for bombing a supposedly neutral country.





# Top-Scoring Air-Gunner

Boulton Paul Defiants of 264 Sqn on patrol; the Defiant was the only 'turret fighter' to see significant operational service.

*Alec Brew details the career of Fred Barker — the most successful Defiant air gunner, and probably the top-scoring air gunner of World War Two.*



Sgts Fred Barker and Roland Thorne — the top-scoring Defiant team, and, therefore, probably the top-scoring air gunner and pilot 'who never fired his guns'.

**O**VER THE YEARS THERE has been much speculation and investigation into who were the top scoring fighter pilots of each nation in each conflict. However, there can be no argument about the identity of the top fighter pilot of all time, Major Erich Hartmann who scored 352 victories during World War Two. What has received less attention is the identity of the top-scoring air-gunner of all time.

As the top-scoring Boulton Paul Defiant gunner, with 13 victories to his credit, the outstanding

candidate must be Flying Officer Frederick Barker, DFM and Bar. The Defiant was the world's only operational fighter in which all the armament was operated by the gunner, discounting such hopeless devices as the Blackburn Roc — the Defiant's top-scoring gunner must, therefore, have a better claim than any bomber gunner; it's hard to believe that any can have a serious claim to have shot down more than 13 aircraft.

It's possible that a gunner in a multi-seat fighter, which also had pilot-operated guns,

like the Bristol Fighter of World War One or the Northrop P-61 Black Widow, might also have a claim, but it seems doubtful, thus leaving Fred Barker as the most likely claimant to the title, top-scoring air gunner of any nation, of all time.

Frederick James Barker was born in Bow in London. He joined the Royal Air Force Volunteer Reserve in March 1938, and at the outbreak of war was posted to Sutton Bridge. He was then sent on an air-gunnery course at Pwllheli, and as a Leading Aircraftman (LAC) Air Gunner was posted to 264 Squadron, then at Martlesham Heath.

The Squadron had been formed at Sutton Bridge on October 30, 1939, under the command of Sqn Ldr Stephen Hardy, destined to be the first and longest-serving Defiant unit. To begin with there were only a few Magisters and Fairey Battles to fly, but the first Defiants, arrived on December 9.

The Defiant was the only one of a long series of 'bomber destroyers', produced from official specifications between the wars, to have gone into production. The Royal Air Force had a basic philosophy that "The bomber will always get through", and in finding ways to counter enemy

bombers drew up a series of specifications for 'bomber destroyers' which often featured unusual armament. Spec F.9/35 was the latest of these, which envisaged a two-seat fighter (to replace the Hawker Demon) all the armament of which was concentrated in a power-operated gun turret.

With new all-metal, high-speed bombers coming into service, it was considered essential to increase the firepower of attacking aircraft, and one way of doing this was to have the guns in a turret which could traverse as an attack was made, allowing the guns to bear for a longer period. The airframe Boulton Paul Aircraft produced, despite being powered by the same Merlin engine as the Hurricane, managed a remarkably similar performance, even though it had to cope with the extra drag and 850lb (385kg) extra weight of the four-gun turret and its gunner.

The aircraft was easy to fly with a roomy and comfortable cockpit, but Fred Barker's 'office' was much more cramped. The internal diameter of the cupola was 40.62in (103cm), with the gunner occupying the rear of the turret, with four guns in front of him, two on each side, one above the other. He sat on an adjustable padded seat, with no back, with his feet resting on spring-loaded footrests attached to the cross-beam at the base of the turret.

He operated the turret hydraulically with a single stick control, moving it to the side to revolve the turret, and forward and back to

were the main switch and the pilot warning switch, which could relay messages via two lights on top of the pilot's instrument panel, should the intercom be out of action, though Fred does not remember these ever being fitted to the aircraft in which he flew.

Entry to the turret was via two sliding doors behind the gunner's seat, and on take-off and landing the turret guns were always pointed forward, so that in the event of a crash the



**Defiants awaiting delivery outside of Boulton Paul's Wolverhampton factory. The aircraft on the right, L7005, is the one in which Sgts Thorne and Barker force-landed near Herne Bay, shooting down a Bf 109 as they did so.**



**Although this is a tropical version of the Defiant, hence the large radiator scoop, it does show to good effect the way that the turret had been added to a basic fighter airframe — the turret was positioned with guns forward for take-off and landing as this would make it easier for the gunner to exit in case of an emergency. (FP Collection)**

raise or lower the guns. Control was so accurate that, with a pencil placed in one of the gun barrels, a trained gunner could write his name on a suitably placed card. The guns were fired electrically by a button on top of the control stick. He did not have to worry about hitting parts of his own aircraft, as there was an automatic cut-out for each pair of guns, activated by a contact running over a revolving metal drum, with suitably shaped non-conductive inserts.

In the centre, above the substantial structure of the gun mountings, was the gun-sight, and below that there were a number of other controls. In the centre were the twin dials of the standard Air Ministry Oxygen Regulator. To the left of that were the gun-sight and cockpit light switches and the turret drive engagement lever. To the right

gunner could escape through these doors and over the rear fuselage. This was also the normal route for a parachute exit, though Defiant gunners had great difficulty leaving the aircraft in a hurry, even though they were equipped with a specially designed 'parasuit' on their back. There was actually an alternative exit for the gunner, down the turret, through the bulkhead, into the rear fuselage and out through an escape hatch underneath. This route would be useful if the aircraft turned over in a crash, but would be almost impossible in the air.

The pilots and gunners paired up, and Fred Barker teamed up with Sergeant Roland Thorne, usually called Ted. In the Defiant it was essential that the two crew members acted as a closely co-ordinated team, with the pilot having to

position his aircraft for his gunner to make the most effective attack. In addition, the whole of 264 Squadron practised co-ordinated attacks, making cross-overs from different quarters so as to divide the defensive fire of bomber formations.

The personnel of 264 Sqn pioneered the tactics to be used by this radically new fighter, and they also had to suffer the usual teething problems with a new aircraft. Sqn Ldr Philip

Hunter assumed command of the unit in March 1940, and it was he who led the first night flying practice in April, which came as a shock to many aircrew; though the Defiant had been envisaged as a day or night fighter from the outset. Its 100mph (160km/h) approach speed for landing, because of the high wing loading, was regarded as high for night landings but with the easy handling of the aircraft, good forward visibility, and wide track undercarriage, the Defiant found no difficulty landing at night.

The Squadron was declared operational on May 10, moving to Duxford that day — but the first combat did not take place until the 12th, when A Flight flew a sweep over Holland in company with six Spitfires of 66 Squadron, and shot down a Junkers Ju 88. The following day, B Flight flew a similar operation, and after attacking a formation of Ju 87s, and shooting down four, its aircraft were bounced by a large number of Bf 109s and five of the six Defiants were shot down.

Neither Fred Barker nor Sgt Thorne flew on these operations. The Squadron re-equipped and was moved to Manston to cover Dunkirk, flying the first two patrols on May 23, again without Barker/Thorne, the first of a series of patrols over the evacuation beaches over the next few days. The Squadron had its first successes over Dunkirk when a force of 12 Heinkel He 111s was attacked, and broken up; three being claimed shot down and two more damaged.

Fred Barker and Roland Thorne achieved their first victory on the following day, May 28. Sqn Ldr Hunter led ten Defiants, taking off from Manston at 11.35am. About 10 miles (16km) out over the Channel they were attacked by around 30 Bf 109s. Hunter ordered the Defiants into line astern, to follow him into a defensive circle, a manoeuvre they had practised many times. Thorne and Barker were last in line, as the Defiants covered one another's tails. Sqn Ldr Hunter's gunner, LAC Strong, shot down two of

the attackers, but two of the Defiants were picked off by the Bf 109s. Thorne and Barker's aircraft was hit in the wings and tail, but Fred poured fire into the German fighter, which fell away to the sea, out of control. As more Bf 109s attacked from the rear, Fred shot down two more, an auspicious beginning to his operational career. As the brief but fierce action ended, the Defiants had claimed a total of six of their attackers destroyed, but only seven of their number were able to fly back to Manston.

On the following morning, 12 Defiants took off again for Dunkirk, at relatively low altitude, with the Hurricanes of 56, 151 and 213 Squadrons higher above them. They could see the huge columns of smoke from Dunkirk right across the Channel, and Fred had a tremendous feeling of being part of a huge three-service operation. The Channel below was crowded with ships travelling

Squadron, as well as further Bf 109s which joined in the fight, bringing the total to eight, along with Thorne/Barker's stray Ju 87.

The 11 Defiant crews flew home to Manston triumphant — a triumph only slightly tempered by the discovery of the loss of LAC Jones. In the evening they took off again for another patrol over the beaches, Plt Off Kay in a new aircraft, with a replacement gunner, LAC Cox. As Spitfire and Hurricane squadrons engaged the German fighters high above them, Hunter led the Defiants down to sea level, to catch a force of Ju 87 dive bombers as they pulled out of their dives.

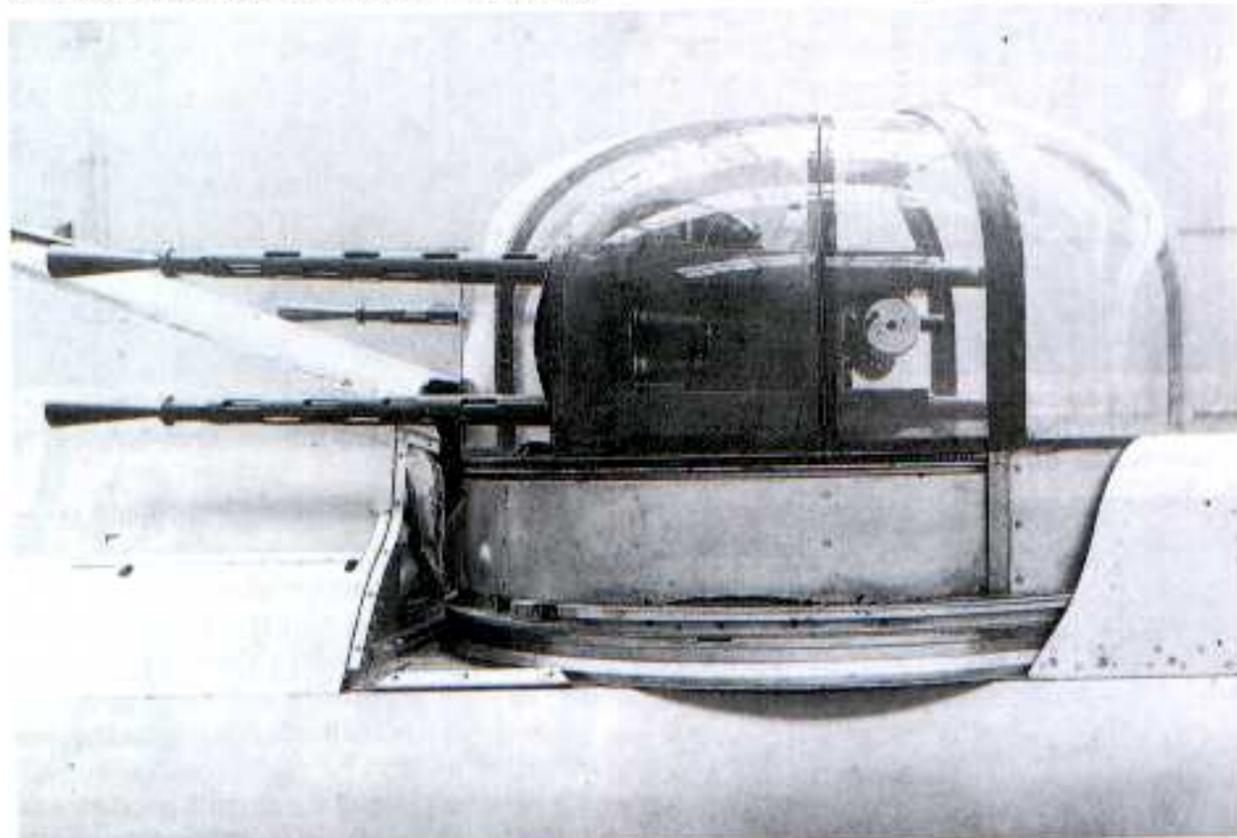
The Stukas were almost sitting ducks, as the Defiant gunners poured fire into them from the flanks, shooting down 18 to add to the one on the morning patrol. Barker and Thorne claimed one of these, sending it down in flames and

twin-engined fighters, and they had broken up formations of bombers, the task for which they were specifically designed.

The Squadron flew no operations on the 30th but returned to the French coast on the afternoon of the 31st. Sighting a force of about 30 Heinkel He 111s escorted by 70 Bf 109s, Hunter led his aircraft towards them. The Heinkels turned and ran, some jettisoning their bombs, and the Messerschmitts swooped — Hunter put the Squadron into a defensive circle, and a fierce battle ensued in which five Bf 109s were shot down, but three Defiants were lost, though two of those were due to a collision.

Later in the afternoon the Squadron crews returned to the Dunkirk area with 111 and 609 Squadrons above them. They sighted a formation of Heinkel He 111s 2,000ft (600m) below them and dived to the attack. Four Defiant gunners, including Fred Barker poured fire into one Heinkel, which soon fell away in flames and was seen to crash. Thorne rejoined the formation in Red Section. Three more Heinkels were claimed in the engagement, including one by Barker and Thorne, as the Defiants once more proved their ability as bomber destroyers. Unfortunately, two more Defiants were lost to the return fire, though the crew of one aircraft was rescued when they ditched in mid-Channel.

No 264 Squadron had experienced an intense period of action. During May it had flown 174 sorties, and had claimed 65 German aircraft shot down for the loss of 14 Defiants. It was withdrawn to Duxford to rest and receive replacement aircraft and aircrew. For his part in the actions, with five aircraft destroyed and a part share in another victory, Fred Barker was awarded the Distinguished Flying Medal (DFM) on June 14. During May he had been promoted from LAC to Sergeant, when an order went out that all air-gunners should be of at least that rank.



**The turret was equipped with four machine-guns — and was somewhat cramped for the gunner — the intention being that as a bomber destroyer the Defiant could fly alongside its target and the gunner could traverse his guns to fire a steady stream of bullets into the bomber and thus ensure its destruction.**

in each direction, and the sky was soon crowded with aircraft of both sides.

They were flying in sections in line astern with Thorne/Barker as No.3 in Blue Section; and as they neared the beaches six Bf 109s attacked them from high altitude. Sqn Ldr Hunter's gunner, LAC King, opened fire first, on the leading Bf 109 and kept firing from 300 to 100 yards range until it burst into flames. Three other Bf 109s were hit and plummeted away to the sea, but Pilot Officer Kay's Defiant was hit in the starboard aileron and turret, and the hydraulics put out of action. His gunner, LAC Jones, baled out but Kay made it back to Manston, and his Defiant was eventually repaired.

The remaining Defiants pressed on and Hunter manoeuvred to attack a Heinkel He 111 over the beaches, but then he saw a force of Junker Ju 87s, escorted by Bf 110s. Thorne turned his aircraft towards a Ju 87 which obviously had not seen them, and shot it down. They then rejoined the formation as the German fighters swung to the attack from below, Sqn Ldr Hunter led his squadron into a defensive manoeuvre they had practised many times, a line astern spiral dive, giving no blind spots for the attacking fighters to exploit. Sgt Thorne and Fred Barker were last in line and the first to shoot down one of the Bf 110s. Eight more Bf 110s were claimed by the

making a total of three victories for the day. Thorne then climbed back to 8,000ft (2,400m) to look for the rest of the Squadron. They saw two more Ju 87s and commenced a cross-over attack, hitting them both, but without seeing them crash. At this point, Fred's guns stopped and Thorne flew back to Manston, where the exhausted pilot overshot the runway, and his undercarriage collapsed — Thorne and Fred Barker clambered uninjured from L7006, which was later repaired.

The rest of the Squadron had re-formed after the decimation of the dive-bombers and launched an attack on a formation of Ju 88s, claiming one destroyed and one probably destroyed. All the crews returned successfully to Manston, tired but exultant.

The Squadron had achieved a record for the Royal Air Force, claiming 37 German aircraft destroyed for the loss of two aircraft damaged, and one gunner killed. There is no doubt that these claims were unintentionally exaggerated. The very nature of the Defiant meant that two or more gunners could be firing on the same target from different directions without necessarily realising it, each claiming an aircraft destroyed, but there is also no doubt that the aircraft had proven itself in daylight combat. The Squadron crews had successfully defended themselves once more, against determined attack from single- and



**Aircrew of 264 Sqn, spring 1942, L-R: F/Sgt 'Bubbles' Chandler, Sgt Jock Meir, F/Sgt Fred Barker and Sgt Denny Croucher. (All via author unless stated)**

**Alec Brew concludes this story in the August issue of FlyPast (on sale July 1).**

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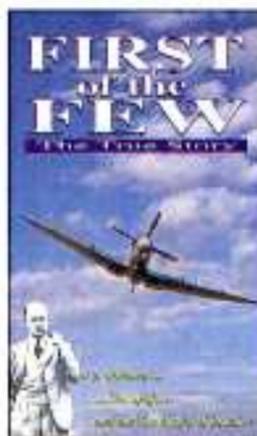
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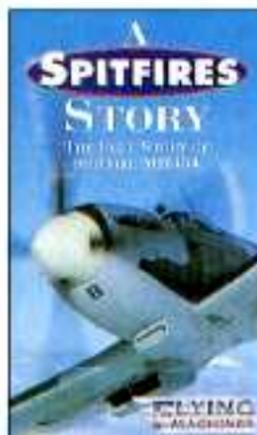
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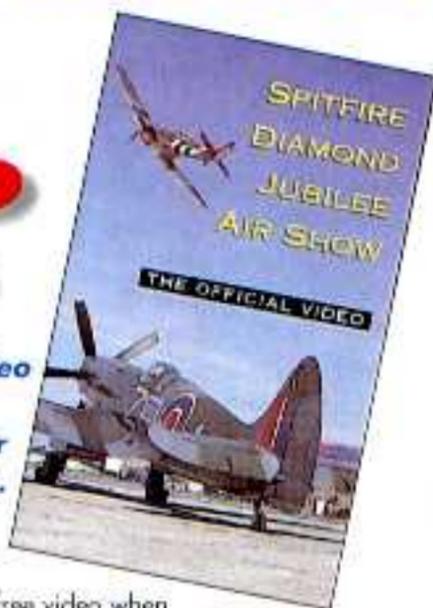
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The line-up on Saturday. The Spitfire Society's replica of the prototype K5054 headed the long flightline which culminated in the IWM's Spitfire Mk.24 VN485. (FP - Duncan Cubitt)

## SPITFIRES

*Robert Rudhall reports from Duxford's 'record-breaking' Spitfire Airshow. A show which included everything the most ardent Spitfire fan could ever want!*

**T**HE WORLD RECORD for flying restored Spitfires in formation was equalled and then broken at Duxford's two-day Spitfire Airshow on May 2/3. On the first day of the display (Saturday) the organisers managed to get 13 Spitfires in the air together, equalling the world record set at Southampton two years ago, but on Sunday the magical sight of 16 Spitfires roared across Duxford Airfield, setting a new record in the process!

Around 26,000 people turned out to witness this large gathering of R J Mitchell's famous design, with variants ranging from Mk.II P7350 through to the Imperial War Museum's Mk.24 VN485, all lined up on Duxford's grass. Way back in 1938 the Spitfire first entered Royal Air Force service with 19 Squadron, which was based at Duxford at the time, and the fighter has since gone down in the annals of RAF history. It was without doubt the most graceful and aesthetically pleasing fighter design to see action during the war, and these days an increasing number of the breed are finding their way back into the skies.

But to attempt to get a substantial number of Spitfires (and qualified pilots to fly them) in one place at one time is not as easy as many may think! The organisation behind the Duxford



It's a record breaker! Sixteen Spitfires in close formation on Sunday afternoon set a new world record. (FP - Robert Rudhall)

show was immense, not only to get the aircraft to the airfield, and have them lined up in mark order — to put up a mass formation of 16 took even more detailed planning, and it was this depth of preparation which paid dividends over the weekend.

The organisers of the flying programme had to cope with a strong crosswind, which according to the forecast, was going to be in the region of 15 knots, with gusts of up to 25 knots, for the two days of the show. Conditions of this sort can play havoc with plans to get aircraft like Spitfires safely into the air and back on the ground, and safety was the paramount concern at the display briefings held in Duxford's control tower at 11am each day.

Introduced by Duxford's Airfield Manager, David Henchie, the brief contained details of display lines which have to be adhered to with regard to aircraft speeds. "Display line A for speeds up to 200 knots is in line with the southern edge of the grass runway" said David. "For speeds

of between 200 knots and less than 300 knots display line B is the northern edge of the hard runway, and for flypasts in excess of 300 knots, display line C is the southern edge of the hard runway, which is also the line for aerobatic manoeuvres between 200 and 300 knots. There are also various sensitive areas which should not be overflown, if at all possible, these include Fowlmere, Triplow, Duxford village, Whittlesford and Ickleton. Sometimes it is not possible to avoid overflying these places, but please fly considerately and keep as high as you can over those areas mentioned."

Emergency procedures were explained to the pilots as were the three separate radio frequencies in use for the show. Duxford tower information would be operating on 122.075, and aircraft would start up and taxi using that frequency. Once airborne pilots would turn to the display frequency of 121.175 and if individual 'aircraft' needed to talk to each other during any of the scenarios, then 122.675, the Duxford

Supermarine Spitfire PR.1

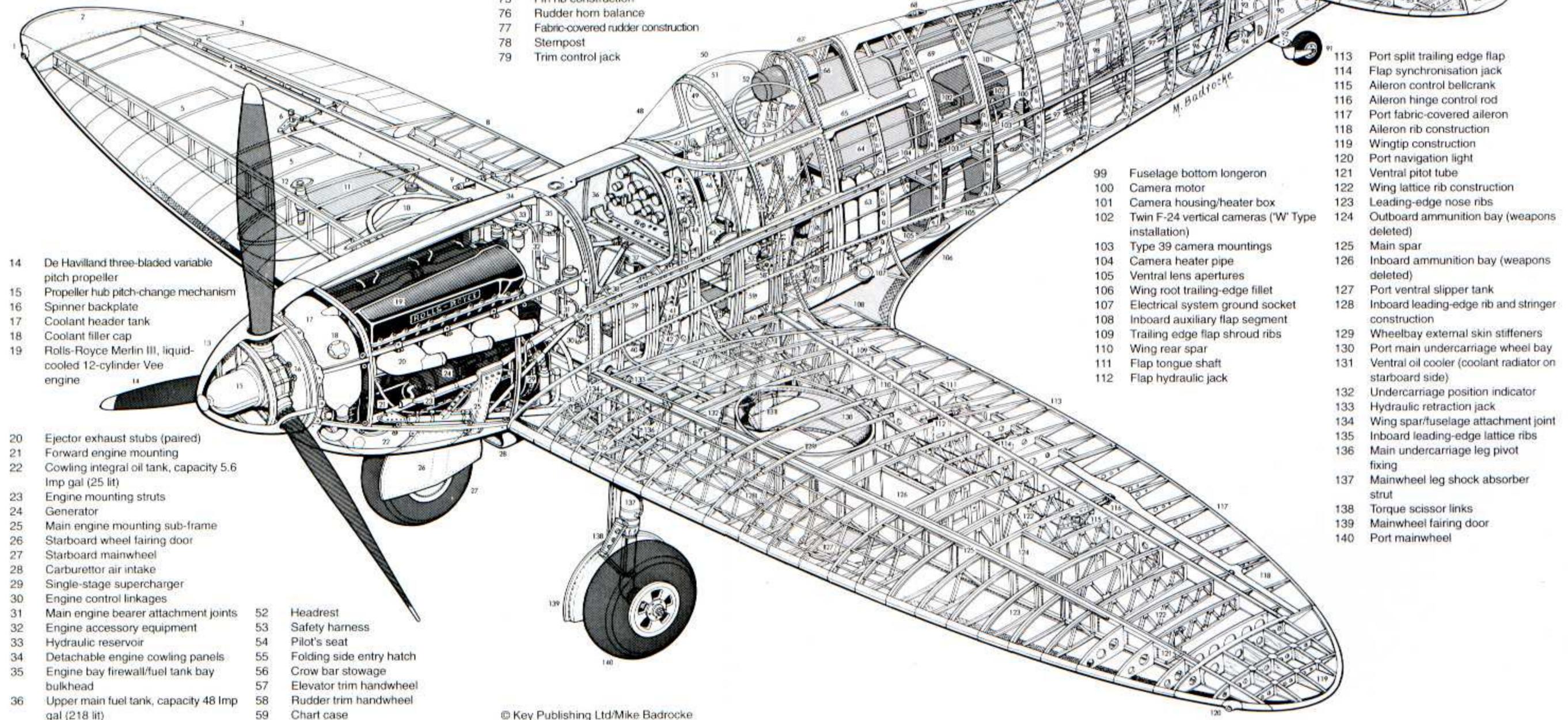
- 1 Starboard navigation light
- 2 Wingtip fairing
- 3 Starboard fabric-covered aileron
- 4 Aileron mass balance weights
- 5 Starboard wing gun bays (weapons deleted)
- 6 Aileron bellcrank hinge control
- 7 Aileron operating cables
- 8 Starboard split trailing-edge flap
- 9 Flap hydraulic jack
- 10 Starboard mainwheel bay
- 11 Ventral slipper fuel tank, port and starboard, capacity 30 Imp gal (136.5 lit)
- 12 Fuel pump
- 13 Propeller spinner

- 37 Compass mounting
- 38 Fuel tank/longeron attachments
- 39 Lower main fuel tank, capacity 37 Imp gal (168 lit)
- 40 Rudder pedal bar
- 41 Sloping fuel tank bay bulkhead
- 42 Rudder pedals
- 43 Engine throttle, mixture control and propeller pitch control levers
- 44 Control column handgrip
- 45 Back of instrument panel
- 46 Selector box
- 47 Camera controller
- 48 Single-piece frameless windscreen panel
- 49 Canopy framing
- 50 Rearward sliding cockpit canopy cover
- 51 All-round vision blisters

- 60 Windscreen de-icing fluid reservoir
- 61 Adjustable seat mounting
- 62 Battery bay
- 63 Pneumatic system air bottles
- 64 Rear auxiliary fuel tank, capacity 29 Imp gal (132 lit)
- 65 Sliding canopy rail
- 66 Voltage regulator
- 67 Canopy aft glazing
- 68 Upper identification light
- 69 Starboard side access panel
- 70 Rear fuselage frame and stringer construction
- 71 Fuselage skin panelling
- 72 Starboard tailplane
- 73 Starboard fabric-covered elevator
- 74 Fin front spar (fuselage frame extension)
- 75 Fin rib construction
- 76 Rudder horn balance
- 77 Fabric-covered rudder construction
- 78 Sternpost
- 79 Trim control jack

- 80 Rudder trim tab
- 81 Tail navigation light
- 82 Elevator tab
- 83 Port elevator rib construction
- 84 Elevator mass balance
- 85 Tailplane rib construction
- 86 Elevator trim control jack
- 87 Rudder control rod
- 88 Elevator hinge control
- 89 Tailplane spar/fuselage frame attachment joint
- 90 Fuselage double frame
- 91 Non retracting castoring tailwheel
- 92 Tailwheel strut
- 93 Tailplane control cable quadrants
- 94 Control access panel

- 95 Sloping tail assembly attachment main frame
- 96 Tailwheel shock absorber strut
- 97 Tailplane control cables
- 98 Rear fuselage starboard side access hatch



- 14 De Havilland three-bladed variable pitch propeller
- 15 Propeller hub pitch-change mechanism
- 16 Spinner backplate
- 17 Coolant header tank
- 18 Coolant filler cap
- 19 Rolls-Royce Merlin III, liquid-cooled 12-cylinder Vee engine
- 20 Ejector exhaust stubs (paired)
- 21 Forward engine mounting
- 22 Cowling integral oil tank, capacity 5.6 Imp gal (25 lit)
- 23 Engine mounting struts
- 24 Generator
- 25 Main engine mounting sub-frame
- 26 Starboard wheel fairing door
- 27 Starboard mainwheel
- 28 Carburettor air intake
- 29 Single-stage supercharger
- 30 Engine control linkages
- 31 Main engine bearer attachment joints
- 32 Engine accessory equipment
- 33 Hydraulic reservoir
- 34 Detachable engine cowling panels
- 35 Engine bay firewall/fuel tank bay bulkhead
- 36 Upper main fuel tank, capacity 48 Imp gal (218 lit)
- 52 Headrest
- 53 Safety harness
- 54 Pilot's seat
- 55 Folding side entry hatch
- 56 Crow bar stowage
- 57 Elevator trim handwheel
- 58 Rudder trim handwheel
- 59 Chart case

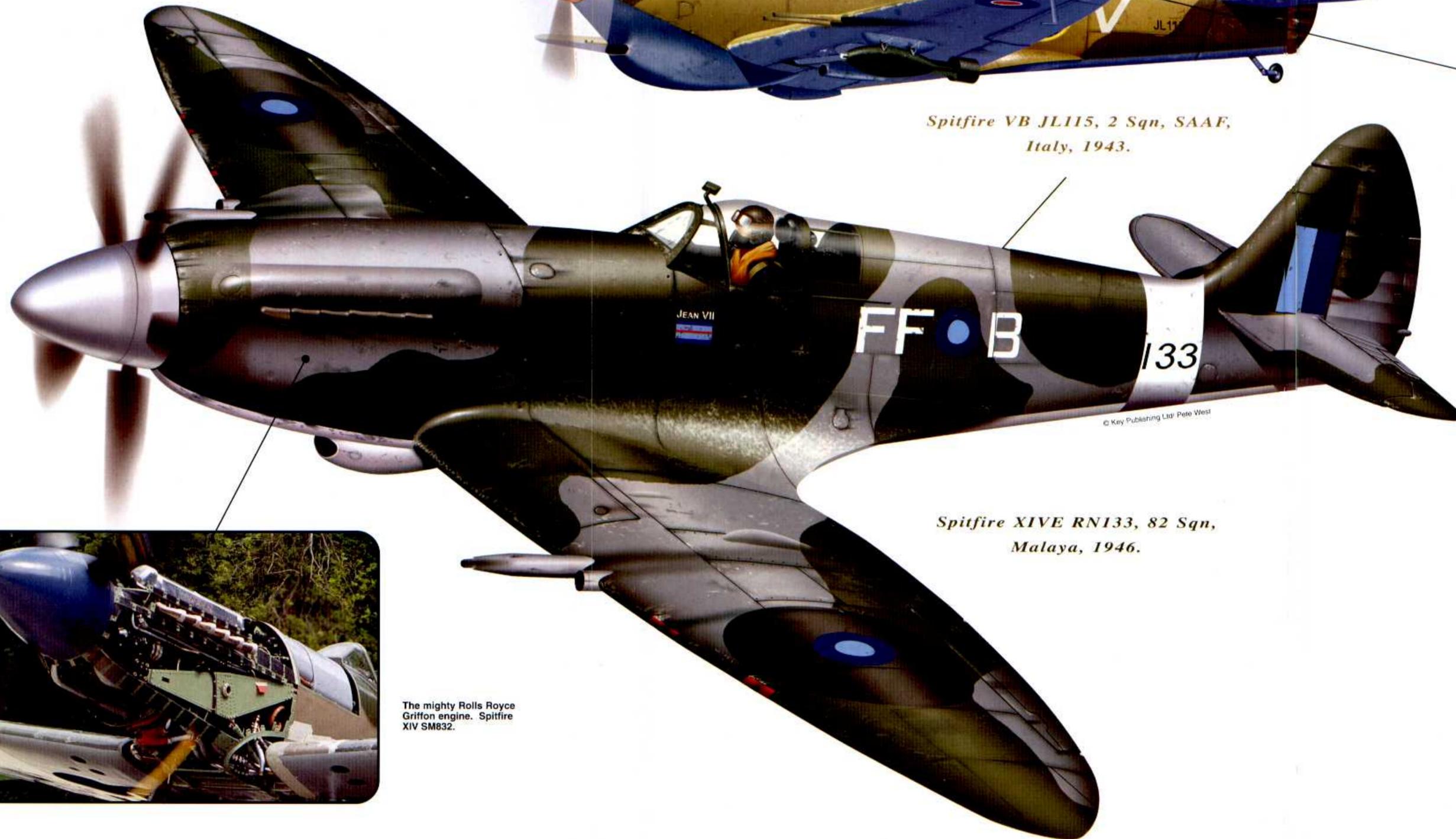
- 113 Port split trailing edge flap
- 114 Flap synchronisation jack
- 115 Aileron control bellcrank
- 116 Aileron hinge control rod
- 117 Port fabric-covered aileron
- 118 Aileron rib construction
- 119 Wingtip construction
- 120 Port navigation light
- 121 Ventral pitot tube
- 122 Wing lattice rib construction
- 123 Leading-edge nose ribs
- 124 Outboard ammunition bay (weapons deleted)
- 125 Main spar
- 126 Inboard ammunition bay (weapons deleted)
- 127 Port ventral slipper tank
- 128 Inboard leading-edge rib and stringer construction
- 129 Wheelbay external skin stiffeners
- 130 Port main undercarriage wheel bay
- 131 Ventral oil cooler (coolant radiator on starboard side)
- 132 Undercarriage position indicator
- 133 Hydraulic retraction jack
- 134 Wing spar/fuselage attachment joint
- 135 Inboard leading-edge lattice ribs
- 136 Main undercarriage leg pivot fixing
- 137 Mainwheel leg shock absorber strut
- 138 Torque scissor links
- 139 Mainwheel fairing door
- 140 Port mainwheel
- 99 Fuselage bottom longeron
- 100 Camera motor
- 101 Camera housing/heater box
- 102 Twin F-24 vertical cameras ('W' Type installation)
- 103 Type 39 camera mountings
- 104 Camera heater pipe
- 105 Ventral lens apertures
- 106 Wing root trailing-edge fillet
- 107 Electrical system ground socket
- 108 Inboard auxiliary flap segment
- 109 Trailing edge flap shroud ribs
- 110 Wing rear spar
- 111 Flap tongue shaft
- 112 Flap hydraulic jack

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# SPITFIRE



*Spitfire VB JL115, 2 Sqn, SAAF,  
Italy, 1943.*



*Spitfire XIV RN133, 82 Sqn,  
Malaya, 1946.*



The 'office', Spitfire V BL614.



The mighty Rolls Royce  
Griffon engine. Spitfire  
XIV SM832.

# SPITFIRE



Spitfire I X4590, 609 Sqn.



Spitfire IXb MK472, 421 Sqn.



Spitfire FR.XIVe RN152, 17 Sqn.



Spitfire LF.XVIe RW382, 604 Sqn.



Spitfire F.22 PK574, 613 Sqn.

(All artwork by Pete West)

## Airworthy Spitfire Survivors

| Mark   | Identity               | Operator                          | Base  |
|--------|------------------------|-----------------------------------|---|
| 1a     | AR213 (G-AIST)         | Victor Gauntlett & Peter Livanos  | Wycombe Air Park, Bucks, UK                                     |
| Ila    | P7350                  | Battle of Britain Memorial Flight | RAF Coningsby, Lincs, UK  |
| Vb     | AB910                  | Battle of Britain Memorial Flight | RAF Coningsby, Lincs, UK  |
| Vb     | BM597 (G-MKVB)         | Historic Aircraft Collection      | Duxford Airfield, Cambs, UK                                     |
| Vb     | EP120 (G-LFVB)         | The Fighter Collection            | Duxford Airfield, Cambs, UK                                     |
| Vc     | AR501 (G-AWII)         | The Shuttleworth Collection       | Old Warden Aerodrome, Beds, UK                                  |
| Vc     | AR614 (G-BUWA)         | Alpine Fighter Collection         | Earls Colne, Essex, UK  |
| VIIIc  | MT719 (N719MT)         | Cavanaugh Flight Museum           | Dallas, Texas, USA  |
| Tr.8   | MT818 (N58JE)          | Jack Erickson                     | Medford, Oregon, USA  |
| VIIIc  | MV154 (G-BKMI)         | Robs Lamplough                    | Filton Airfield, Bristol, Avon, UK                              |
| VIIIc  | MV239/A58-758 (VH-HET) | Colin Pay                         | Scone, New South Wales, Australia                               |
| VIIIc  | NH631                  | Indian Air Force Historic Flight  | Palam, New Delhi, India   |
| IXc/e  | MA793 (N930LB)         | David Price                       | Santa Monica Museum of Flight,<br>Santa Monica, California, USA |
| IXc    | MH434 (G-ASJV)         | Old Flying Machine Company        | Duxford Airfield, Cambs, UK                                     |
| Tr.9   | MJ627 (G-BMSB)         | Maurice & Peter Bayliss           | Bruntingthorpe Airfield, Leics, UK                              |
| IXe    | MJ730 (G-HFIX)         | David Pennell                     | Gloucestershire Airport (Staverton), Glos, UK                   |
| Tr.9   | MJ772 (N8R)            | Champlin Fighter Museum           | Mesa, Arizona, USA  |
| IX     | MK356                  | Battle of Britain Memorial Flight | RAF Coningsby, Lincs, UK  |
| IX     | MK732 (G-HVDM)         | Dutch Spitfire Flight             | Deelen/Gilze-Rijen Air Base, The Netherlands                    |
| IXc    | MK923 (N521R)          | Cliff Robertson (?)               | Kalamazoo Air Zoo, Michigan, USA                                |
| Tr.9   | ML407 (G-LFIX)         | Carolyn Grace                     | Duxford Airfield, Cambs, UK                                     |
| IXe    | ML417 (G-BJSG)         | The Fighter Collection            | Duxford Airfield, Cambs, UK                                     |
| IXe    | NH238 (G-MKIX)         | David Arnold/Flying A Services    | North Weald Airfield, Essex, UK                                 |
| IXe    | PL344 (G-IXCC)         | Kermit Weeks                      | Wycombe Air Park, Bucks, UK                                     |
| Tr.9   | PT462 (N462JC)         | Anthony Hodgson                   | Duxford Airfield, Cambs, UK                                     |
| Tr.9   | PV202 (G-TRIX)         | Rick Roberts                      | Goodwood Airfield, West Sussex, UK                              |
| IXe    | TE213/5518             | South African Air Force           | Lanseria, Johannesburg,<br>Museum Historic Flight, South Africa |
| Tr.9   | TE308 (N308WK)         | Bill Greenwood                    | Aspen, Colorado, USA  |
| IXe    | TE554 (2057)           | Israeli Air Force Museum          | Beersheba Airfield, Israel                                      |
| IXe    | TE566 (G-BLCK)         | Historic Aircraft Collection      | Duxford Airfield, Cambs, UK                                     |
| PR.XI  | PL965 (G-MKXI)         | Real Aeroplane Company            | Brighton Airfield, Yorks, UK                                    |
| PR.XI  | PL983 (G-PRXI)         | David Arnold/Flying A Services    | North Weald Airfield, Essex, UK                                 |
| XIVe   | MV293 (G-SPIT)         | The Fighter Collection            | Duxford Airfield, Cambs, UK                                     |
| XIVe   | NH749 (NX479DP)        | David Price                       | Santa Monica Museum of Flight,<br>Santa Monica, California, USA |
| XIVc   | NH904 (N114BP)         | Bob Pond                          | Planes of Fame, Palm Springs, California, USA                   |
| XIV    | SM832 (F-AZSJ)         | Christophe Jacquard               | Dijon, France   |
| XVle   | RW382 (G-XVIA)         | Bernie Jackson                    | San Jose, California, USA                                       |
| XVle   | SL721 (NX721WK)        | Chris Woods                       | Novato, California, USA   |
| XVle   | TB863 (ZK-XVI)         | Alpine Fighter Collection         | Wanaka, New Zealand   |
| XVle   | TD248 (G-OXVI)         | Karel Bos                         | Audley End, Essex, UK   |
| XVle   | TE184 (G-MXVI)         | Alain de Cadenet                  | North Weald Airfield, UK  |
| XVle   | TE356 (N356TE)         | Evergreen Ventures                | McMinnville, Oregon, USA  |
| XVle   | TE384 (VH-XVI)         | Hockey Treloar Syndicate          | Toowoomba, Queensland, Australia                                |
| XVle   | TE476 (N476TE)         | Kermit Weeks                      | Fantasy of Flight Museum, Polk City,<br>Florida, USA            |
| XVIIIe | SM969 (G-BRAF)         | David Arnold/Flying A Services    | North Weald Airfield, Essex, UK                                 |
| XVIIIe | TP280 (N280TP)         | Rudy Frasca                       | Urbana, Illinois, USA   |
| PR.XIX | PM631                  | Battle of Britain Memorial Flight | RAF Coningsby, Lincs, UK  |
| PR.XIX | PS853 (G-RRGN)         | Rolls-Royce Plc                   | East Midlands Airport, UK                                       |
| PR.XIX | PS915                  | Battle of Britain Memorial Flight | RAF Coningsby, Lincs, UK  |

Some 49 Spitfires are included in the above listing. This impressive figure looks set to increase over the next few years as even more Spitfires take to the air upon the completion of restoration programmes all over the world. Last month's *FlyPast* Magazine contained a news report of yet another airframe (Mk.IX PT879) which has been recovered from Russia, and has arrived in the UK for rebuild to fly. The Spitfire IX is certainly the most prolific of the airworthy variants of the famous fighter, with BR601 and MK959 currently under restoration in the USA, while MK912, SM520 and TA805 are undergoing rebuild in the UK. Rarer variants of the Spitfire family, like Seafire III PP972 and Seafire XV PR503, are being rebuilt to flying condition in the UK and USA respectively. So it shouldn't be too long before we see the airworthy Spitfire population break the magical 50 mark! However, this grand total can fluctuate. A belly landing befell T.9 MJ627 (G-BMSB) at Coventry Airport on April 25, thus reducing the total to 48! The charisma surrounding this graceful fighting machine is as strong today as it was at the height of World War Two, when the name Spitfire put fear into the enemy and made one proud to be British!

operations frequency, would be available.

The strong gusting crosswind would inevitably affect the detailed flying programme, as would some aircraft unserviceabilities. Due to an incident a few days earlier, all of the RAF's Hawk trainers were grounded, so the slot where a pair of Hawks would formate with the two Battle of Britain Memorial Flight (BBMF) Spitfire PR.XIXs had to be cancelled. Instead Mark Hanna flew a stunning display routine in former Swiss Air Force Hawker Hunter J-

(HAC), IXe ML417 (TFC), IXc MH434 (Old Flying Machine Company), IXe MJ730 (David Pennell), PR.XI PL965 (Real Aeroplane Company), XVIe TD248 (Karel Bos), XVIe TE184 (c/o Intrepid Aviation Company), 'MK178'/TE311 (RAF Exhibition Flight), 'MK673'/TB382 (RAFEF), T.9 ML407 (Carolyn Grace), T.9 PV202 (Rick Roberts), XVIe MV293 (TFC), PR.XIX PM631 (BBMF), PR.XIX PS853 (Rolls-Royce), PR.XIX PS915 (BBMF) and Mk.24 VN485 (IWM).

Company's 'all-black' Hawker Hurricane XII G-HURR, now resplendent in its nightfighter markings (see this issue's News pages), BBMF's PZ865 (now in its final season wearing desert colours), TFC's XII 'Z7381' and Shuttleworth's Sea Hurricane Ib Z7015.

A quartet of Mustangs (G-HAEC, G-BIXL, G-BTCD and G-SIRR) were ranged alongside TFC's Bell P-63 Kingcobra G-BTWR, while the Aircraft Restoration Company's Blenheim and Lysander represented Spitfire 'contemporaries'.

But it was the Spitfire which basked in all of the glory, and not just in the air. Veteran Spitfire pilots were on hand to sign books, prints, etc in one of the historic Duxford hangars. Lady Joan Bader, whose late husband Sir Douglas Bader was a great exponent of the Spitfire (and Hurricane) during World War Two, and Air Vice Marshal 'Johnnie' Johnson, the top-scoring British fighter pilot of the war, were just two of the 'personalities' present. Dr Gordon Mitchell, son of the Spitfire's designer was also present on Saturday. Another of the 'veterans', Ken Woodward, a former RAF Warrant Officer was particularly pleased to be at the show, for he had flown one of the aircraft present on the



Seen infrequently last year, the BBMF's Spitfire IIa P7350 now carries 277 Search and Rescue Squadron colours, representing P8509 'The Old Lady', which was given to the RAF by the Bank of England during World War Two. (FP - Duncan Cubitt)

4021. The Duxford-based PBY Catalina was nursing a sick engine, so standing in for this slot was John Romain in the Aircraft Restoration Company's Beech 18 G-BKGL. The Shuttleworth Collection's Gloster Gladiator and SE.5A were also unable to attend and the times allocated to their display slots had to be incorporated into the afternoon's running order. But by far the biggest organisational 'headache' was the arranging of the mass



The last of the breed! The Imperial War Museum's static Spitfire Mk.24 VN485 was a welcome addition to the flightline during the weekend. (FP - Robert Rudhall)



The Battle of Britain Memorial Flight excelled itself with the attendance at Duxford of four Spitfires and the Hurricane. Here, Spitfire PR.XIX PS915 (in its new 152 Sqn colours) gets airborne on Saturday. (FP - Robert Rudhall)



Lady Joan Bader (widow of Sir Douglas Bader), and leading fighter ace 'Johnnie' Johnson, were kept busy inside Duxford's hangars signing prints and books. (FP - Robert Rudhall)

Spitfire formation at the end of the show, but more of that later!

Twenty-two Spitfires dominated the flightline on Sunday: 'K5054' (prototype replica from the Spitfire Society), IIa P7350 (BBMF), Vb EP120 (The Fighter Collection), Vb AB910 (BBMF), Vb BM597 (Historic Aircraft Collection), Vc AR501 (Shuttleworth Collection), IXe TE566

The vast majority of these were 'flyers' — the exceptions being 'K5054', MK178', MK673' and VN485.

Even though this impressive 'vista' was the one which most impressed visitors to Duxford over the May Bank Holiday weekend, there were other 'gems' in the shape of four Hawker Hurricanes, comprising the Real Aeroplane

airfield, even though it was not actually out on the flightline! Spitfire T.9 PT462, recently returned to the UK from the USA (see last month's News pages) and was in the process of being put back together, and this aircraft (in its single-seat form) was one of 207 Spitfires ferried by Ken. "I joined the RAF in 1942" he

told *FlyPast*, "trained in Rhodesia and went on to serve with No 4 Ferry Unit. I flew all different marks of Spitfires up to the Mk.XI. In terms of handling, the nicest was the Spitfire VIII. I never flew any Griffon-powered Spitfires because we did not get any of those particular aircraft in our theatre of war.

"I always remember the early Spitfire Is because they had the manual undercarriage retraction pump and we used to take-off and go off in the circuit porpoising up and down as we pumped away on the handle to get the gear up. As a ferry pilot our average flights were quite short, from something like 45 minutes to a couple of hours."

Another of the surviving Spitfires which was flown by Ken was Robs Lamplough's Spitfire VIII G-BKMI, but sadly this particular aircraft could not be at Duxford for the show.

Spitfires were also present in force inside one of Duxford's hangars, where the Lincoln and Newark Branch of the International Plastic Modelling Society had put on a superb display of 1/48 scale models, covering all the Spitfire production variants, most service modifications and a wide cross section of colour schemes.

The daily flying programme started at 2pm with a duo display by The Fighter Collection's Spitfire Vb and Hurricane XII and these were followed on both days by an RAF Tornado F.3 (ZE162 on Saturday and ZE808 on Sunday), contrasting fighters old and new!

On Saturday the BBMF put up a five-ship

respectively. A pleasing Hurricane duo routine was flown on Saturday by Steve Privett in TFC's XII and Cliff Spink in the Real Aeroplane Company's XII. After a couple of passes in formation this slot became a solo routine when the all-black Hurricane had to cut short its display due to damage to its starboard undercarriage door, the forward portion of which had been blown back at right angles. After a slow run past the control tower for a visual check, Cliff brought the Hurricane in for an uneventful

Section after take-off. "I'll be flying at 150 knots on the outbound leg after take-off so don't bust a gut to form up, take your time. When we get abeam Bury St Edmunds we'll do one large orbit around Bury and start back on the run in to Duxford. Section Leaders call when your aircraft are all on board the formation. Power for the run-in will be aimed at 180 knots and I intend to go over the airfield at 1,000ft.

"After the flyover I'll ease up to 1,500ft as we clear to the west. Green and Blue Sections can



**Spitfire Scramble! MH434, TE184 and PV202 line up for take-off at Duxford on May 2. (FP - Duncan Cubitt)**



**Rod Dean in TE566 leads Red Section (BM597, ML407 & ML417) in a four-ship flypast on Saturday. (FP - Duncan Cubitt)**

formation routine of its four Spitfires and Hurricane PZ865, with Sqn Ldr Paul Day AFC flying the Hurricane, Gp Capt Al Lockwood AFC flying Spitfire P7350, Sqn Ldr 'Shiney' Simmons in Spitfire AB910, Wg Cdr Dave Harrison piloting PS915 and Sqn Ldr Clive Rowley in PM631. However, due to the strong crosswind it was not possible to fly this routine and land back at Duxford on Sunday, so BBMF just participated in the mass formation at the end of the second day's display.

TFC's Bell P-63 Kingcobra was flown by former Red Arrows pilot Guy Bancroft-Wilson, while Ray Hanna in G-HAEC led a Mustang trio of Nick Grey in TFC's G-BTCD, Pete John in G-BIXL and Norman Lees in G-SIRR. On both days of the show the TFC Mustang landed back soon after take-off with a technical problem, leaving the remaining three to perform an exciting tailchase routine.

The Beech 18, Blenheim and Lysander all performed admirably, as did TFC's Spitfire Vb and David Pennell's Spitfire IXe MJ730, flown by Dave Southwood and Andy Sephton

landing. Luckily the damage was only superficial and the Hurricane was back out on the flightline the following day, minus its undercarriage door. Repairs to the aircraft were only expected to take a couple of days and as Tony Smith of the Real Aeroplane Club told *FlyPast*. "It's very frustrating seeing as the aircraft has been flying so well, but it's not going to affect any of our other display commitments."

While the Hurricanes were performing, the airfield came alive with the sound of Merlin and Griffon engines starting up — it was time for the Spitfire finale!

Saturday's pilot briefing revealed the depth of detail and planning needed to achieve a safe and smooth scenario! Rod Dean, who briefed the flying programme, set out the finely-tuned running order. "We will operate as three sections, Red, Green and Blue. The whole sortie from start-up to landing will be carried out using 122.175 as our radio frequency. If you have a late start the choice to continue or not is entirely yours. If you can catch the rest of the formation up then please do so, but it's up to you. If a section leader has a radio failure in the air, hand over to your number three aircraft. Any other aircraft having radio problems stay in the formation and carry on as briefed. If you suffer a major engine problem while in the formation, remember the only way to go is up. If you choose to go down you will inevitably cause major problems for those aircraft flying behind you, so gain height and then sort yourself out!

"Start and taxi out to the runway holding point at two-minute intervals and bearing in mind the crosswind we will all do singleton take-offs at ten-second intervals."

Rod was leading the formation as Red Leader, and Green and Blue Sections would form on Red

then ease out of the main formation, leaders calling when clear. All three sections will remain in box formations and head back in for a single pass from south-west to south-east in box formation. Aim to fly past at 300ft, watching out for turbulence."

After the passes in box formation the individual sections reverted to finger four formation and came back across Duxford Airfield for a final run and break to land. The landings on both days of the show took all the concentration that the pilots could muster, for the crosswind was almost at right angles to the runway, and landing a Spitfire in these conditions is not easy to say the least! Nevertheless everyone coped with it admirably and all the aircraft landed safely.

Saturday's formation consisted of 13 Spitfires, equalling the world record set up two years earlier. While the mass balbo was away forming up Stephen Grey treated the audience to a scintillating display in TFC's Spitfire XIV MV293, its Griffon engine filling the sky with a truly evocative sound.

By Sunday, three more aircraft were able to participate and the record-breaking formation included (in order of taxi out and take-off): TE566, ML407, BM597, ML417, PL965, MH434, TE184, PV202, EP120, PS853, TD248, AB910, P7350, PM631, PS915 and MV293.

The sight of all these Spitfires in close diamond formation literally stopped the audience in their tracks. The sky was full of that baritone throb that only Merlins and Griffons can make, and after putting up with a very cold wind all day long the crowd that had travelled to Duxford to witness this grand spectacle went away well satisfied!

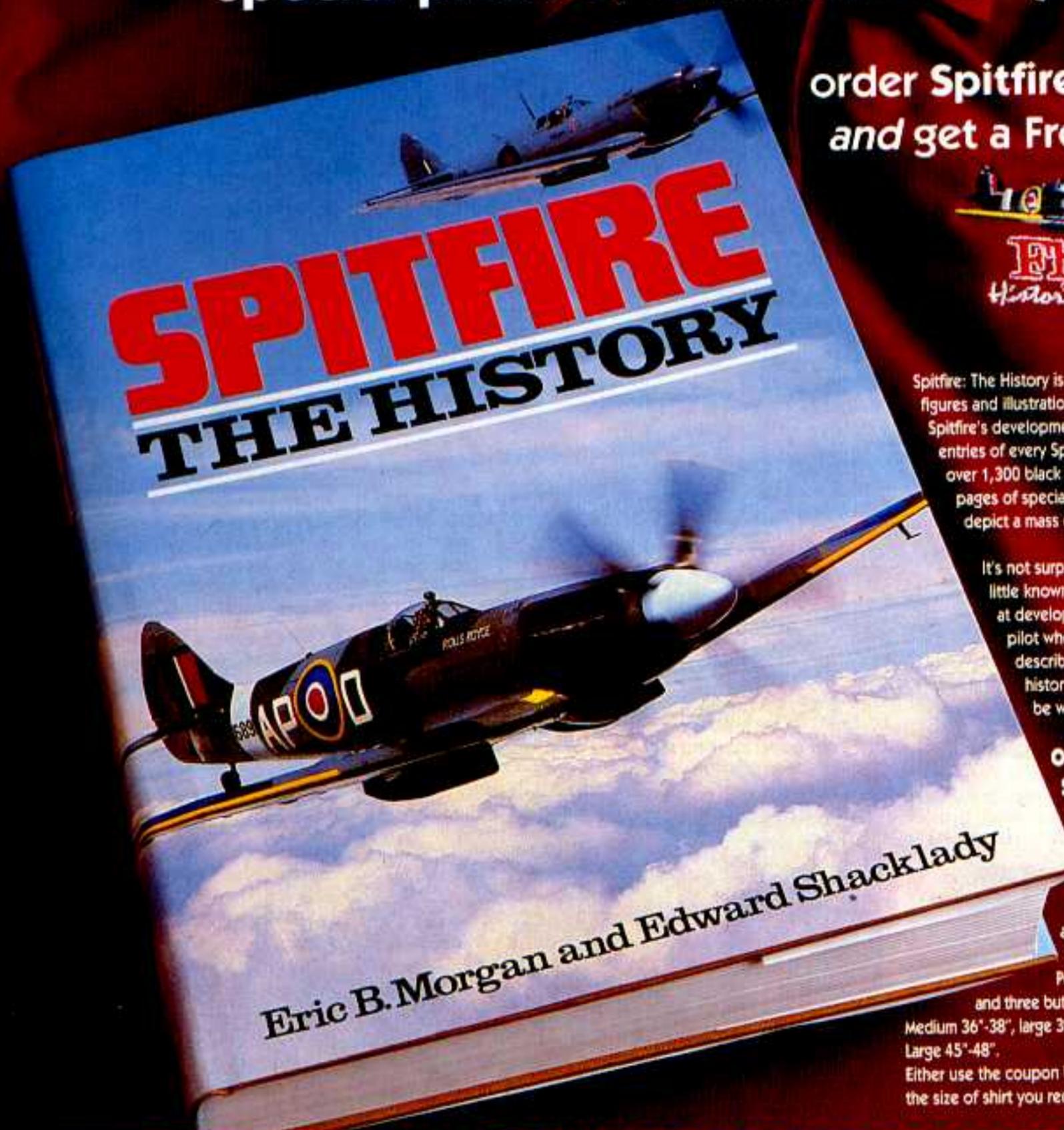
So the record now stands at 16. With an increasing number of Spitfires being restored to flying condition in Europe, one wonders how long this will last?



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DH.89A G-ACZE saw wartime service in Scotland with Allied Airways and is currently operated by Brian Woodford. (Author)

*The DH 89 Rapide became the mainstay of the UK's growing civil fleet in the late 1930s, Keith Saunders looks at the growth of Rapide operations.*

**I**N THE FOUR-YEAR period between 1935 and the outbreak of war in Europe in 1939, the de Havilland DH.89 Dragon Rapide became the mainstay of UK commercial aviation, building on the success of both the DH.84 Dragon and DH.86, and ensuring the continuing success of 'de Havillands' — a name synonymous with British aviation during the next three decades.

The search for a design that would support itself financially in the air, can be traced to the Clacton-Maylands-Ramsgate scheduled service of Hillman's Airways Ltd, when, during 1932, three early examples of the DH.83 Fox Moth, G-ABVI, 'VJ and 'VK, replaced Puss Moths on the Hillman's route. It was the success of this early scheduled service, especially when operated by the Fox Moth, that saw Edward Hillman approach de Havillands at Stag Lane, with a request for a twin-engined design, with suitable design characteristics and operating costs, to enable the Hillman services to be extended across the Channel to Paris.

In fact the de Havilland design office was already working on a similar project, regarded as a double Fox Moth, for the Iraqi Air Force and Hillman immediately placed an order for four examples of the high aspect ratio, two-bay biplane known as the Dragon.

Accommodation was provided for six passengers, while the pilot occupied a nose compartment that was reached through a door at the front of the passenger cabin. The first four Hillman machines, G-ACAN *Maylands*, 'AO *Goodmayes*, 'AP and 'BW (c/ns 6000-6002 and 6009) were joined by 'EU *Brentwood* and 'EV *Ilford* (c/ns 6022 and 6023), while increased traffic saw all six aircraft converted to eight-seaters at the expense of the rear luggage compartment.

Success with the four-engined and ten-seat DH.86 and plans for a faster and more comfortable version of the Dragon resulted in a twin-engined and scaled-down version of the DH.86, that incorporated the same type of fuselage construction, tapered mainplanes, engine nacelles and trousered undercarriage. Utilising the 200hp (149kW) six-cylinder version of the Gipsy Major, known as the Gipsy Six, the new design was again the work of DH's design staff headed by A E Hagg and was initially named 'Dragon Six', although this was amended to Dragon Rapide in February 1935.

On April 17, 1935, Captain H S Broad, DH's senior test pilot, who had previously taken both the Dragon and DH.86 on their first flights, lifted the prototype, with Class 'B' marks E.4, from Hatfield for the first time. Certificate of Airworthiness trials at Martlesham Heath followed at an all-up weight of 5,000lb (2,268kg) with accommodation

# Rapide

## Queen of the Airways

for six passengers and 140lb (63kg) of baggage. Maximum permissible speed was restricted to 160mph (257km/h) when tests revealed that the nose buckled when 175mph (281km/h) was reached.

Meanwhile, during construction of the prototype, Edward Hillman negotiated the purchase of the first three production aircraft G-ACPM - G-ACPO (c/ns 6251-3).

On completion of the trials at Martlesham, the prototype was returned to Hatfield and sold, as CH-287, to Herr R Herzig of the Ostschweiz Aero Gesellschaft for service in Switzerland, carrying

Right: The prototype DH.89 pictured prior to export as CH-287. (A J Jackson collection)  
Below: Exhibited by the Science Museum at Wroughton, G-ALXT carries Railway Air Services logo and masquerades as *Star of Scotia*, the name originally allocated to the Company's G-AEBX. (FP Collection)



winter sports enthusiasts between St Gall, Zurich and Berne.

The first production Dragon Six G-ACPM made the type's public debut at Hatfield on July 13, when it competed in the 1934 King's Cup Race. Entered by Viscount Wakefield of Hythe and flown by Hubert Broad, the Rapide retired during Round 2, heat 9, when the wings were severely damaged by hail over Waddington. Captain Broad had completed the earlier heats at an average speed of 158mph (254km/h).

Railway Air Services (RAS) quickly followed the Hillman order, with orders for two DH.89 Dragon Rapides G-ACPP and G-ACPR (c/n's 6254-5) named *City of Bristol* and *City of Birmingham* respectively.

The four years of prewar DH.89 production would see just over 200 examples of the type constructed, while from c/n 6309, C-ADWZ for Personal Airways, DH.89s had thickened wingtips, cabin heating and a nose landing light, and the all-up weight was increased from 5,000lb to 5,500lb (2,268kg to 2,495kg). In 1937 G-AEOV (c/n 6342) appeared as the first DH.89A, featuring trailing-edge flaps on the lower wing to improve the landing performance. Many earlier examples of the type were modified to DH.89A standard.

The Hillman's DH.89s were ordered for delivery between June and September 1934 essentially for the Company's Paris and Belfast routes. G-ACPM, the first production DH.89 was short-lived in Hillman's service. Flown by chief pilot, Capt

was formed by merging the fleets of United Airways, Hillman's Airways and Spartan Air Lines. Controlled by Whitehall Securities, the name was changed to British Airways Ltd on October 29. Both Hillman's and United included DH.89s in their fleets. Operating from headquarters at Terminal House in Grosvenor Gardens, opposite Victoria Station, British Airways was one of the largest contemporary airlines in the United Kingdom.

A British Airways' DH.89, with Capt W F Anderson at the controls, departed London on February 12, 1936, on a two-day proving flight via Amsterdam-Hamburg-Copenhagen to Malmo. The following day, the twice-weekly British Airways' DH.86 service to Malmo was introduced.

On April 6, RAS commenced spring schedules, with two flights each way daily, on the Marx

was operated daily. Famed Scottish airline pioneer, Capt E E Fresson made the inaugural flight in DH.89 G-ADAJ.

Northern and Scottish Airways commitments on English route sectors saw nine British Airways' aircraft handed to the Scottish operator on June 30. These included DH.89s G-ADAG, G-ADAH, G-ADBU and G-ADDF and four Spartan Cruisers.

Weston-super-Mare was the venue on May 8, 1937, when Flt Lt Fielden, Captain of the King's Flight, delivered DH.89 G-ADDD to the Somerset airfield. Operated in turn by HRH Prince Edward, Prince of Wales and the King's Flight, the aeroplane was purchased by Norman Edgar of Western Airways for £3,345. On January 21, 1936, G-ADDD had been the first aircraft to carry a reigning monarch, conveying the Prince of Wales from



**Railway Air Services DH.89s G-ACPP and G-ACPR at Whitchurch Airport, Bristol, on August 6, 1936. (W K Kilsby)**

Airway, utilising six DH.89s on the Manchester-Liverpool-Blackpool-Isle of Man route. The first of these, G-AEAJ *Star of Lancashire* was delivered on March 14, with the remaining examples in service for the opening of summer schedules on May 25.

The beginning of Jersey Airways' summer schedules, saw a Jersey-Plymouth service opened. Operated by Dragon G-ACNJ and DH.89s, G-ADBV and G-ADBW, fares were 55s single and £4 return. Exeter, with its better weather, replaced Plymouth as the mainland terminus for the service in 1937.

At the northern extremity of the UK, Aberdeen Airways began an Aberdeen-Shetland service on June 2, 1936. A logical extension of the Company's

Sandringham to London, on the death of his father, King George V.

A month later on June 1, DH.89 G-ADBW of Jersey Airways carried the first air mail for the Company between Jersey and Southampton, with Capt B Walker at the controls, while Scottish Airways was formed during August bringing together the de Havilland fleets of Northern and Scottish Airways and Highland Airways with a total of six DH.89s and nine Dragons.

As the summer of 1937 drew to a close, Isle of Man Air Services took over operations on the Marx Airway from RAS, at the same time receiving five DH.89s from the RAS fleet to enable services to be maintained.

Returning to Scotland, Allied Airways (Gander



W R Bannister, the DH.89 was lost at sea off Folkestone, in bad weather, while en route to Le Bourget with passengers on October 2 1934.

The type received considerable publicity when on December 1, 1934, G-ACPN, flown by Capt Walter Anderson and accompanied by Capt Charles Pelley in Dragon G-ACEU, set out from Stapleford, on Hillman's new Post Office mail contract, on the former Sword's Midland and Scottish Air Ferries route, to Liverpool and Glasgow but with additional ports of call at Ronaldsway and Belfast.

On May 18 at Croydon, RAS took delivery of its first two DH.89s, which from May 27 operated the RAS Shoreham-Portsmouth-Southampton-Bristol-Birmingham-Liverpool service. Eventually the DH.89 would become the mainstay of the RAS, playing an important role in the development of UK air services.

However, a less successful RAS venture was its Sunday excursion service from Brighton to Le Touquet. Commencing on July 28, only two flights were made with passenger numbers totalling 11.

On September 30, 1935, Allied British Airways



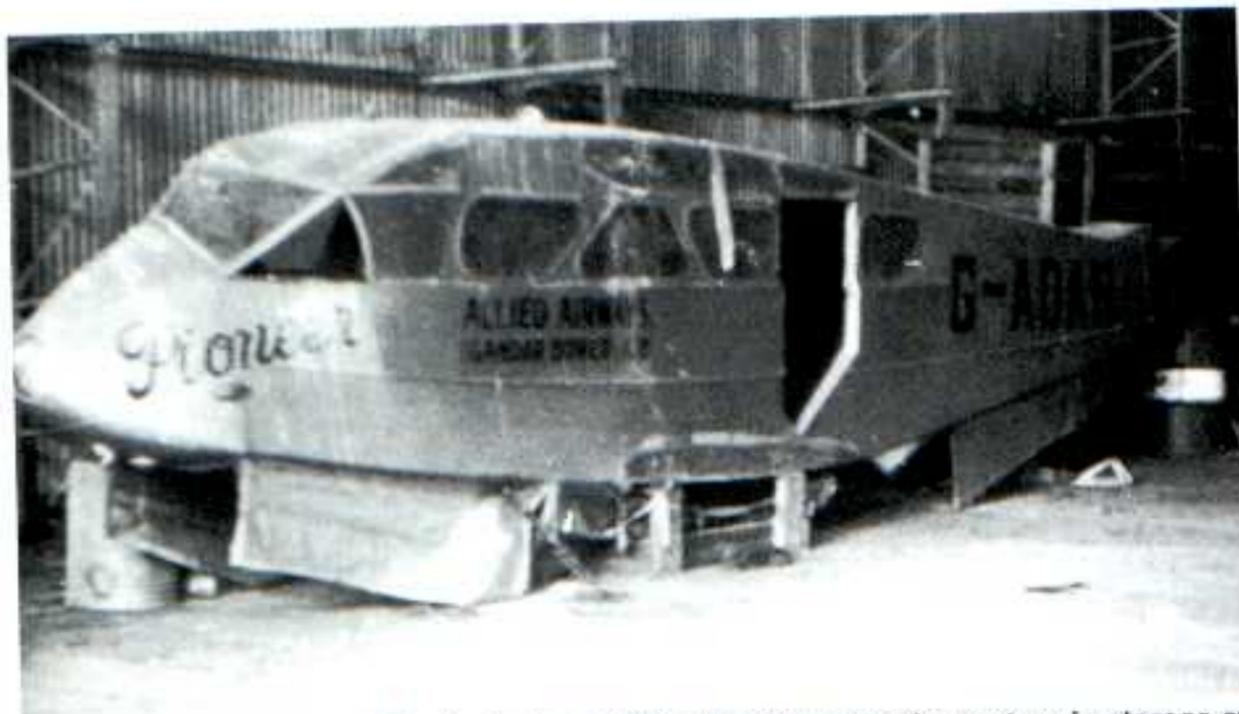
**DH.89 G-ACPP in the colours of Great Western and Southern Air Lines during 1939. (A J Jackson collection)**

Aberdeen-Stromness service, the first flight was by DH.89 G-ADDE with Capt Eric Starling at the controls.

The following day Highland Airways extended its three-times weekly Inverness-Kirkwall service to Sumburgh. From July to October the service

Dower) Ltd began carrying mail on the Aberdeen-Shetland service, the first mail flight taking place on November 23 with Eric Starling at the controls of Dragon G-ACNJ.

The evening of October 2, 1938, saw Norman Edgar (Western Airways) Ltd, introduce a scheduled



Pictured by the author at Booker in June 1968 after a quarter of a century in storage at Dyce, DH.89 G-ADAH still carries its Allied Airways logo and currently forms part of the collection of Manchester's Museum of Science and Industry. (Author)

night service between the Company base at Weston-super-Mare and Cardiff, with DH.89 G-ADDD operating the inaugural flight. BBC commentator Wynford Vaughan Thomas covered the arrival and landing at Cardiff. Just 16 days later, the Straight Corporation acquired the Norman Edgar operation which was immediately renamed Western Airways.

Subsequent to the Western Airways take-over, all aircraft operated by the Straight Corporation were painted in a standard colour scheme. Fuselage and wings were painted in a metallic blue/grey, while all lettering was crimson outlined in white. Rudders were striped with ten white bands and 11 red bands.

At the end of October, the Air Transport Licensing Authority under the provisions of the Air Navigation Act of 1936, issued provisional service licences, for internal services, to successful applicants, after closely contested public hearings.

On December 5, 1938, a new DH.89 operator

December. Subsidies of £100,000 were proposed, although the forthcoming hostilities would ensure that any long-term evaluation as to the viability of subsidised services under peace time conditions would be impossible.

On April 3, 1939, Great Western and Southern Air Lines began operating on the Ryde-Bournemouth and Brighton-Ryde routes with the DH.89s operating as far north as Liverpool from May 1, with a new route from Brighton to Cardiff via Ryde, Bournemouth, and Bristol being introduced a week later. By the end of May international schedules for the companies DH.89s included Croydon-Luxembourg, Croydon-Deauville and Croydon-Le Touquet.

By August, the Air Transport Licensing Authority had issued 47 licences for United Kingdom air services to a total of 14 operators. The important developments in air transport that would have undoubtedly followed were quickly curtailed when



The DH.89, as the Dominie, was produced in large numbers for military use during World War Two and served as both trainers and communications aircraft. (FP Collection)

was formed. Great Western and Southern Air Lines Ltd, took over operations from Channel Air Ferries and incorporated a number of former RAS routes. Both the Great Western Railway and the Southern Railway were share holders and funds provided by the two railway companies enabled Great Western and Southern Air Lines to acquire DH.89s G-ACPP and G-ACPR, together with Dragon G-ADDI from RAS.

The turn of the year saw the introduction of internal route subsidies first disclosed in a White Paper during

Great Britain declared war on Germany on September 3, 1939. All civil flying then ceased.

A gradual resumption of flying by the airlines for the Government under the umbrella of National Air Communications followed, while on May 4, 1940, the Associated Airways Joint Committee (AAJC) was formed out of an agreement between the Secretary of State for Air and seven airlines that would enable essential communications to continue, through the maintenance of scheduled services useful to the war effort and operated in

## de Havilland 89 and 89A Dragon Rapide scheduled Fleet Operators 1935-1940.

### Hillman's Airways Ltd

|             |             |
|-------------|-------------|
| G-ACPM 6251 | G-ACPN 6252 |
| G-ACPO 6253 | G-ADAG 6266 |
| G-ADAH 6278 | G-ADAJ 6276 |
| G-ADAL 6263 | G-ADDF 6284 |

### Jersey Airways and Guernsey Airways

|             |                              |
|-------------|------------------------------|
| G-ADBV 6286 | <i>The St Owen's Bay 11.</i> |
| G-ADBW 6288 |                              |

### Highland Airways Ltd

|             |                  |             |                |
|-------------|------------------|-------------|----------------|
| G-ADAJ 6276 | <i>Inverness</i> | G-AEWL 6367 | <i>Zetland</i> |
|-------------|------------------|-------------|----------------|

### Northern and Scottish Airways Ltd

|             |             |
|-------------|-------------|
| G-ADAG 6266 | G-ADAH 6278 |
| G-ADBU 6280 | G-ADDF 6284 |

### Scottish Airways Ltd

|             |                  |             |                |
|-------------|------------------|-------------|----------------|
| G-ADAJ 6276 | <i>Inverness</i> | G-AEWL 6367 | <i>Zetland</i> |
| G-AFEY 6402 |                  | G-AFFF 6386 |                |
| G-AFOI 6450 |                  | G-AFRK 6441 |                |

### Railway Air Services Ltd

|             |                           |             |                           |
|-------------|---------------------------|-------------|---------------------------|
| G-ACPP 6254 | <i>City of Bristol</i>    | G-ACPR 6255 | <i>City of Birmingham</i> |
| G-AEAJ 6320 | <i>Star of Lancashire</i> | G-AEAK 6324 | <i>Star of Mona</i>       |
| G-AEAL 6325 | <i>Star of Yorkshire</i>  | G-AEAM 6326 | <i>Star of Ulster</i>     |
| G-AEBW 6327 | <i>Star of Renfrew</i>    | G-AEBX 6328 | <i>Star of Scotia</i>     |
| G-AFFF 6386 | <i>Juno</i>               |             |                           |

### Aberdeen Airways Ltd and Allied Airways

|                           |                |             |                   |
|---------------------------|----------------|-------------|-------------------|
| <b>(Gander Dower) Ltd</b> |                |             |                   |
| G-ACZE 6264               | <i>The Don</i> | G-ACZF 6268 | <i>Carina</i>     |
| (7.2.42 - 27.12.45)       |                |             |                   |
| G-ADAH 6278               | <i>Pioneer</i> | G-ADDE 6282 | <i>Aberdonian</i> |

### United Airways Ltd

|             |             |
|-------------|-------------|
| G-ADAE 6272 | G-ADBU 6280 |
| G-ADBX 6289 |             |

### Isle of Man Air Services Ltd

|             |                        |             |
|-------------|------------------------|-------------|
| G-AEAJ 6320 | <i>FIMA Castletown</i> | G-AEAK 6324 |
| G-AEAL 6325 |                        | G-AEAM 6326 |
| G-AEBW 6327 |                        | G-AFEZ 6408 |

### Great Western and Southern Air Lines Ltd

|             |             |
|-------------|-------------|
| G-ACPP 6254 | G-ACPR 6255 |
| G-ACYM 6269 |             |

### British Airways Ltd

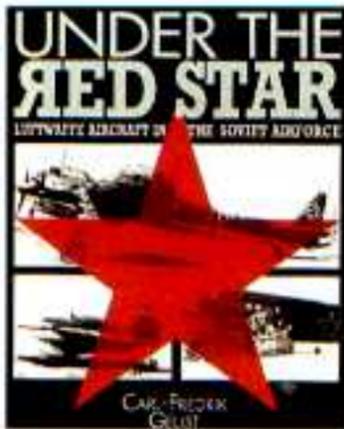
|             |             |
|-------------|-------------|
| G-ACPN 6252 | G-ACPO 6253 |
| G-ADAE 6272 | G-ADAG 6266 |
| G-ADAH 6278 | G-ADAJ 6276 |
| G-ADAJ 6276 | G-ADAK 6281 |
| G-ADAL 6263 | G-ADBU 6280 |
| G-ADBX 6289 | G-ADDF 6284 |
| G-ADIM 6293 |             |

### Western Airways Ltd

|             |             |
|-------------|-------------|
| G-ACTU 6258 | G-ADBV 6286 |
| G-ADDD 6283 | G-AFSO 6445 |

many cases by the DH.89.

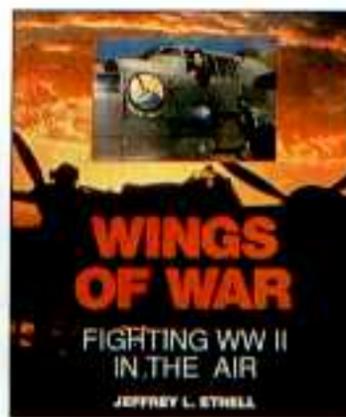
At Hendon No 24 Squadron received 24 civil DH.89s, while wartime production of DH.89B Dominies at Hatfield and Loughborough as navigation trainers and communications aircraft, saw the production totals reach some 727 examples between 1934 and 1946, with many Dominies civilianised postwar as DH.89As for a worldwide market, hungry to fulfil charter, club and airline roles with the biplane that had proved itself both dependable and sturdy, during the formative years of UK airline development.



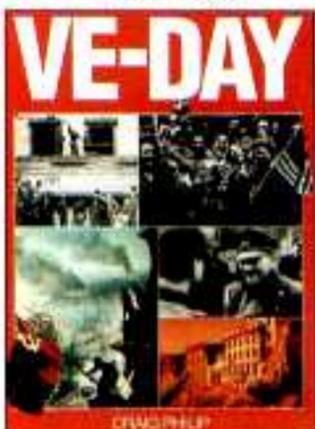
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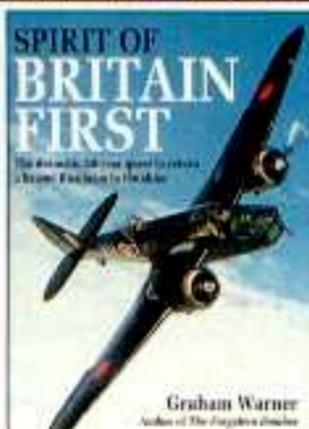
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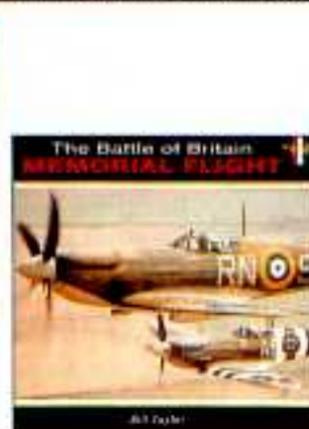
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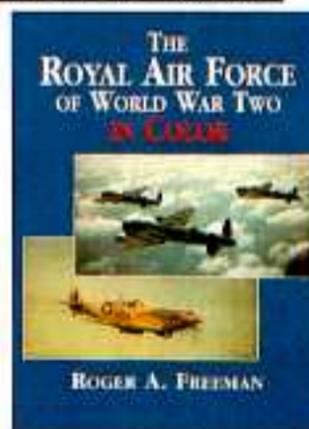
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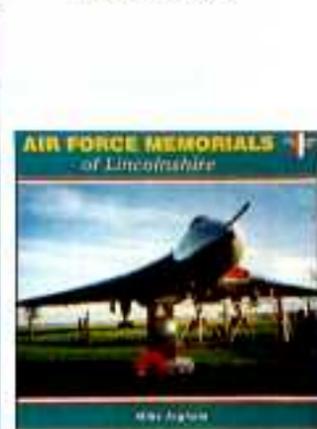
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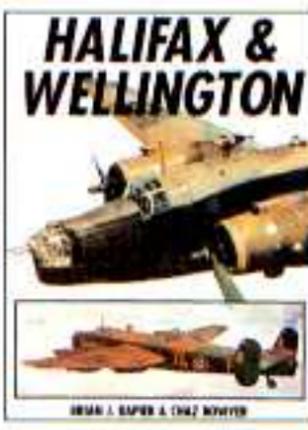
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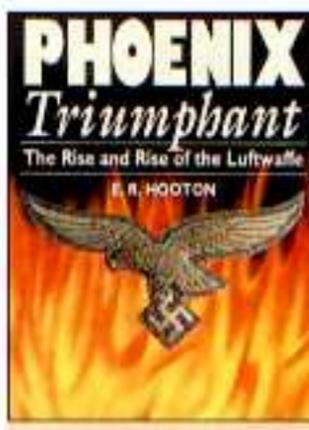
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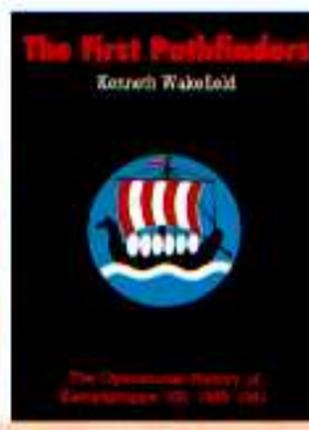
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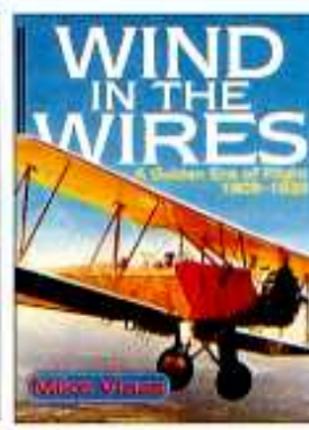
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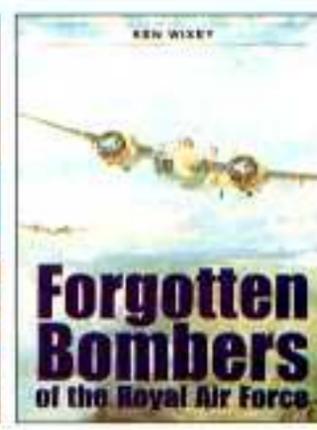
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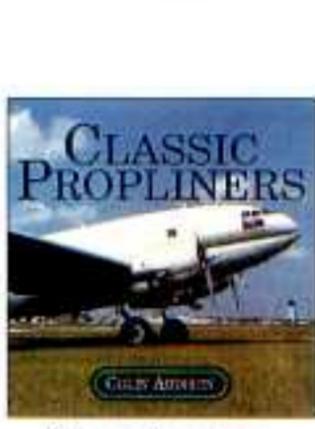
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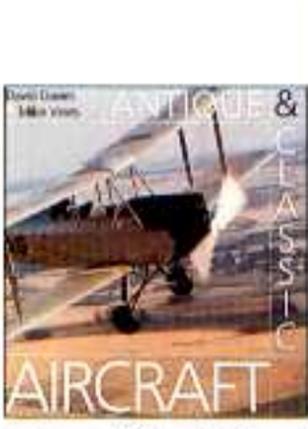
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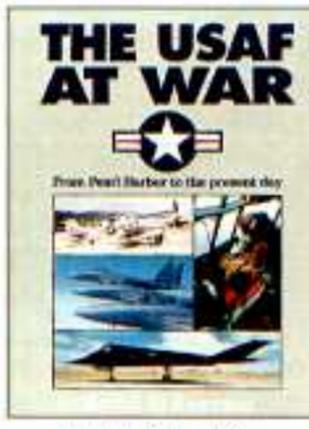
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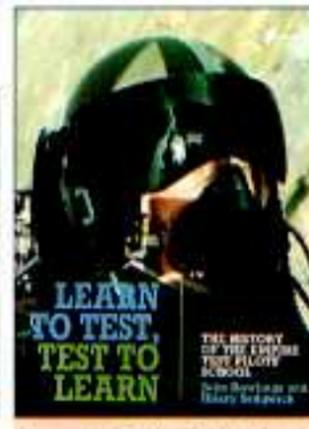
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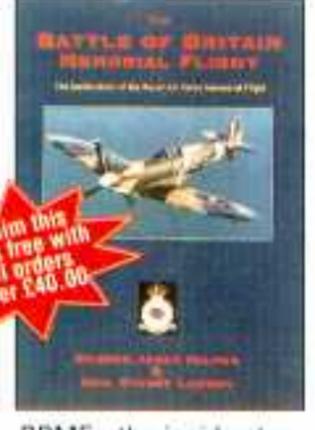
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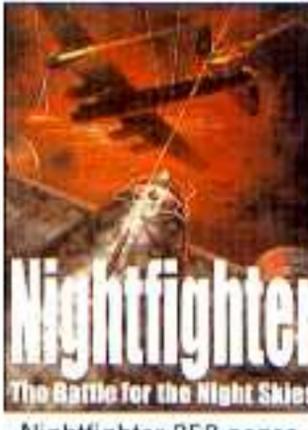
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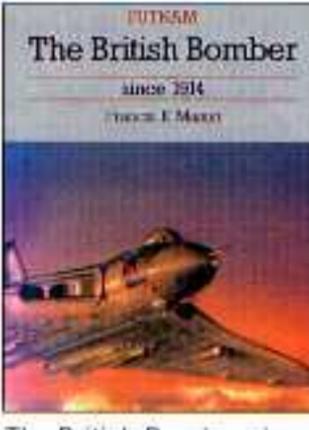
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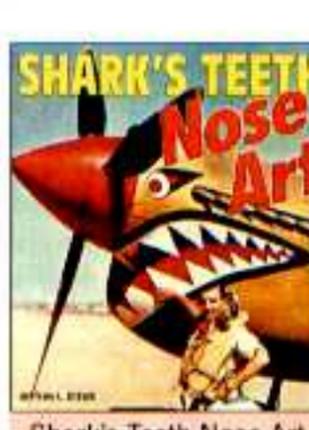
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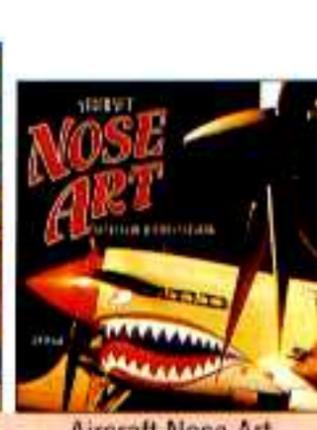
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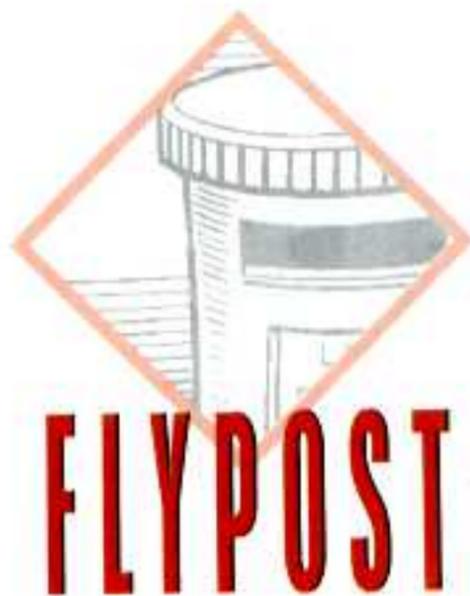


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### Dornier Discovery

The news pages of the March issue mentioned the discovery of a Dornier Do-217 in Middlesborough. **Sven Grunzig** adds this to the story: "According to Mr Ulf Balke's chronicle of KG.2 and my own archive, the Do-217 wnr.5314 was an E-2 but converted to E-4 standard. According to the unit code, the aircraft was part of the 8th Staffel. On January 14, 1942, the III Gruppe of KG2 and parts of II Gruppe of KG40 were ordered to attack a convoy near Middlesborough. Due to low cloud and bad visibility, U5+HS found no target and came over land. At 1730 hours they sent a short (and last) radio message. About 18.10 hours they struck a balloon cable at 1,300 metres and crashed. All the crew were killed - pilot FW Joachim Lehnis, observer Lt Rudolf Matern, radio operator Uffz Hans Maneke and mechanic gunner Ofw Heinrich Richter."

### Aviation Connection Updates

The Aviation Connections booklet that was issued with the May issue has, as anticipated, brought forth a number of corrections and additions — detailed below. However, we know that there must be other organisations out there that would like to be included in this listing ... let us know who you are!

**1 Fighter Sqn and 249 (Gold Coast) Sqn:** Hon Sec, Sqn Ldr D P F McCaig, 99 Heathermount Drive, Crowthorne, Berks, RG45 6HJ. Post code change only.

**2 Fuel Transport Co, RAF Shallufa, Egypt:** Enquiries to John Edwards, 1 King Street, Twyford, Melton Mowbray, Leics, LE14 HR.

**XV Sqn Assn:** Hon Sec, Wg Cdr Graham Bowerman, 34 Peronne Road, Hilsea, Portsmouth, PO3 5LD.

**25 (F) Sqn Assn:** Hon Sec, Wg Cdr S J Howard, 101 Bradenham Beeches, Walters Ash, High



Forming part of the gate collection at Shaw AFB, South Carolina, is this P-47D marked as 42-26470. It would appear to be a real Thunderbolt and not a replica, but is the serial carried correct? (Paul Marsh)

Considerable feedback from you, our readers, together with further research has uncovered a number of additions and amendments to some of the survivors details that we have published in recent issues of *FlyPast*. However, you have also supplied information that raises more questions about certain aircraft — so, in the interests of research, if anyone else has something valuable to add please contact us.

|                       |  |
|-----------------------|--|
| C-133B 59-0531/N2276V | Stored Tucson International Airport, Arizona ( <i>FlyPast</i> June 1997, p34)  |
| P-47D '42-26470'      | Gate Guard Shaw AFB, South Carolina ( <i>FlyPast</i> April 1998, p48)  |
| B-17G 44-85813/N6694C | Fuselage only at Kissimmee, Florida, in March 1996 to be used in the rebuild of Tom Reilly's 44-85734/N5111N ( <i>FlyPast</i> May 1998, p60) |
| C-123J N98 (ex-N123)  | Transportation Museum of Alaska, Wasilla Airport ( <i>FlyPast</i> May 1998, p26)   |
| C-123K 54-0659/N2129J | Stored Pima Air & Space Museum, Arizona ( <i>FlyPast</i> May 1998, p26)  |

Most problematical of the above is the P-47 Thunderbolt at Shaw Air Force Base. It may be wearing a false serial and could possibly be a replica, although from the photographic evidence it certainly appears to be a real aircraft. The C-123 in Alaska was purposefully omitted from the survivors list, since this was widely thought to be 55-4548 which is preserved in Thailand. However, it transpires that the Provider was supplied as new to the FAA in May 1957 as N123 and served with it until retirement in 1983. The reference to C-123K 55-4505 can be deleted from the list as this is correctly detailed as a C-123B.

### Mustangs

Turning to the *Mustang Special*, published last November a few amendments and additions to the production details on page 60 are detailed below:

| Model      | NA design | Serial numbers | C/n             | Quantity |
|------------|-----------|----------------|-----------------|----------|
| P-51D-15NA | 109       | 44-15253/15752 | 109-35536/36053 | 500      |
| P-51K-15NT | 111       | 44-12753/12852 | 111-36036/36135 | 100      |
| P-51D-25NA | 122       | 44-72627/73626 | 122 39086/40085 | 1000     |
| P-51D-30NT | 124       | 45-11343/11742 | 124-48096/48495 | 400      |

It should be noted that there is some debate regarding the correct designation given to the batch 45-11343/11742, since some sources suggest this was two batches of 200 aircraft, with 45-11343/11542 being P-51D-25NT and not -30NT. A lot of correspondence has also been generated concerning the airworthy Mustang population, in particular P-51D 45-11533/NL51VF. The photograph accompanying the entry on page 48/49 shows this aircraft wearing 'false' marking of 44-72934 which is explained in the caption. It would be impossible to answer all the queries raised on the airworthy Mustangs subject — suffice it to say that simply referring to certain publications is not always gospel, since they may now be two years out of date.

Wycombe, Bucks, HP4 4XN.

**29 Sqn Assn:** D M Holiday, Orchard End, Two Dells Lane, Ashley Green, Chesham, Bucks, HP5 3RB.

**45 (R) Sqn:** c/o Adjutant, 45(R) Sqn, RAF College, Cranwell, Sleaford, Lincs, NG34 8HB.

**48 Sqn Assn:** A Hartley, 19 Staverton Close, Mount Nod, Coventry, CV5 7LF.

**51 MT Co, RAF El-Hambra, Egypt:** Telephone enquiries to Maurice Townsend on: 01788 576130.

**57 Sqn Assn:** R Hudson, 1 Heather Close, Ellicombe Meadow, Minehead, Somerset, TA24 6LL.

**58 Entry Royal Air Force Halton Aircraft Apprentices:** Chairman, David E Alexander, 'Cupertino', 16 Mill Road, Hartford, Huntingdon,

PE18 7YJ.

**60 Sqn Assn:** D B G Downey, 50 Abbots Ann, Andover, Hants, SP11 7BG.

**76 Sqn Assn:** H W Kirtland DFC, 125 Fairfield Avenue, Kirk Ella, East Yorkshire, HU10 7UW. (Note: this is the main 76 Sqn Assn)

**76 Sqn & 44 Base RADAR Assn:** Hon Sec, Frank Roberts, 11 Fernham Road, Faringdon,

### Tank Busters at Tunis?

**R D Cooling** sent in this fascinating note: "The item 'Tank Buster Restoration' (March page 19) stirred memory of a photograph taken 55 years ago, at El Aouina airfield on June 6, 1943. I had taken Wellington HZ402 from Kairouan West, from whence No.142 Squadron was operating, to Blida for a major inspection. Unhappily the aircraft we should have collected to return was not yet ready so the four of us — navigator, wireless operator, rear gunner and myself — had to hitch-hike back to our squadron. Luckily a torpedo Wellington was bound for Protville (Bizerta) the next day and then it was thumbing lifts, complete with flying kit and parachute pack, southwards.

"El Aouina was the obvious

first stage in the hope of finding another aircraft to take us home. The Americans operated courier circuits with B-25 Mitchells and P-38 Lightnings between General Jimmy Doolittle's HQ at Constantine and the forward bases, but we were out of luck.

"However, the enforced stopover did allow some exploration of the Luftwaffe graveyard and photo opportunities, one of which included the wreck of a Henschel HS 129. Is it too much of a coincidence to suggest that this is the Australian rebuild? It was the only one we saw: the rest were Ju 52s, Me 323s, Bf 109s, a Macchi 202 and what looked like an Fw 190. We got back to base the following day riding with a lorry load of incendiaries!"

Left: Wreckage at El Aouina airfield included Me 323s as well as the Henschel 1129. By the standards of 1943 this was a huge aircraft, as is shown by the scale of the Wellington pilot 'Tiny' Cooling ex 142 Squadron, himself 6ft 7in tall.



The picture of an Hs 129 Tank Buster in the March issue prompted a one-time Wellington pilot to turn up a photo taken at El Aouina airfield in June 1943. Could this be the same aircraft?



Oxfordshire, SN7 7JY.

**80 Sqn Assn:** Christopher Bartle, 12a Church Hill, Bromham, Wilts, SN15 2JQ.

**89 Sqn Assn:** B H Cook, 23 Waterloo Lane, Skellingthorpe, Lincs, LN6 5SJ.

**120 Sqn Assn:** C/o 120 Sqn, RAF Kinloss, nr Forres, Moray, IV36 0UH.

**141 Sqn Assn:** D F Aris, 81 Richmond Hill Court, Richmond, Surrey, TW10 6BG.

**160 Sqn Assn:** E H Daines, 45 Randolph Road, Norwich, NR1 2RU.

**201 Sqn Assn:** Secretary, Sqn Ldr John Gibbons (Ret'd), 'Craigend', Dallas, Morayshire, IV36 0RP.

**435-436 (Burma) Sqns Assn:** Box 403, Station B, Etobicoke, Ontario, Canada, M9Q 5L4.

**500 (County of Kent) Sqn Assn:** No contact available.

**518 Sqn Assn:** Peter Rackliff, 8 Thomas Drive, Newport Pagnell, Bucks, MK16 8TH.

**Airfield Research Group (ARG):** Secretary, Ian Reid, 104 Peaks Lane, New Waltham, Grimsby, NE Lincs, DN36 4LY.

**Arnold Scheme Register, RAF Pilot Training USA 1941-43:** F Norman Bate MBE, 51 Henley Road, Leicester, LE3 9RD.

**Arnold Scheme Stearman Assn:** Founder, Ron Gould, 69 Eastwood Road, Leigh-on-Sea, Essex, SS9 3AH.

**British Aerobatic Assn (BAeA):** Membership Secretary, Jen Buckenham, Lynhill, 119 Fembank Road, Ascot, Berks, SL5 8JT.

**British Aviation Preservation Council (BAPC):** Secretary, Nick Forder, c/o Museum of Science & Industry, Liverpool Road, Castlefield, Manchester, M3 4FP. Tel: 0161 832 2244, Fax: 0161 834 5135. E-mail: curatorial@mussci.u-net.com

**British Aviation Research Group:** Membership Secretary, Mr P Hewins, 'Aorangi', Beech Road, Tokers

Green, Reading, RG4 9EH.

**Chipmunk Club:** Ralph Steiner, 4 Colman Court, Gordon Avenue, Stanmore, Middx, HA7 3QF.

**Martlesham Heath Aviation Society:** Chairman, Martin Cooke, 313 High Street, Walton, Felixstowe, Suffolk, IP11 9QL.

**RAF Swindon 201 AFS Assn:** Tony Palmer, 31 The Drive, Oakley, Hampshire, RG23 7BA.

**Rosendale Aviation Society:** Alan Buxton, 4 Searness Road, Middleton, M24 4JQ.

**Royal Air Force Historical Society:** Secretary, Wg Cdr C G Jefford, 'Walnuts', Lower Road, Postcombe, Thame, Oxon, OX9 7DU.

**Short Bros Commemoration Society:** Secretary, Mrs Irene Richards, 2 St Peter Street, Rochester, Kent, ME1 2DE.

**Collings Foundation:** The River Hill Farm, Stow, MA 01775, USA.

**F-4 Phantom II Society:** PO Box 900174, San Diego, CA 92190-

0174, USA.

<http://www.f4phantom.org>

**F-4 Phantom II Society:** Events Co-ordinator, Steve Eisner, PO Box 8335, Van Nuys, CA 91409-8335, USA. E-mail: gib4@aol.com

**307th Bomb Group,** comprising **370, 371, 372 & 424:** C/o Secretary, Cena Marsh, 262 East Valley View Drive, Preston, Idaho 83263, USA.

**345th Bomb Group, comprising:** 498, 499, 500 & 501: George Mordecai, 14 Fredrick Street, North Brantford, CT 06471, USA.

**436th Troop Carrier Group:** Maj Gen Harold N Read, 17 Belton Drive, Barrington, RI 02806, USA. E-mail: halread@unidial.com

**479th Fighter Group:** Edward A Kueppers Jr, PO Box 7215, St Paul, MN 55107, USA.

**Hong Kong Historical Aircraft Assn:** Cliff Dunnaway, Flat 4, 25th Floor, Tower 4, 8 Tsing Yung Street, Tuen Mun, New Territories, Hong Kong.





# AIRSHOW

Unusual formations are part of the norm at the Flying Legends airshow as illustrated here by the combination of The Fighter Collections B-25 and three Spitfires at last years event, what delights will be on offer for 1998?  
(FP - Steve Fletcher)



**J**ULY IS CRAMMED to the gills with displays and events to cater for every aeronautical taste, from the light and general aviation-biased Popular Flying Association's International Air Rally at Cranfield Airfield (3/5), which should include the Constellation Group's C-121 N494TW, to the wealth of modern military hardware which gathers every year at RAF Fairford for the Royal International Air Tattoo (25/26). The 'season's' top warbird show takes place on July 4/5 at Duxford. The Flying Legends Airshow at Duxford has itself become a legend in the annals of displays devoted to the aircraft of World War Two. This year's show should feature all the favourites, plus some surprises (like the American-based Constellation for example!). And, of course, *FlyPast* Club members have the added benefit of our enclosure from which to enjoy the show (see Club page of this issue for further details).

If you would like something very different from Flying Legends or even the PFA Rally to try out over the weekend of July 4/5 then Bembridge on the wonderful Isle of Wight is the place to go. The Royal Aero Club will be staging the Airborne Trophy on the 4th and the Schneider Trophy on the 5th. Over 20 aircraft of all shapes and sizes are expected to compete for both events. Also taking place in this crowded air race weekend will be a Formula One 'midget' racer event each day. The public are very welcome to the event, with *FlyPast* and *Sonic* combining to provide full commentary on both days. Call Ryde Tourism (on 01983 562905) for more details.

Two cancellations should be noted at this stage. The RAF

Coningsby Photocall on July 8 has been cancelled (as reported in *FlyPast* last month), as has the Photo Call scheduled at RAF Leeming for August 11; furthermore, the East Coast Air Fete, at North Coates Airfield on July 18/19 has also 'bitten the dust', proving yet again that the airshow world is a fluctuating one!

Two of the largest Royal Navy-organised airshows take place in July, RNAS Culdrose in Cornwall on July 15 and RNAS Yeovilton in Somerset on July 18, and it's particularly pleasing to see the latter re-appearing in the display schedules after its enforced absence last year.

For those more interested in the lighter side of aviation, there is the third of the Shuttleworth Collection's Sunset Displays on July 18 and a garden party-style atmosphere will prevail at the Festival of the Air 98, held at White Waltham Airfield on July 18/19.

The organisers of the Classic Jet & Fighter Display, to be held at Cranfield Airfield on August 16, have informed *FlyPast* of a change of contact telephone number. The digits to dial for more information on this particular event are 01234 750646. More information on this new airshow for 1998 will be featured in the Airshow pages of next month's *FlyPast*. Another notification of a telephone number change has come from the organisers of the Rougham Air Display 98, due to take place on August 23. The new number to dial is 01359 271471.

**For the most up-to-date information, tune in to the *FlyPast* airshow hot-line on 0660 662288 (calls will not exceed 5 minutes at 50p per minute).**



The PFA International Air Rally (July 3/5) attracts aircraft ranging from wartime classics like the Stearman to aerobatic machines like the Pitts. (FP - Robert Rudhall)

## JULY - UK

- 3-5: PFA International Air Rally, Cranfield, Beds. (01273 461616)
- 4-5: Flying Legends '98, IWM Duxford Airfield, Cambs. (01223 835000)
- 4-5: Southampton Balloon &

Flower Festival, Hants. (01703 832755)

- 4-5: Woodspring Wings '98, Yatton Somerset. (01275 343641)
- 4-5: The Airborne Trophy (4th)/The Schneider Trophy (5th) Air Race, Isle of White.
- 5: Shuttleworth Summer Airshow,

Old Warden, Beds. (0891 323310 or 01767 626228)

**8:** RAF Coningsby Photo-Call, Lincs. (01526 342581) **CANCELLED**

**11:** West London PFA Strut Fly-in, Brooklands Museum, Surrey. (01932 857381)

**11-12:** Wings & Wheels Model Spectacular, North Weald, Essex. (01684 562038 or 0836 297168)

**11-12:** Glider Aerobatic Experience Open Day 2, Lasham Airfield, Hants. (01344 891721)

**11-12:** Aeronca Club Fly-in, Fenland Airfield, Lincs. (01752 406660)

**12:** Wirral Show 1998, Lancs. (0151 2007788)

**12:** de Havilland & Biplane Fly-in, Popham Airfield, Hants. (01256 397733)

**15:** International Air Day, RNAS Culdrose, Cornwall. (01326 552461)

**18:** International Air Day, RNAS Yeovilton, Somerset. (01935 456751)



### WANAKA 98 - NEW ZEALAND

The 1998 Wanaka Airshow held from April 10-12 was dominated by the appearance of five Polikarpov I-16 Ratas, four of which can be seen in the above photograph, which have injected both a new sight and sound to the airshow scene. Many other warbirds provided thrilling displays, none more so than Ray Hannah in the P-40E pictured below who put on one of his characteristically low performances. The August issue of FlyPast will include a photo-feature on the New Zealand event. (Both Craig Justo)



**18:** Shuttleworth Sunset 3 Display, Old Warden, Beds. (0891 323310 or 01767 626228)

**18-19:** East Coast Air Fete, North Coates, Lincs. (01525 714814) **CANCELLED**

**18-19:** Festival of the Air '98, White Waltham Airfield, Maidenhead, Berks. (01628 823272)

**18-19:** Festival of Flight, Museum

of Flight, East Fortune Airfield, East Lothian, Scotland. (0131 225 3317)

**18-19:** McAulley & Newbold Aerobatic Trophies, Fenland Airfield, Spalding, Lincs. (01344 891721)

**18-19:** City Livery Challenge Trophy, Air Race Welshpool.

**19:** July Fly-in, Compton Abbas, Dorset. (01747 811767)

**25-26:** Royal International Air

Tattoo '98, RAF Fairford, Glos. (0891 122999)

**25-26:** Mid-summer Fly-in (hangar bash Sat night), Brighton Airfield, N. Yorks. (01757 289065 or 01032 890633)

**26:** Summer Fly-in, The Squadron, North Weald, Essex. (01992 524510)

**30:** Sea Front Air Display, Lowestoft, Suffolk. (01502 562111)

**31-Aug 2:** 8th Weston Super Helidays, Weston-super-Mare, Somerset. (01934 635227)

### JULY - EUROPE

**1-5:** Gelendzhik Hydroaviation Show, Moscow, Russia.

**4:** Royal Netherlands Air Force Open Day, Leeuwarden, The Netherlands.

**4-5:** International Airshow, Koksijde, Belgium.

**5:** Festival de Voltige Aerienne, Luc sur Mer, France.

**5:** Fundacion Infante de Orleans Flying Day, Cuatro Vientos, Madrid, Spain.

**13:** RAF Laarbruch, Germany.

**18:** International Airshow, Mont de Marsan, France.

**18-19:** Flight Days '98, Raron, Switzerland.

**23-26:** 51st RSA International Rally, Epinal-Mancourt, France.

## NORTH WEALD 98

INTREPID AVIATION HAD quite an act to follow when they decided to organise a replacement display for the long established Fighter Meet. But their first attempt on Sunday May 10 can only be considered a resounding success. Helping their fortunes was some fine sunny weather, albeit with a brisk North-easterly wind, a good turnout by the general public and some real gems amongst the assembled aircraft.

Without a shadow of a doubt the star attraction was the Berlin Airlift Historical Foundation's C-54E Skymaster N500EJ (c/n 27370) which had just completed its transatlantic flight from Floyd Bennet Field in Brooklyn, New York, with



Getting airborne for its first UK display is the T-28 Fennec of Radial Revelations in the capable hands of John Romain. (FP - Duncan Cubitt)



Pride of place at North Weald 98 went to the C-54 Spirit of Freedom and its crew. Seen signing copies of his book is 77 year-old 'candy bomber' Gail Halvorsen (nearest the camera) who, together with the other veterans and crew members, is accompanying the historic aircraft on its European tour. (FP - Duncan Cubitt)

North Weald being its first airshow at the start of a busy European Schedule. The aircraft was parked at the end of the cross runway thus allowing steps to be erected at the rear cargo doors to allow public access. For a small fee of £2 it was possible to go aboard and view the superbly finished interior and talk to members of the crew. Signing books outside the C-54 was the famous Berlin Airlift pilot Gail Halvorsen, better known as the 'candy bomber' for his exploits dropping candy for the children on the approach to Berlin Tempelhof Airport 50 years ago. To add to the nostalgia a number of historical vehicle owners provided jeeps to transport the crew around the airfield during their stay. In all some 80 military vehicles were assembled and these proved a popular attraction

for the assembled crowd, particularly as close inspection was possible.

The flying display was opened in noisy fashion by a 20 (R) Squadron Harrier GR.7 from RAF Wittering, which apart from Bulldog and Tucano training aircraft was the only modern RAF participant at the show. The remainder of the flying programme was primarily dominated by various warbirds but a few unusual guests were also in store. Making some low and not too slow passes was a Fokker 100 from the Dutch airline KLM while a BAe 146 from Titan Airways, resplendent in its new colour scheme, landed and parked at the south eastern end of the runway.

A pleasant and rare display by a Bucker Jungmann was concluded with a quite astounding slow speed landing that even a Harrier would have



Award for the best warbird display at North Weald must surely go to Stephen Grey who really turned it on in The Fighter Collections Douglas Skyraider - seen here in a more sedate pose in the warbird park. (FP - Duncan Cubitt)

been proud of. The Battle of Britain Memorial Flight made their first full appearance of the 1998 season with the Hurricane, Lancaster and Spitfire Ila, the latter looking very smart in its new 277 Search and Rescue Squadron colours (see page 62 of

Providing the drama and excitement was not just down to the older warbirds but also to another act making its UK display debut. The Strikemaster Duo, piloted by Tom Moloney and Bob Thompson, put on an exhilarating routine that was notably more

aggressive than the one the pilots used to perform in a pair of Jet Provosts as the Transair Duo. To liven up proceedings they performed their display in a 'Vietnam scenario' which included simulated flak and numerous explosions, the Napalm run was to say the least spectacular! Unfortunately plans to add authentic national markings to both these former Botswana Defence Force aircraft have been thwarted, though one does wear the Botswana camouflage the other aircraft could not be marked up as a Kenyan example as planned and so instead it appears this year in the colours of the Royal New Zealand Air Force.

Closing the show was the C-54 which made a couple of sedate passes in the capable hands of pilot Timothy Chopp, President of the Berlin Airlift Historical Foundation, before completing an impressive nose-high tactical landing before the appreciative crowd.

It would not be fair on the organisers to try and compare this show with past events held at the same venue, though for many people it was seen as a 'one day Fighter Meet'. The layout of the airfield and the types of aircraft available obviously foster familiarity and although there were no significant collections of static aircraft, the flying programme was varied and ran smoothly and there were enough ground 'attractions' of other types. Should the event become a regular one on the airshow calendar, as we hope it will, it can only grow, thus ensuring North East London a slice of the airshow action. In all, congratulations to the team for ably filling what would have otherwise have been a significant hole in the airshow calendar.

DUE TO THE Spring Air Display on

## SHUTTLEWORTH SUNSET

May 3 having to be cancelled at short notice (information on this cancellation was carried on *FlyPast's* Aviation Event Hotline) due to a waterlogged airfield, the Sunset I Display on the evening of Saturday May 16 was the first of the regular air events to take place at Old Warden Aerodrome this year, reports Robert Rudhall. A fine afternoon and evening brought out a good crowd, virtually all of whom seemed to partake in picnics alongside their cars, prior to the flying display.

Sadly the wind did not abate enough to allow the Collection's earliest aircraft to take to the air, but a good selection of the more hardier types flew much to the enjoyment of the audience! Kicking off the evening proper was Gordon McClymont who flew the based Gloster Gladiator in one of the most lyrical display routines seen from this aircraft for many years, the silver Norwegian Air Force colour scheme contrasting well with the deep blue sky. Recently refurbished



Gordon McClymont flies Gloster Gladiator G-AMRK 'round the corner' at Old Warden. (FP - Robert Rudhall)



Avro duo. 504K and Tutor represented two generations of Avro trainers. (FP - Robert Rudhall)



Lee Proudfoot put on a superb display in Westland Lysander 'V9545' (G-BCWL). (FP - Robert Rudhall)

Pitts Special G-BIRD was put through its paces by Denny Dobson, and this diminutive biplane was followed by a stunning performance by Lee Proudfoot in the Aircraft Restoration Company (ARCO)-operated Westland Lysander 'V9545'. Shuttleworth's own 'Lizzie' is still undergoing work over at Duxford prior to it moving to its new home, so it was good to see ARCO step in and 'fill the slot'. Lee, son of the much missed 'Hoof' Proudfoot, is obviously much at home in the Lysander, as his steep take off and sprightly display in the wartime 'secret agent-dropping' aircraft showed!

Following the Lysander was one of the best 'crazy flying' demonstrations this writer has seen for many years, as Dennis Neville 'stunted' DH Tiger Moth G-AGPK around the circuit at Old Warden. Aided and abetted by commentator David Lee (who ably set the scene for the novice pilot to take the Tiger aloft without an instructor), 'GPK' careered its way among the trees, looking like it was going to

come to grief at any time! However, it was the skill of the pilot, who 'painted this picture of comedy' so deftly at Old Warden that evening, which was awarded with a hearty round of applause.

Wartime memories were well and truly evoked by Mark Hanna, flying the Old Flying Machine Company's Spitfire IX MH434 (G-ASJV). It must be very difficult displaying a high performance fighter like the Spitfire at a small airfield like Old Warden, but Mark showed the Spitfire off well with a series of aerobatic manoeuvres and low passes, before departing back to Duxford.

The unique pairing of two generations of Avro training aircraft (504K & Tutor) was one of those sights which can only be seen at Shuttleworth's, as was the two sporting aircraft in the shape of the Parnall Elf G-AAIN and Miles Hawk Speed Six G-ADGP, both types providing welcome contrasts in sight and sound! Bristol F.2b Fighter D8096, one of the Collection's perennial performers, was followed by Hawker Hind K5414, its Rolls Royce Kestrel engine barking its staccato note as the sun slowly set behind the trees. Because the older aircraft were prevented from flying due to the brisk wind, a 'consolation' of a taxi demonstration by the Bristol Boxkite and an engine run from the 'new' Bristol M.I.C monoplane was an added bonus.

Shuttleworth's Chief Pilot, Andy Sephton, treated the crowd to one more routine from the Gladiator, before it was time to pack up the picnics and set off on the journey home in the fading light.



# £2400 worth

## of IAT tickets to be won

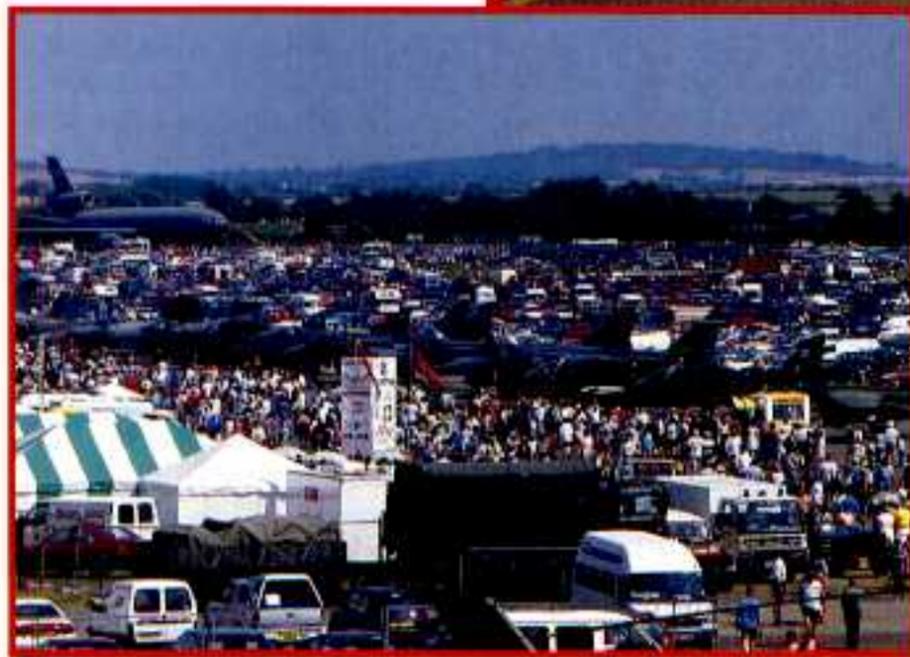
**In conjunction with the Royal International Air Tattoo (RIAT) we are able to bring you this superb opportunity to win a pair of tickets to the 1998 show (we have 50 pairs to give away\*)**

**R**IAT has always been THE show to attend for modern military enthusiasts, and in recent years there has been a growing number of warbirds on display - this year will see the largest warbird selection yet as RIAT 98 (to be held at Fairford on July 25/26) has as one of its major themes the RAF's 80th Anniversary. The finale of this year's show will last 80 minutes and will be opened by a Tiger Moth formation flying a figure '80'. The history of the RAF will then unfold with historic and modern aircraft performing 'stacked flypasts.

Other themes for the show include 'Spy in the Sky' under Skywatch 98 and this will no doubt produce a few real gems for the enthusiast. Another anniversary being marked this year is the 50th anniversary of the Berlin



Exotic aircraft from overseas predominate at the RIAT, such as this Ukrainian Su-27A, the event offers opportunities to get up close to many types otherwise unseen in the UK. (FP - Ken Dolve)



Airlift which will feature a number of aircraft - including a demonstration of the '90 second' take-off and landing stream that was used during the Airlift to ensure the maximum flow of aircraft to and from the beleaguered city. A free two hour concert follows the flying display - so no need to rush off into the traffic.

With its hundreds of aircraft and hundreds of sales and display stands, RIAT is the ultimate airshow experience - so enter now for your chance to experience this with a pair of FREE tickets (saving yourself £48 on the gate price!)

Simply answer the question below and send your answer, along with the clip coupon from this page) to: IAT Competition (FlyPast), PO Box 100, Stamford, Lincs, PE9 1XQ. Closing date Jul 20, 1998.

\* This competition is being run in conjunction with our sister journals, Air Forces Monthly and AIR International.

**Q: By what nickname is the U-2 spyplane best known?**

**A:** \_\_\_\_\_



# FlyPast

## CLUB

### *Flying Legends - Duxford July 4/5.*

A number of Club members have asked for clarification of the Club enclosure scheduled for the Flying Legends display at Duxford. The enclosure will be in the usual place - i.e. on the crowd line in front of the American Air Museum and will feature the usual facilities of chairs (in limited supply), toilets, free tea/coffee/squash; plus a number of special offers being provided by our marketing department. Entry to the enclosure will be on production of the address label that comes with your magazine every month - the August issue. Club members can bring their wives/children along but are expecting a fairly large turn-out and so 'friends and neighbours' are unlikely to get past the door! The editorial team will be at Duxford on both days and we look forward to meeting a great many of you at the enclosure.

### *Yorkshire Aviation Heritage Weekend, October 16-18*

The hotels in York itself are proving somewhat pricey but we have managed to negotiate a reasonable rate at the Jarvis Wetherby hotel (on the A1 at Wetherby and within approx 30 minutes drive of Elvington).

*(Event details and facilities are subject to amendment through weather or other operational requirements).*

It has been decided to delay the Aviation Heritage Symposium to next year to take place during National Aviation Heritage Week (April 23-May 4) and further details of this will be published later this year. Thus, the provisional programme for the Heritage Weekend looks like this: Friday afternoon - The Real Aeroplane Co, Brighton. Possible evening lecture at hotel.

Saturday - All day at the Yorkshire Air Museum, includes two lectures. Sunday - Possible morning lecture. Airfield tour of Tholthorpe. Cost would include dinner/bed/breakfast from Friday evening to Sunday morning, plus museum entry fees and lectures. Full details will be included in the August issue, so please do not send bookings in yet!

**Petwood III** took place on April 10-12 and was a great success. By popular demand we have already booked the dates for **Petwood IV!** This will take place on March 27/28, 1999 and although the format has not yet been firmed up, it will pretty much follow that of Petwood II with a visit to the BBMF at Coningsby on Friday, East Kirkby's Lancaster and Metheringham Visitor Centre on Saturday, and a tour of Woodhall Spa bomb dump on Sunday morning, followed by Thorpe Camp in the afternoon - plus, of course, a series of lectures and the excellent food and accommodation of the Petwood House. A more detailed programme, and prices, will be included with Newsletter No 11 (August FlyPast).

**Please note** - in order to take part in Club events OR purchase Club book/video offers you have to be a member of the FlyPast Club! So, when replying to any Club deal please quote your membership number (i.e. your subscriber number as shown on the address label with your magazine).

*The FlyPast Club — a must for every aviation enthusiast. Join Now!*

## next issue



*The August issue of FlyPast includes:*

- *Oscars and 262s - the fighter production lines at the Texas Airplane Factory.*
- *Airfields of Cambridgeshire.*
- *Skifire - testing the Seafire with skis.*
- *Broussard - multi-role utility aircraft, and now a popular warbird.*
- *Tempest - the last piston-engined Hawker masterpiece.*
- *Cockpit collecting - If you can't save the whole aircraft then save the cockpit!*
- *Bomber Command's War - the major turning points*
- *Plus - comprehensive news reports from around the world.*

*(contents may be subject to change)*

**The August issue of FlyPast is on sale July 1**

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## WRECKS & RELICS (16th edition) by Ken Ellis

Wrecks and Relics is a national institution. Each edition is eagerly awaited and snapped up by enthusiasts, historians, owners and operators of historic aircraft and curators of aviation collections as the most trusted and hard-working of references.

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Fully revised and updated, the 16th edition has an array of appendices and cross-referencing. The photographic section is full of out-of-the-way subjects and as comprehensive as ever.

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## AVIATION MUSEUMS OF BRITAIN (2nd edition) by Ken Ellis

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Here is the answer to the questions that most people need to know before setting out. When is it open? Which ones are open off-season? Is there a cafe? Is there somewhere for the youngsters to play? Is there a shop to browse around? This book answers all of these questions and more while providing an easy-to-read review of aircraft exhibits together with a breakdown of other displays, features and themes within Britain's 80 aviation museums.

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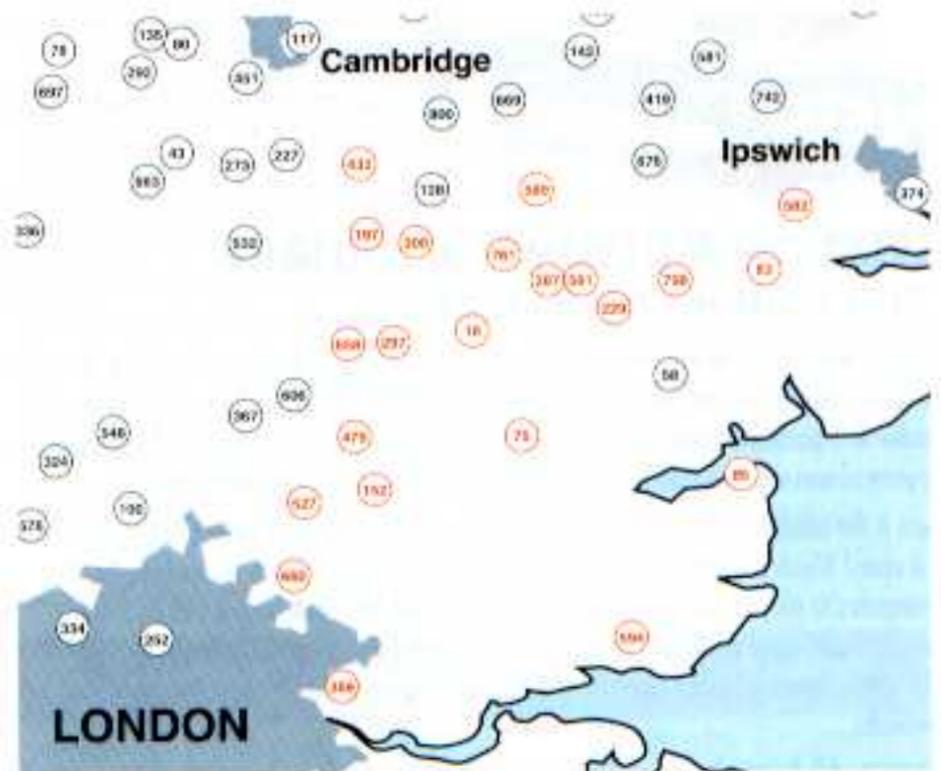
# Airfields of Essex

*Our continuing series of articles looking at the wartime airfields of the UK turns its attention to Essex — home to the American 9th Air Force.*



The previous **INSTALMENTS** in our East Anglian airfields overview looked at Norfolk (January 1998) and Suffolk (March 1998); and it soon became apparent to the reader that but for USAAF use there would have been very few airfields in East Anglia. Whereas in World War Two, Norfolk and Suffolk were home to the heavy bombers of the 8th Air Force,

Essex provided a base for the fighter units and medium bombers of the 9th Air Force — the B-26 squadrons in particular were to be found in Essex from mid-1943. With the invasion of Europe, the 9th Air Force gradually moved to airfields in Europe and by late 1944 most had left Essex; however, a number of airfields reverted to the RAF and

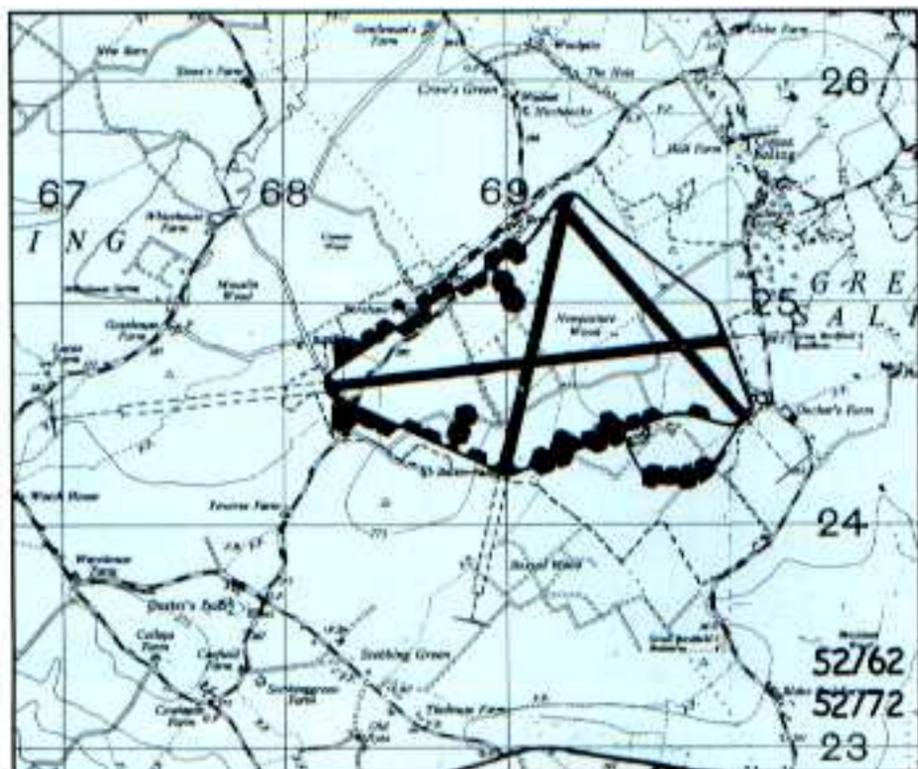


Essex saw major airfield construction work in 1942 and 1943 as the county became home to bombers and fighters of the 9th Air Force. (National Archives)

1942 report, Essex was listed as having the largest requirement of any region for aggregate — 21,000 cubic yards per day for the period September to November 1942. However, 1943 was the most expensive year with a total bill for USAAF construction works (not all in Essex) of £98,914,030. The final part of our East Anglian series, *Airfields of Cambridgeshire*, will be in the August issue of *FlyPast* (on sale July 1).

The best published source of information remains the 'Action Station' series and two volumes relate to East Anglia — 'Action Station 1' by M J F Bowyer and 'Action Stations 8' by Bruce Barrymore Halpenny. In recent years 'Countryside Books' has published a series of books looking at Second World War airfields, county by county; also, over the years a few airfields and units have been covered in individual publications. The numbers (in bold type) given below relate to the two-part airfield map published in *FlyPast* last year; the map references in brackets (numbers and co-ordinates relate to the OS 1:50000 series).

were used by 38 Group units in support of airborne operations, such as the Rhine crossing, Operation Varsity. With Essex extending down to the London area, there were also a number of RAF fighter airfields that played a key role in the Battle of Britain, such as North Weald and Hornchurch. The majority of the new airfields for the growing USAAF were built by the Air Ministry (of 50 new airfields constructed for the USAAF, 36 were built by the Air Ministry), whilst others were built by US Army engineers — the EABs (Engineer Aviation Battalions). In a



Andrews Field opened in 1943 — the first airfield built in England by the US Pioneer Corps. (FP Collection)

**16. ANDREWSFIELD**  
(map 167/TL695245)

Opened in April 1943, this was the first airfield built by the US Engineer Aviation Battalions in England. It was initially occupied by the B-17s of the 95th BG but they were soon replaced by the B-26 equipped 322nd BG. In common with most B-26 Groups, it moved to Europe in mid-1944. Andrewsfield then became home to RAF Mustangs — and there was a fleeting appearance by the first jet squadron, the Meteors of 616 Squadron on anti V-1 patrol. The airfield went out of use in late 1945.

Major units — 19, 65, 122, 129, 309, 315, 316 Sqns, 95th BG, 322nd BG.



Hangars at Andrewsfield, near the present Flying Club, April 1998. (FP - Duncan Cubitt)



The 833rd EAB's asphalt plant at Andrews Field. (National Archives)

**75. BOREHAM**  
(map 167/TL740120)

From its opening in March 1944, Boreham was home to the B-26s of the 394th BG.

Major unit — 394th BG.

**83. BOXTED**  
(map 168/TM015305)

Another B-26 base, Boxted opened in May 1943 and was occupied by the 386th BG; however, it moved out in

September and the airfield became home to various Fighter Groups. The P-51s of the 354th FG were replaced in spring 1944 by P-47s of the 56th FG.

Major units — 56th FG, 354th FG, 386th BG.

**85. BRADWELL BAY**  
(map 168/TM000085)

Opened in November 1941 but it was April 1942 before the first unit — the Boston-equipped 418 Sqn — moved in. The airfield also housed detachments using the nearby Denghie Flats range (and indeed had been in use as a

formed. Amongst a number of other units to operate from Bradwell was 278 Squadron in the Air Sea Rescue role.

Major units — 23, 64, 126, 141, 151, 264, 278, 418, 456, 488, 605, 611 Sqns.

**152. CHIPPING ONGAR**  
(map 167/TL055580)

The 387th BG was the first to use this airfield, which opened in June 1943; when it left in July 1944 Chipping Ongar became a storage site for Hadrian gliders. The RAF took over the site in April 1945 but it saw very little further use.

Major unit — 387th BG.

landing ground for the ranges before opening as an airfield). Its main use was by night fighter/intruder units, plus, from 1943 onwards, various fighter-bomber units flying 'Rangers' over Europe. In due course, units also flew anti-'Diver' patrols from here and a three-squadron Spitfire Wing was

**197. DEBDEN**  
(map 154/TL565340)

A 1930s Expansion Period airfield, Debden opened in April 1937 for three fighter squadrons. During the early part of World War Two it was used by various day and night fighter units on rotation. By 1941 it had turned to offensive



March 14, 1944 - constructing the taxiway at Boreham. (National Archives)



Mid-1944 and a P-51B of the 335FS/4th FG takes a rest from operations at Debden. (Andy Thomas Collection)

operations and the following year, September 1942, the four US air-crewed Eagle squadrons of the RAF moved here to form the 4th FG. They remained here, operating in turn, Spitfires, P-47s and P-51s, until the end of the war.

Major units — 17, 29, 85, 111, 418, 504, 601 Sqns, 4th FG.

#### 229. EARLS COLNE

(map 168/TL850270)

The airfield was first used from May 1943 by the B-17s of the 94th BG but with the change of Group deployments they were replaced the following month by the B-26s of the 323rd BG. This unit departed in July 1944 and two months later the RAF moved in, the airfield being used for special operations and glider towing.

Major units — 296, 297 Sqns, 323rd BG.

#### 287. GOSFIELD

(map 167/TL770315)

Gosfield opened in autumn 1943 and became the largest airfield in Essex. It was initially home to the P-47s of the 365th FG. In March 1943 they were replaced by the A-20-equipped 410th BG, one of three such Groups in the 9th Air Force. When the A-20s moved to France in September 1944, the airfield saw little further use, except during the period of airborne operations organised in conjunction with the Rhine crossing when three Dakota squadrons were in brief residence.

Major units — 365th FG, 410th BG.



Surviving buildings in the NE corner of Great Dunmow, April 1998. (FP - Duncan Cubitt)

#### 297. GREAT DUNMOW

(map 167/TL590255)

Opened in July 1943, this was another B-26 base, housing the 386th BG from September 1943 to October 1944. Like other 'abandoned' 9th Air Force

bases, Great Dunmow was brought into service by the RAF's 38 Group for transport operations, including Operation 'Varsity'.

Major units — 190, 620 Sqns, 386th BG.



The 410th BG's Aero Club (plus two American Red Cross girls), June 1944. This A-20 equipped Group flew from Gosfield between March 1943 and September 1944. (National Archives)



#### 300. GREAT SAMPFORD

(map 154/TL630360)

One of the later fighter bases, Great Sampford opened in April 1942 as a home to escort fighters, the main users being Spitfire units — although from late 1942 there were a number of American detachments. By the following year the airfield was little used for operational flying and became the RAF Regiment's Battle School until it closed in August 1944.

Major units — 65, 616 Sqns.

#### 359. HORNCHURCH

(map 177/TQ530845)

A famous World War One Home Defence field — as Sutton's Farm — a new airfield was built in the same area during the late 1920s. By the outbreak of war it was home to two fighter



**432. LITTLE WALDEN**  
(map 154/TL550435)

The 409th BG with its A-20s moved into Station 165 in spring 1944 and stayed until September when it moved to Europe with the rest of 9th Air Force. The airfield was then used by 8th Air Force fighter units — plus a short detachment by the B-17s of 493rd BG when its own base was under repair.

Major units — 361st FG, 409th BG, 493rd BG.

The 818th EAB constructing the runway at Great Dunmow, January 1, 1943. (National Archives)

**479. MATCHING**  
(map 167/TL550110)

Opened in September 1943, Matching first housed the B-26s of the 391st BG, from February 1944. When they departed the following November, the airfield was taken on by the RAF's 38 Group as a Stirling training unit, although operational flying took place during Operation 'Varsity'.

Major units — 391st BG.

**527. NORTH WEALD**  
(map 168/TL488044)

Another of the famous World War One Landing Grounds around London, this too was rebuilt in the late 1920s and by September 1939 housed Hurricane and Blenheim units. The airfield played a central role in the Battle of Britain and was heavily attacked. From 1941 onwards it turned to offensive ops and was home to many short-term detachments, most units being based here on more than one occasion. It remained busy to the end of the war, mainly with Hurricanes, Spitfires and Mustangs.

Major units — 25, 26, 46, 56, 63, 71, 111, 121, 151, 249, 257, 285, 310, 311, 313, 331, 332, 403, 604 Sqns.

**582. RAYDON**  
(map 155/TM061391)

Opened late 1943 for a USAAF Fighter Group, the

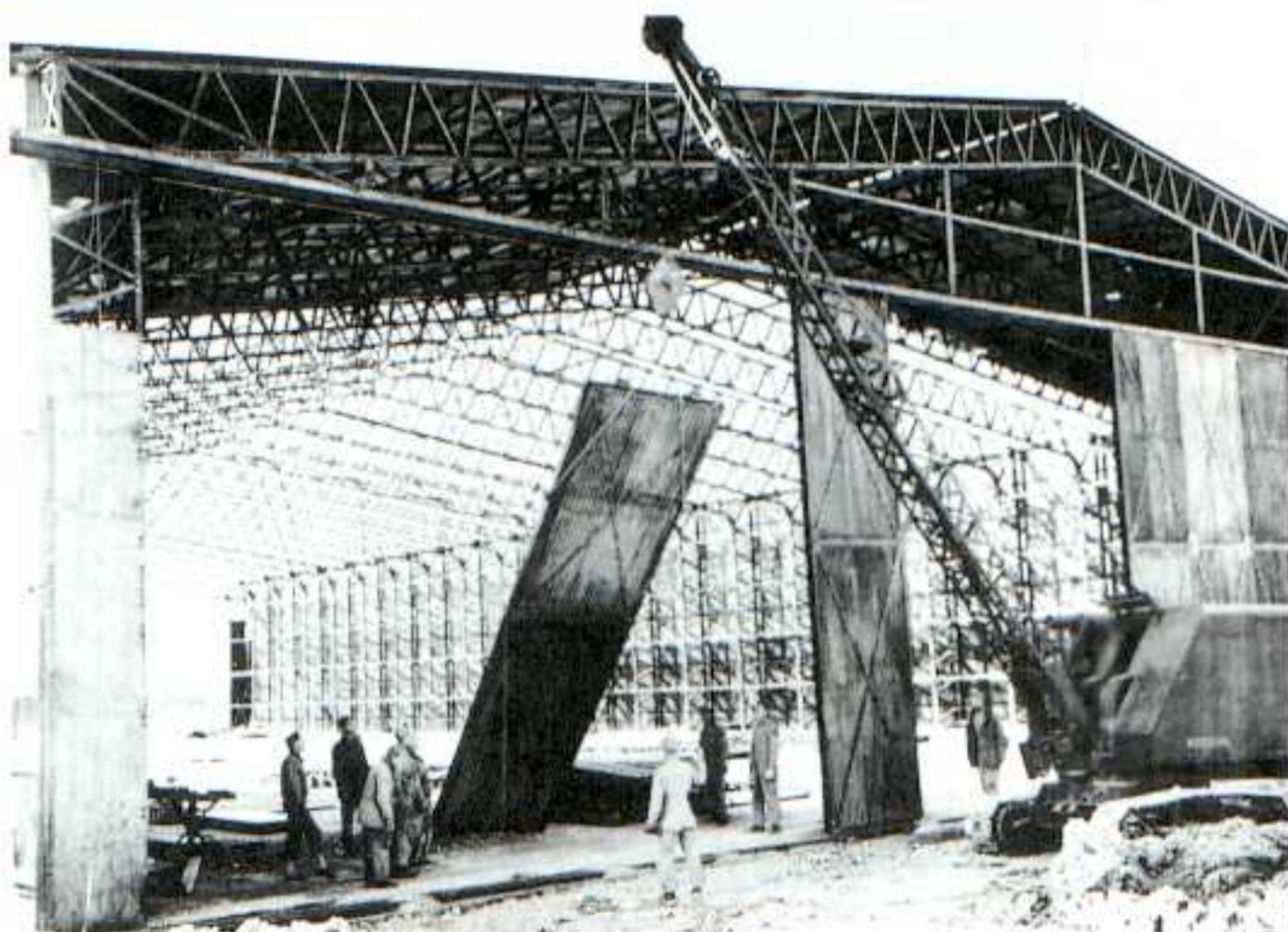


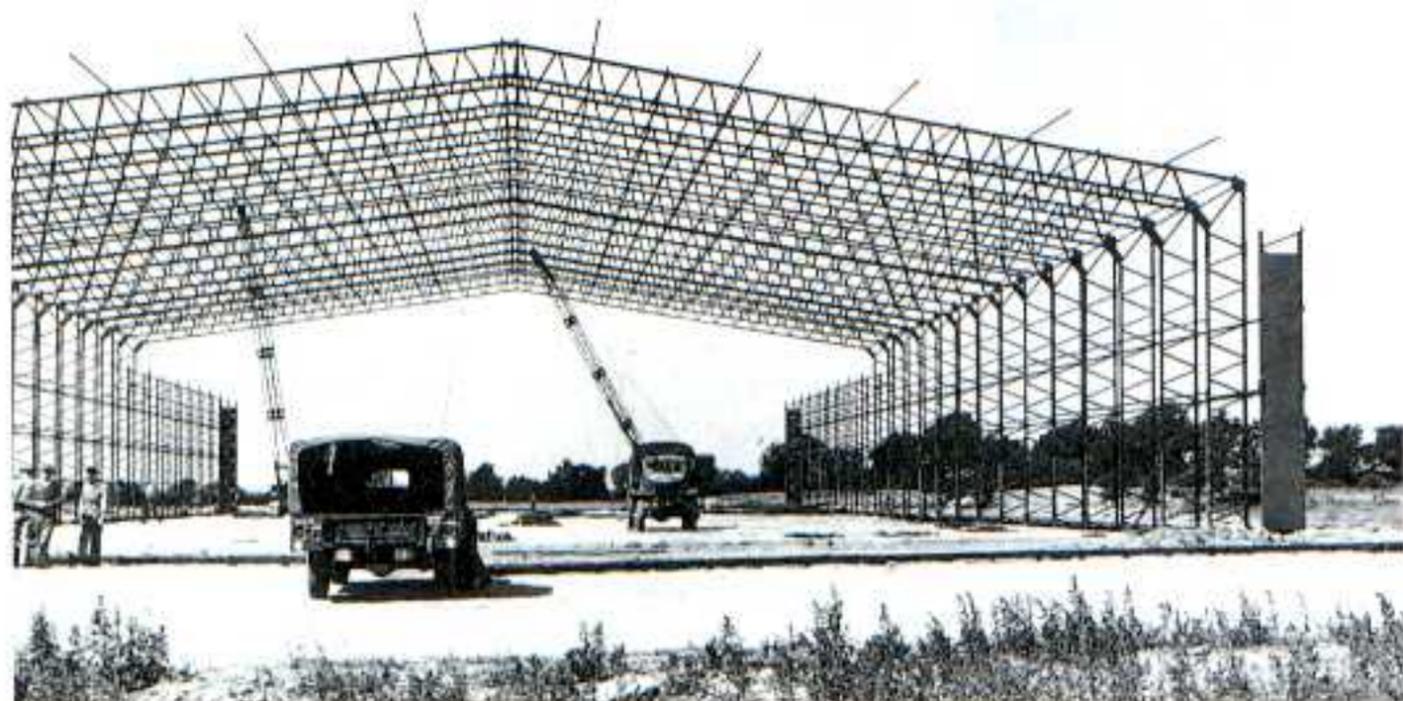
Little Walden control from the SE, April 1998. (FP - Duncan Cubitt)

squadrons and was destined to play a major role in the Battle of Britain, being home to a variety of fighter units. As the RAF took the offensive, the three Spitfire squadrons of the Hornchurch Wing flew sweeps over Occupied Europe. By May 1944 the airfield had ceased major flying operations and was used as a PTC (Personnel Training Centre), although a number of detachments, such as 278 ASR Squadron, continued to use the airfield.

Major units — 41, 54, 64, 65, 66, 74, 92, 122, 129, 222, 278, 313, 340, 349, 350, 411, 453, 504, 603, 611 Sqns.

T-2 hangar being erected by the 834th EAB at Matching. (National Archives)





Raydon and a T-2 hangar being erected by the 833rd EAB. (National Archives)

airfield was briefly occupied by the 357th FG before it was replaced by the 358th FG. This P-47 unit left in April 1944 to be replaced by the 353rd FG which, re-equipped with P-51s in October, remained to the end of the war.

Major units — 353rd FG, 357th FG, 358th FG.

#### 589. RIDGEWELL

(map 155/TM740415)

Opened in late 1942 as a satellite for Stradishall, 90 Squadron arrived in December with Stirlings as part of Main Force Bomber Command. In



The 353rd FG occupied Raydon from mid-1944; this view shows the 'Third Echelon auto repair shop in March 1945'. (National Archives)



The tower area at the 381st BG's Ridgewell home. (National Archives)

May the following year the airfield was under C&M for the USAAF, the B-17s of the 381st BG arriving in June and remaining to the end of the war.

Major units — 90 Sqn, 381st BG.

#### 591. RIVENHALL

(map 168/TM820210)

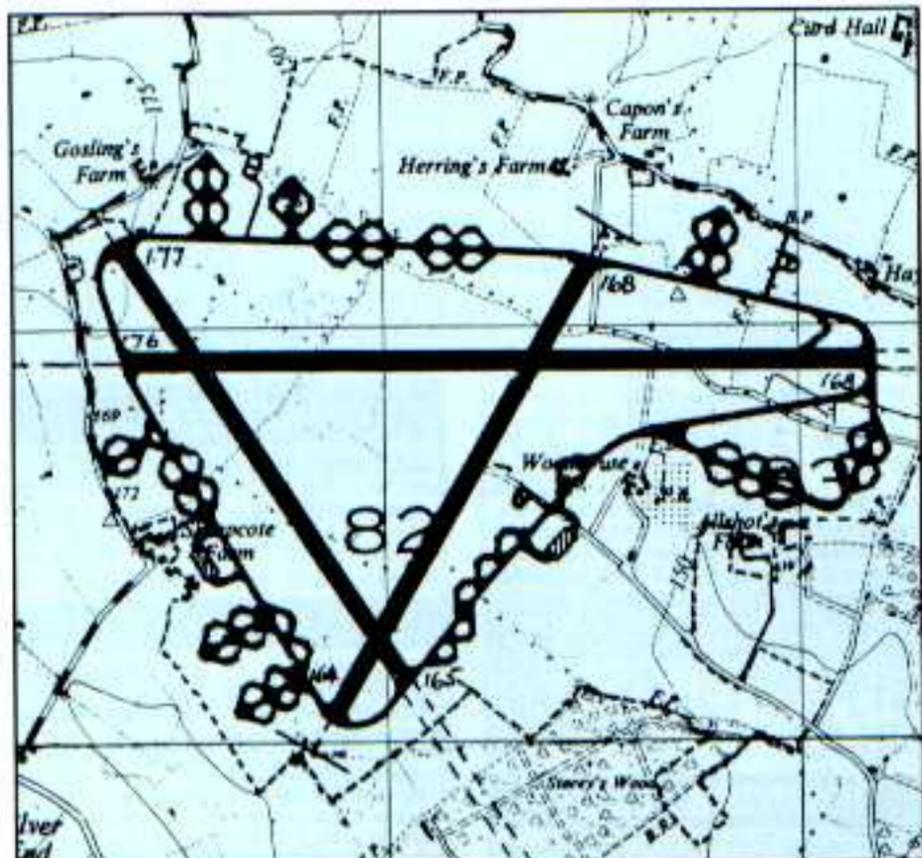
This 9th Air Force fighter base opened in late 1943 and housed the P-51s of the 363rd FG from January 1944, although the unit was replaced by the 397th BG for operations around D-Day. Following this hectic period, the airfield was transferred to the



December 1944 and the Officers Mess of the 381st BG at Ridgewell is given a festive look — note the wall and ceiling paintings. (National Archives)

RAF's 38 Group and housed two Stirling units for paratroop and glider-towing during Operation 'Varsity'.

Major units — 363rd FG, 397th BG, 295, 570 Sqn.



Rivenhall was first used as a fighter base by 9th Air Force. (FP Collection)



B-17 'Happy Bottom' of the 382nd BG, July 1944; the unit moved into this airfield in mid-1943 and stayed for the remainder of the war. (National Archives)



Flying Training (ERFTS) unit. It was requisitioned on the outbreak of war as a satellite for Hornchurch, becoming, in October 1940, RAF Southend and operating in the fighter role with squadrons using it on short-term detachments or as a refuelling stop. By 1944 it was operating as an Armament Practise Camp (APC) and formally became 17 APC until reduced to C&M in September 1944 — although it was still being used.

Major units — 64, 121, 222, 287, 350, 603, 611, 1488 TTF, 17 APC.

#### 660. STAPLEFORD TAWNEY

(map 177/TQ439970)  
This 1930s civil field was home to 21 ERFTS by 1938

#### 594. ROCHFORD

(Southend)

(map 178/TQ872895)  
This ex World War One field was used for civil aviation in the 1930s, and in the Expansion Period was adopted as an Auxiliary Camp, becoming home to an Elementary Reserve

but on the outbreak of war was closed for redevelopment — to become a satellite for North Weald. From August 1940 it received short-term detachments, the first being 151 Squadron, but was little used in the winter months due to waterlogging. In March 1943 it was transferred to Army Co-Operation Command for use by Sawbridgeworth's Austers but by the end of the year it had become part of the new 2nd Tactical Air Force. From mid-1944 it housed a glider unit of London Gliding Command.

Major units — 3, 46, 242, 277, 656 Sqns, 142 Flt, 2 Camouflage Unit.

#### 761. WETHERSFIELD

(map 167/TL720335)  
One of the many postwar ex-USAFA airfields that used to be a popular airshow destination in the 1980s, Wethersfield has its origins as a 1941 satellite for Ridgewell, although almost no use seems to have been made of the site until it opened in January 1944 as a full Bomber Command station — only to be occupied by the A-20s of the 416th BG! This unit left in September 1944 and two months later 38 Group Stirlings arrived for supply drop and glider-towing work. During Operation 'Varsity' it was used by 9th Air Force C-47s.  
Major units — 196, 299 Sqns, 416th BG.



Having been handed to the RAF, Rivenhall became home to No 38 Group for airborne operations and was used by Stirling units such as 295 Squadron; Stirling IV LK271 of that unit is seen here at Rivenhall on August 8, 1945. (Andy Thomas Collection)



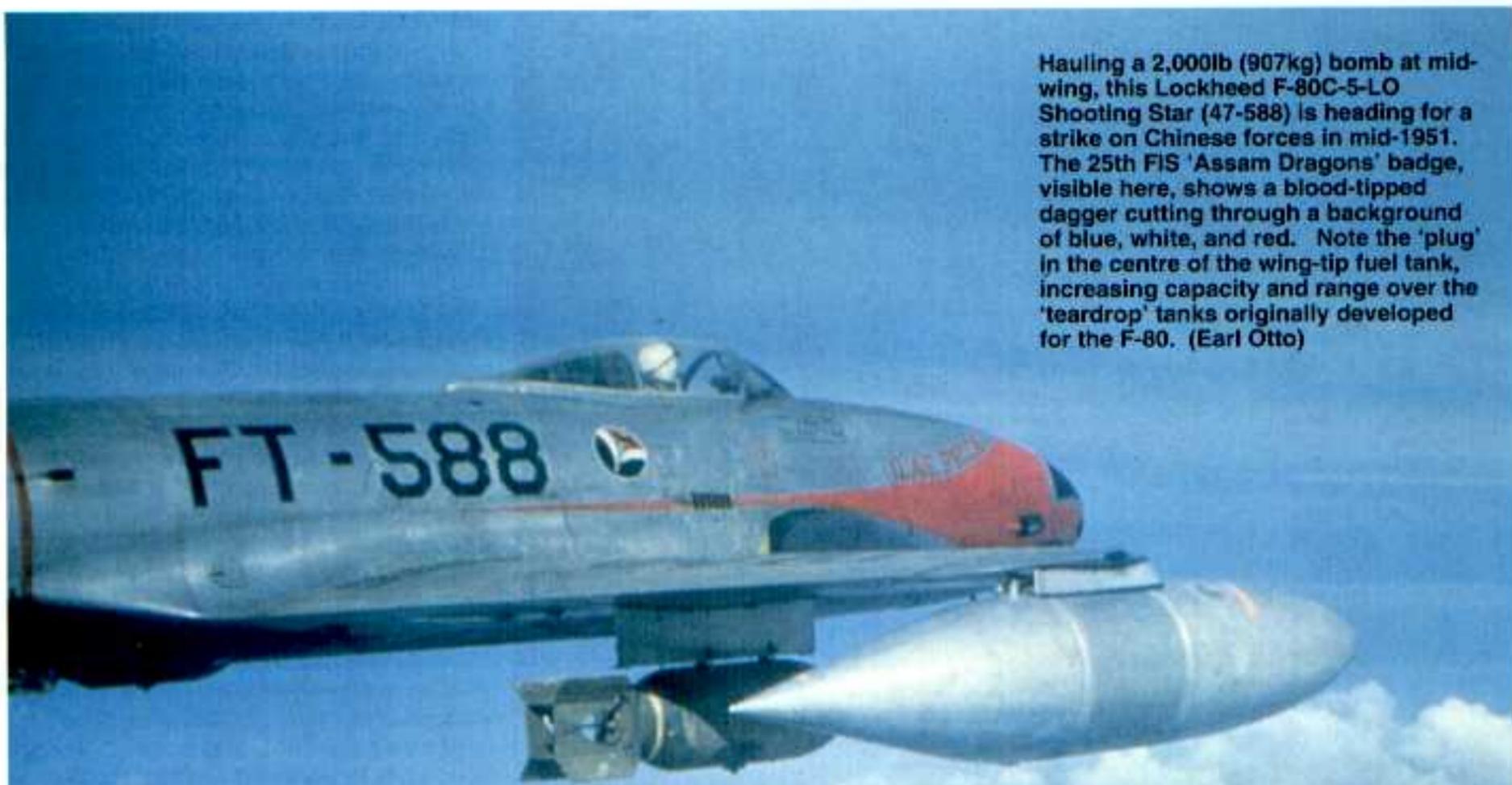
This building in the SE corner of Rivenhall (off Silver End, Kelvedon Road) is rapidly becoming overgrown, April 1998. (FP - Duncan Cubitt)

#### 658. STANSTED

(map 167/TL535230)  
Opened July 1943 as an Air Depot but housed operational units pre D-Day; the B-26s of the 344th BG being in residence from March to September 1944.  
Major unit — 344th BG.

#### 798. WORMINGFORD

(map 168/TL920308)  
Built in 1943, the airfield was occupied from November by the P-47s of the 363rd FG, although these were subsequently replaced by the P-38 equipped 55th FG. This latter unit gave up its Lightnings in favour of Mustangs in mid-1944 and remained in residence until the end of the war.  
Major units — 55th FG, 363rd FG.



Hauling a 2,000lb (907kg) bomb at mid-wing, this Lockheed F-80C-5-LO Shooting Star (47-588) is heading for a strike on Chinese forces in mid-1951. The 25th FIS 'Assam Dragons' badge, visible here, shows a blood-tipped dagger cutting through a background of blue, white, and red. Note the 'plug' in the centre of the wing-tip fuel tank, increasing capacity and range over the 'teardrop' tanks originally developed for the F-80. (Earl Otto)

# Assam Dragons

*Robert F Dorr looks at operations by the 25th Fighter Interceptor Squadron in the Korean War.*

**O**N JUNE 25, 1950, an onslaught by T-34 medium tanks began the Korean War. At the time, the most experienced fighter outfit in the Far East was the 25th Fighter-Interceptor Squadron — the 'Assam Dragons'.

The 25th FIS was part of the 51st Fighter-Interceptor Wing (FIW), operating the Lockheed F-80C Shooting Star, the principal USAF fighter in 1950. Stationed at Naha Air Base on Okinawa, the 25th FIS 'commuted' to Japan to fly cross-channel missions during the initial weeks of the Korean fighting. But a chance came soon enough to fight on Korean soil. When the September 1950 landings at Inchon turned the tide against the North Koreans, the 25th was uprooted and installed at newly-recaptured Kimpo Air Base near Seoul, also known as K-14.

Sgt John Nossick, a 25th FIS crew chief, made the journey from Okinawa to Korea aboard the Victory-class transport USNS Sgt Sylvester Antolak (T-AP-192), "where the bunks were piled 14 high". Nossick arrived at liberated Kimpo two weeks ahead of the first F-80Cs. Near the end of the month, the Shooting Stars became operational and the 'Assam Dragons' began supporting United Nations troops driving north across the 38th Parallel into North Korea.

"It was unusually cold for September," recalls Nossick, "Conditions seemed pretty primitive. We pumped fuel out of 55-gallon drums. We lived in tents and used a slit trench for a bathroom.



F-80C-10-LO Shooting Star (49-801) of the 25th FIS/51st FIW shortly after the squadron arrived at K-13 Suwon Air base, South Korea on July 20, 1951. The paired red stripes identify the personal mount of squadron commander Lt Col Clure Smith, who may have had the first encounter with a MiG-15. The squadron badge frequently appeared on both sides of the aircraft, but its application was not consistent. The purpose of the yellow trim around the air intake inlet is not known. (John Nossick)

Bomb holes in the runway were covered over with PSP [pierced steel planking]. Shortly after we began flying, an F-80 was taking off when it hit a road grader working on the runway, the pilot was killed."

UN troops advanced rapidly, securing virtually all of the Korean peninsula. Many were saying that the war would soon be over. But Nossick and his fellow F-80 crew chiefs were not celebrating. "North Korea's last surviving Yak fighter came down and blew up our mail room.

It was so cold, our JP-1 fuel wouldn't fire, so we had to start F-80s on 140-octane gas and then switch to JP-1 after the engines lit up." Nossick's 25th FIS suffered its first combat fatality when Lt Jacobs, in an F-80C, failed to return from a close air support mission.

There were to be 17 more F-80s claimed by enemy gunfire in the low-level inferno of Korea where, as Nossick recalls: "There was one hell of a lot of metal flying around." The F-80C had not been designed with air-to-ground



When the 25th FIS and the rest of the 51st FIW began receiving F-86E Sabres, the aircraft initially were painted with yellow fuselage stripes but lacked other distinctive markings. In this previously unpublished glimpse at the sandbagged Suwon flight line c. December 1951, F-86E-10-NA Sabre 51-2786 (foreground) is receiving maintenance attention, virtually all of which had to be performed out-of-doors. (LeRoy E Bain)

## MiG debut

In a move that came as a stunning surprise in the West, China intervened in the Korean War in November 1950 and soon had 300,000 troops on the peninsula, reversing the ground battle and sending UN armies into a retreat southward. The appearance of the Soviet-built MiG-15 rendered the F-80 obsolete. UN intelligence had known of huge, modern airfields on the Chinese side of the Yalu River at Antung and Tatangkou, but knew little about the MiGs flying there. In early November 1950, 25th FIS commander Lt Col Clure Smith came back from an F-80C mission with a gun-camera photo of a MiG-15 limping north across the Yalu trailing smoke. This may have been the first photographic evidence of the MiG. It was greeted with a sense of menace.

Two sister squadrons of the 25th FIS 'Assam Dragons' figured in history's first jet-versus-jet air battle on November 8, 1950. 1st Lt Russell Brown of the 26th FIS was flying an F-80C (49-713) belonging to Capt Jack Smith of the 16th FIS — these were the other two squadrons subordinate to the 51st FIW — when Brown shot down the first MiG-15 to fall in battle. Although the 'Assam Dragons' slogged through treacherous



F-80C-10-LO Shooting Star (49-501) of the 25th FIS/51st FIW at K-13 Suwon Air Base, South Korea in late 1951. (John Nossick)

warfare in mind, yet it was often able to return to base after sustaining brutal damage. No one ever seemed to have an unkind word for the F-80, even after December 1950 when a rival fighter squadron unit began operating the classier F-86 Sabre.

In fact, the F-80C Shooting Star was much-loved by those who flew it — but times were changing fast. The F-80 owed its origins to design work begun in June 1943 using a British-designed jet engine. The F-80C was the main version employed in Korea and was powered initially by a 4,600lb (2,087kg) thrust Allison J33-A-23 centrifugal-flow turbojet engine, while late production F-80Cs received 5,400lb (2,449kg) thrust J33-A-35s. The F-80C was armed with six .50 calibre (12.7mm) nose Browning M3 machine-guns with ammunition trays for 300 rounds per gun, and typically carried fuel tanks and two 1,000lb (454kg) bombs and eight underwing rockets.



North American F-86E-10-NA Sabre 51-2740. Nicknames on the right side of the aircraft were applied by the crew chief or armourer. Sometimes, although not here, two nicknames appeared to starboard. The pilot was allowed to put a nickname on the port side of the aircraft, which was also where he climbed aboard. (Bill Rogers)

air-to-ground missions, no F-80 pilot of the 25th FIS was ever able to get a MiG.

Americans were chased out of Kimpo when the Chinese pressed their ground assault and recaptured Seoul. Soon, however, the Chinese advance stalled. The 51st FIW returned to Korea. The Wing, including the 25th FIS 'Assam Dragons', began flying from K-13, Suwon Air Base on July 20, 1951.

### Sabre song

The MiG force north of the Yalu grew relentlessly. Eventually, there were about 800 MiGs opposing about 70 battle-ready Sabres. Even those odds were not reached until, along with sister squadrons in the parent wing (16th and 26th), the 'Assam Dragons' were assigned the air combat mission. According to crew chief Sgt Kenneth F Rhodes, the December 1, 1951, transition from F-80C to F-86E happened so fast, "the engines never shut down." The unit operated the F-86E model with an 'all-flying tail' that greatly enhanced the Sabre's manoeuvrability, although retaining the wing and leading-edge slats that were to be completely reworked in later Sabre variants. Contrary to published reports, neither the 25th FIS nor any other squadron in the 51st Wing ever flew the F-86A.

To prevent F-86 Sabre pilots from mistaking each other for MiGs, the rival 4th FIW painted its aircraft with forward-slanting black-and-white stripes, like the "Normandy invasion stripes" of World War Two. Lt Col George Jones, 51st FIW commander, didn't want to copy the other wing, so he sought a new design. It was a familiar



1st Lt Bill Ginn peels off in F-86F-30-NA Sabre 52-4316, 'Nita'. (Bill Ginn)



An 'Assam Dragons' Canadair F-86E-6-CAN Sabre 52-2882 is broken apart for an engine change. Hard-pressed crew chiefs and maintainers performed most of their duties out-of-doors, even in Korea's sub-zero winters. (Hank Buttelmann)

story — in peacetime, aircraft are camouflaged to make them harder for an enemy to see. In war, they must be painted brightly so 'friendlies' will recognise them. Captain Ed Matczak, Group materiel officer and budding artist, used grease pencil to draw a picture of an F-86 with a rearward-slanting yellow band on the fuselage and yellow bands on wing and tail. His yellow bands were more attractive than the rival 4th's

paint job. A four-word exchange of dialogue gave birth to the standard Sabre markings of the war.

Matczak: "How's this?"

Jones: "That's it."

Matczak's yellow bands eventually became standard throughout all the Sabre units. Sometime in 1952, the 51st FIW, including the 25th FIS, also adopted 'chequerboard' tails (black on

natural metal), a revival of the 'Assam Dragons' World War Two signature. The 25th had a red fin cap collar.

### F-86E Sabre

The F-86E had been rushed into action following a first flight on September 23, 1950. The 'E model' Sabre powerplant was the General Electric J47-GE-13 (later -27) axial-flow turbojet engine rated at 5,200lb static thrust and armament remained six .50 cal (12.7mm) M3 machine-guns. The 'all-flying tail' and the irreversible hydraulic systems introduced in the F-86E were considered one of the most important advances of the era. Among the 25th FIS' aircraft were some of the 60 F-86Es built in Montreal by Canadair.

Now, the war waged by the 'Assam Dragons' had a kind of purity — it was all fought in the stratosphere, often above the level where contrails gave a tell-tale warning of a fighter wing on the approach, and it was all air-to-air. Pilots praised the way an F-86E could manoeuvre with the MiG — but a classified report listed all the obstacles the 25th FIS was up against. Sabres, the report said, were "almost invariably outnumbered" by "extreme odds." 'MiG Alley', the Americans' term for the stretch of hard-fought territory along the Yalu, opposite the enemy's Antung airfield, was "at the outer range of the F-86E combat radius" and "is over enemy territory at all times."

Not even the worthy F-86E could fully satisfy hard-pressed maintenance men. Sgt Daniel Walker, crew chief for 25th ace Captain Iven C Kincheloe noticed that the aileron actuators leaked. This was an irritating characteristic unique to the F-86E model. When the worst

happened, all of the hydraulic fluid in the airplane would gush out. Walker also complained that when the aft section of the Sabre had to be removed for engine work, the spiral disconnects were difficult to loosen or tighten properly. The canopy seal was never right. Because of persistent maintenance problems even when new Sabres were arriving, the aircraft-out-of-commission rate (AOCR) spiralled upward.

On December 2, 1951, 1st Lt Paul E Roach claimed a MiG-15 in a running dogfight near the Yalu — the first aerial victory of the war for the 25th FIS. Maj Bill Whisner, squadron commander, became the unit's first ace with a fifth MiG kill on February 23, 1952. As more and better groundcrews became familiar with the F-86E, AOCR rates improved and red stars — kill markings — began to proliferate on the sides of the aircraft.

Ultimately, six men were to achieve ace status in Korea while flying with the 25th. Two were wing commanders — Col Francis S Gabreski and Col Robert P Baldwin. The others were Maj Whisner, Capt Iven C Kincheloe, Jr, Maj William H Wescott and 1st Lt Henry 'Hank' Buttelmann. At times, these men went across the Yalu after their prey. At times, they were caught up in some of the biggest dogfights in history, with hundreds of aircraft hurtling around.

Battling the MiGs was always a challenge. The Americans had to travel up to 380 miles (610km) to fight an adversary who could choose the time and place of the engagement and never get beyond eyesight of his home base. The MiGs could fly higher, and seemingly could sustain an enormous amount of punishment from the Sabre's .50 cal (12.7mm) guns. The friendly radar site on Chodo Island that was supposed to warn of approaching bandit trains (formations of MiGs) sometimes got it wrong, and sometimes it was out of commission. Some of the MiG pilots lacked experience but others were highly skilled. We know today that many of these pilots were Russians.

## MiG Alley

1st Lt Joe Cannon, who flew F-86E Sabres with the 25th FIS remembers what it was like to fight the MiG: "Of the 91 missions I flew, most of them were with Kinch [Kincheloe] and Gabby [Colonel Francis S Gabreski, 51st FIW commander]. On April 2, 1952, Kinch and I entered the area near Sinanju, not far from the Yalu River, at about 48,000ft [14,630m]. We dropped our external tanks when we spotted three flights of MiGs about 5,000ft [1,524m] below us. We were lucky in that we were not pulling any contrails and they had not seen us.

"We rolled over and dove down on them. Kinch bagged one as we busted through the middle of the whole damned formation (not the smartest thing we ever did). I came so close to colliding with one MiG that as I went by, we looked each other straight in the face and I noticed that the MiG pilot had a cloth helmet on.

"Kinch called out over the radio that it was my turn now (we alternated flying wing for each other). I pulled up real hard and rolled. Going around I saw the MiG I had just missed colliding with. He was heading for the Yalu, so I split-S'ed and came down behind him. After a three-second burst he began to burn.

"About that moment, Kinch yelled, 'Break left!' When I broke hard and turned my head to see who was on my tail, the entire world lit up. This MiG jockey shoots the oxygen mask right



F-86F Sabre pilots of the 25th FIS at Suwon in 1954. In the sparse room are a blackboard and chalk for pre-flight briefings, a map of the Korean peninsula, pages from an airfield runway guide, and a roster of 'Assam Dragons' aircraft. (Bill Ginn)

off my face, blows the canopy away, makes my left wing half the size of my right one, and shreds my rudder.

"When I punched out over the coast, several hundred miles from where I wanted to be, the MiGs set up a gunnery pattern on me coming down in the chute. Kinch was right in the middle of them, breaking their concentration up. MiGs were coming from everywhere. Some of them came so close, they were swinging me horizontally in the chute, but I swear that Kinch was behind every one that came by. What a sight!

"I was picked up by the Navy and returned to Suwon for dinner."

In late 1952, the 25th FIS began to receive F-86F Sabres. The 'F model' initially had only minor changes, but late F-86Fs introduced a new wing design. The '6-3' wing, so named because of the ratio between chord and span, dispensed with leading-edge slats. With more powerful J47 engines and this 'hard' wing, the Sabre finally was superior to the MiG-15 in all performance regimes. No longer could the MiGs fly higher or manoeuvre more tightly.

In early 1953, pilots of the 25th FIS began to see a different kind of MiG pilot. The first team was gone. More and more of the MiG-15s coming up to do battle with the Sabres were being

flown by inexperienced newcomers, dubbed 'cadets' by the Americans. In less than three years, the enemy's pilot cadre went from mostly Russian to mostly Chinese to increasingly North Korean. "Some of them seemed to be amateurs," acknowledged Marine Maj John H Glenn Jr, flying an exchange tour with the 25th in an F-86F Sabre called 'MiG MAD MARINE'. Glenn shot down three of them in a fortnight and would certainly have become an ace but for the signing of the armistice on July 27, 1953.

Ultimately, Sabre pilots of the 25th FIS scored 116 aerial victories. Aircraft losses were not recorded by squadron, but the combat ratio of 15 kills for every loss — the best such ratio in the history of air warfare — is generally believed accurate, in large measure because of the deteriorating quality of enemy pilots near the end of the war. Late in the war, the number of Sabre fighter wings went from two to four. By the time of the armistice, Sabre pilots had flown 87,177 sorties and were credited with downing 792 MiGs vis-a-vis 78 losses in air-to-air combat. A fresh look at Korean War statistics in the 1980s suggested that the actual figures might actually be even more strongly in favour of the US pilots.

In the immediate postwar Korean era, the 25th FIS flew 'hard wing' F-86F models with brilliant



52-4580 is a North American F-86F-30-NA Sabre piloted by 51st FIW wing commander Col Benjamin O Davis, one of the US' leading black aviators - seen here leading a formation of the 25th FIS on a flight from Suwon, Korea in 1954. (Bill Ginn)

red noses. The squadron's 'MiG killer' era ended in 1956 when it converted to F-86D interceptors. The 'Assam Dragons' still fly in Korea today.



Postwar shot (1954) of Bill Ginn's F-86F 'Nita' (52-4316). (Bill Ginn)

### MiG kills by 25th FIS

| * shared aerial victory |   |              |  |
|-------------------------|---|--------------|--|
| Dec 2, 1951             | 1st Lt Paul E Roach                               | Jun 21, 1952 | 1st Lt Asa S Whitehead                           |
| Dec 13, 1951            | 1st Lt Anthony Kulengosky, Jr                     | Jun 27, 1952 | Capt John R Spalding                             |
| Dec 27, 1951            | 1st Lt Clifford F Brossart                        | Jul 4, 1952  | 1st Lt Sabin L Anderson                          |
| Dec 27, 1951            | 2nd Lt Kenneth A Shealy                           | Jul 4, 1952  | Capt Francis A Williams                          |
| Dec 28, 1951            | 1st Lt Paul E Roach                               | Jul 12, 1952 | Maj Elmer W Harris                               |
| Jan 6, 1952             | Maj Van E Chandler                                | Jul 14, 1952 | 1st Lt Lawrence E Spurr                          |
| Jan 6, 1952             | Capt John M Heard                                 | Jul 16, 1952 | Capt Arthur H McCarthy                           |
| Jan 6, 1952             | 1st Lt Donald E Little                            | Aug 30, 1952 | Capt Paul R Henderson                            |
| Jan 6, 1952             | Col Walker M Mahurin                              | Aug 30, 1952 | 1st Lt Frank A Williams                          |
| Jan 6, 1952             | Maj William T Whisner, Jr                         | Sep 4, 1952  | Capt Norman L Box                                |
| Jan 7, 1952             | Capt Ralph H Ashby                                | Sep 4, 1952  | Capt Arthur H McCarty                            |
| Jan 7, 1952             | Capt John M Heard                                 | Sep 4, 1952  | 1st Lt La Veme G Stange                          |
| Jan 11, 1952            | Col Francis S Gabreski                            | Sep 4, 1952  | 1st Lt Garry A Willard, Jr                       |
| Jan 11, 1952            | 1st Lt Thiel N Reeves                             | Sep 5, 1952  | Capt Norman L Box                                |
| Jan 11, 1952            | Maj William T Whisner, Jr                         | Sep 9, 1952  | 1st Lt Simon K Anderson                          |
| Jan 19, 1952            | 1st Lt Iven C Kincheloe, Jr                       | Sep 9, 1952  | 1st Lt Walter R Copeland                         |
| Jan 25, 1952            | 1st Lt Frank J Gately                             | Sep 9, 1953  | 2nd Lt Thomas L Moore                            |
| Jan 25, 1952            | 1st Lt William Guinther                           | Sep 14, 1952 | Capt Norman L Box                                |
| Jan 25, 1952            | 1st Lt Anthony Kulengosky                         | Sep 15, 1952 | 1st Lt Calvin G Davey                            |
| Jan 25, 1952            | 1st Lt William C Shofner                          | Sep 15, 1952 | Maj Herman W Visscher                            |
| Feb 17, 1952            | 1st Lt William Guinther                           | Sep 21, 1952 | 1st Lt Simon K Anderson                          |
| Feb 17, 1952            | Col Walker M Mahurin                              | Sep 29, 1952 | Lt Col Albert S Kelly                            |
| Feb 19, 1952            | Col Albert Schniz and<br>Capt Paul Henderson*     | Oct 3, 1952  | 1st Lts Asa Whitehead and<br>Craig Canady*       |
| Feb 20, 1952            | Maj Van E Chandler                                | Oct 12, 1952 | Major Vernon J Lyle                              |
| Feb 20, 1952            | Col Francis Gabreski and<br>Maj Wm Whisner*       | Nov 6, 1952  | Lt Col Albert S Kelly and<br>1st Lt James Kumpf* |
| Feb 23, 1952            | Maj William T Whisner, Jr                         | Nov 15, 1952 | 1st Lt Calvin G Davey                            |
| Feb 27, 1952            | Maj Van E Chandler                                | Nov 18, 1952 | Lt Col Albert S Kelly                            |
| Mar 5, 1952             | Col Walker M Mahurin                              | Nov 21, 1952 | Major Vernon J Lyle                              |
| Mar 5, 1952             | Col Walker Mahurin and<br>1st Lt Gordon Atkinson* | Jan 7, 1953  | Capt Charles C Carr                              |
| Mar 5, 1952             | 1st Lt Dale W Smiley                              | Jan 14, 1953 | Capt Charles C Carr and<br>1st Lt Fred W Gray*   |
| Mar 5, 1952             | Capt Kenneth L Swift                              | Apr 12, 1953 | 1st Lt George D Matthews                         |
| Mar 10, 1952            | 1st Lt Homer R Charlton, Jr                       | Apr 17, 1953 | 1st Lt Frederick W Mamerow                       |
| Mar 10, 1952            | Capt Paul Henderson and<br>1st Lt Sabin Anderson* | Apr 17, 1953 | Capt Floyd W Salze                               |
| Apr 1, 1952             | Col Francis S Gabreski                            | May 20, 1953 | Major John C Giraud                              |
| Apr 1, 1952             | Capt Iven C Kincheloe, Jr                         | May 18, 1953 | Capt Harvey L Jensen                             |
| Apr 1, 1952             | Capt Iven C Kincheloe, Jr                         | Jun 5, 1953  | Capt Floyd W Salze                               |
| Apr 1, 1952             | Maj William H Wescott                             | Jun 5, 1953  | 1st Lt Thomas W Seuffert                         |
| Apr 1, 1952             | Maj William H Wescott                             | Jun 16, 1953 | Col Robert Baldwin                               |
| Apr 2, 1952             | Capt Iven C Kincheloe, Jr                         | Jun 16, 1953 | Major George M Howell                            |
| Apr 2, 1952             | 1st Lt Dale W Smiley                              | Jun 16, 1953 | Capt Duncan M Morton                             |
| Apr 6, 1952             | Capt Iven C Kincheloe, Jr                         | Jun 18, 1953 | Col Robert Baldwin                               |
| Apr 13, 1952            | Capt William L Craig                              | Jun 18, 1953 | F/L R T F Dickinson                              |
| Apr 13, 1952            | Col Francis S Gabreski                            | Jun 18, 1953 | 1st Lt Henry Buttelmann                          |
| Apr 13, 1952            | 1st Lt Donald Hemmer                              | Jun 19, 1953 | Col Robert Baldwin                               |
| Apr 13, 1952            | Maj William H Wescott                             | Jun 22, 1953 | 1st Lt Henry Buttelmann                          |
| Apr 13, 1952            | Maj William H Wescott                             | Jun 22, 1953 | 1st Lt Roscoe E Anderson                         |
| Apr 21, 1952            | 1st Lts Donald Hemmer and<br>Percy Saunders*      | Jun 24, 1953 | 1st Lt Henry Buttelmann                          |
| Apr 26, 1952            | Maj William H Wescott                             | Jun 27, 1953 | F/L H J Lovell                                   |
| Apr 30, 1952            | Lt Col James B Raebel                             | Jun 27, 1953 | 1st Lt Henry Buttelmann                          |
| May 3, 1952             | Lt Col James B Raebel                             | Jun 29, 1953 | 1st Lt Kenneth L Palmer                          |
| May 13, 1952            | 1st Lt Sabin L Anderson                           | Jun 29, 1953 | 1st Lt Henry Buttelmann                          |
| May 28, 1952            | Maj Elmer W Harris                                | Jun 30, 1953 | Major John H Glenn, Jr                           |
| May 28, 1952            | Maj Elmer W Harris                                | Jul 12, 1953 | 1st Lt John D Winters                            |
| May 28, 1952            | 1st Lt Robert C Ochs                              | Jul 12, 1953 | 1st Lt Henry Buttelmann                          |
| Jun 6, 1952             | Capt Paul R Henderson                             | Jul 19, 1953 | Maj John H Glenn, Jr                             |
| Jun 6, 1952             | 1st Lt Ramon L Koenig                             | Jul 19, 1953 | 1st Lt Jerald D Parker                           |
| Jun 15, 1952            | Capt Francis A Williams                           | Jul 22, 1953 | 1st Lt Henry Buttelmann                          |
|                         |   | Jul 22, 1953 | Maj John H Glenn, Jr                             |
|                         |   | Jul 22, 1953 | 2nd Lt Sam P Young                               |



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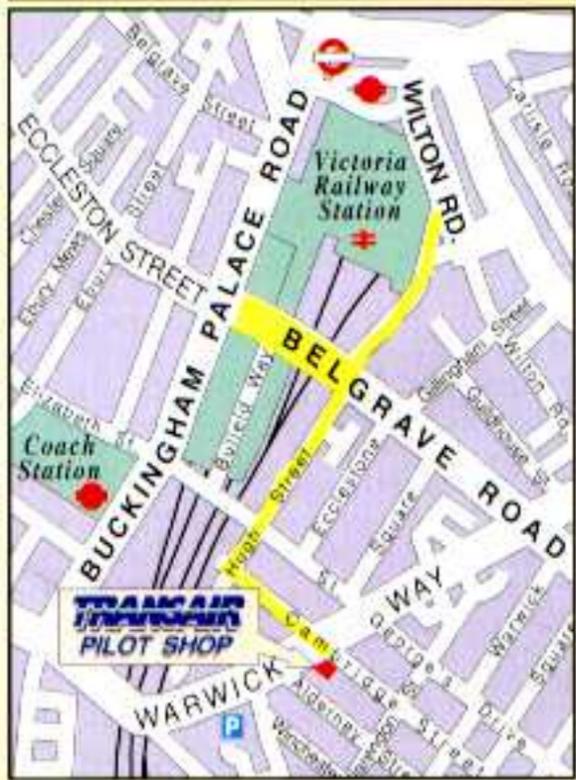
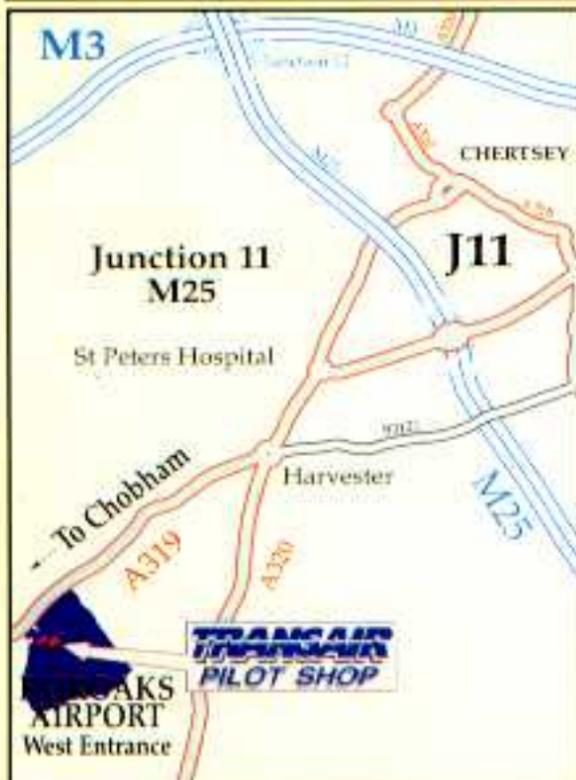
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