



# IMAGES

1939

OF

1945

# WAR

21

THE REAL STORY OF WORLD WAR II

DESTRUCTION OF  
HAMBURG

JULY TO AUGUST 1943

H O M E F R O N T

**GREAT ESCAPERS**

C A M P A I G N

**HOLOCAUST  
OF FIRE**

**MAGAZINE    NEWSPAPER    CAMPAIGN MAP**



## THE COLLECTION

### Plan of the Series

Images of War is published fortnightly. Each issue covers a major campaign of World War II—the only global conflict ever fought. A magazine, a large colour campaign map and a newspaper of the day tell the true story of how each carefully selected campaign developed and eventually climaxed. A full set of magazines builds up into a history of the war, the maps give an instant view of what happened and the newspapers report what it was like on the day. Now, fifty years on, this collection gives the complete picture of what it was like to live and fight through these years.

### INDEXES

The magazines file in four binders, each containing thirteen parts. The last issue in each volume contains a fully cross-referenced index. The final part will include a free 16-page index to the entire series.

### SERIES CONSULTANTS

Images of War is produced under the guidance of military historian, Dr John Pimlott, Deputy Head of War Studies, Royal Military Academy, Sandhurst, Camberley, and with the co-operation and assistance of the Imperial War Museum, London. Original newspaper supplied by John Frost Newspapers.

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Images of War consists of four strands which appear in every issue:

#### Background

The events leading up to the battle featured in the issue.

#### Campaign

Action taken from a major offensive. The strategy and characters which shaped history.

#### Eyewitness

First hand accounts of how it felt to be involved directly in the battle.

#### Home Front

The life of a country at war—the humour and privations which constituted the battle at home.

#### Front cover

Main picture: Ullstein Bilderdienst  
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and at  
HMS Belfast on the Thames  
Cabinet War Rooms in Whitehall  
Duxford Airfield near Cambridge

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# IMAGES

1939 OF 1945

# WAR

THE REAL STORY OF WORLD WAR II

RAF NIGHT BOMBING—July-August 1943  
ISSUE 21 Volume 2

In the summer of 1943, Lancasters are reaching the squadrons of Bomber Command in large numbers and the RAF is anxious to prove its capabilities.

## BACKGROUND

### THROUGH MIST AND DARKNESS

RAF Bomber Command sets out to bomb Germany every night the weather is suitable. But the skills and equipment are not yet up to the job and night fighters take a heavy toll.

## CAMPAIGN

### REAPING THE WHIRLWIND

The citizens of Hamburg take little notice of the air raid warnings because the RAF has not troubled their city so far. But now, 800 bombers are about to change that.

## EYEWITNESS

### FEAR IN THE DARK

Aircrew fly through the darkness, steering towards the flak surrounding their target while in the darkness below, ordinary Germans wonder if they will survive the night.

## HOME FRONT

### DOWN THE LINE

One of the best ways for the citizens of Occupied Europe to resist the Germans is to assist the return of shot-down Allied air crew to active service.

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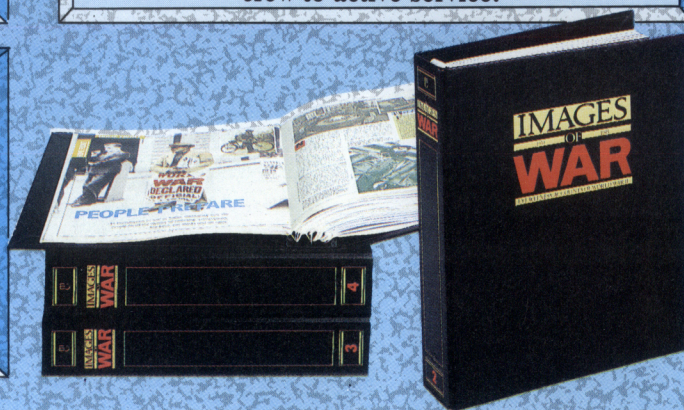
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# THROUGH MIST AND DARKNESS



Süddeutscher Verlag, inset: RAF Museum, Hendon

*The British bomber offensive opened with high hopes, soon to be disappointed. Forced to bomb at night, the RAF struggled to become an effective strategic weapon.*

- ▲ A German searchlight crew watch as their powerful beam lights up the night sky, searching out the British bombers.
- ▲ Inset: The official crest of Bomber Command, authorised in May 1947.

**D**uring the First World War, German and British heavy bombers brought a new dimension to warfare by attacking each other's territory, far from the battlefield. When, in April 1918, the British Secretary of State for Air called for 'a persistent and systematic offensive by air on German morale and on limitation of industrial effort', he was outlining the theory of strategic bombing which emerged from the Great War.

In the inter-war years, 'imperial policing' of places such as on India's North West Frontier entailed attacks by RAF bombers on badly-equipped irregular troops and flimsy village buildings. Their apparent success in this particular role confirmed the belief that bombing would be decisive in any future war. Hence, in 1928, the Chief of the Air Staff argued: 'It is not necessary for an air force, in order to defeat an enemy nation, to defeat its armed forces first.' Four years later, a British cabinet minister



uttered the immortal words: 'The bomber will always get through.' In anticipation of this the British planners worked on a figure of 70,000 fatalities in the first week after the Declaration of War.

In 1937 the Air Ministry drew up plans which called for accurate attacks on German industrial and transport targets so that the RAF could deliver a swift knock-out blow in the event of war.

By 1939, the RAF referred to 'our small but efficient bombing force' of 17 squadrons of twin-engined Whitleys, Wellingtons and Hampdens, which would 'leap across the protective barrier of his (the enemy's) armies and strike home at vital centres, so as to destroy his factories and oil refineries, and to disrupt his communications—in a word, to dislocate and bring to ruin his military economy.'

## HELIGOLAND BIGHT

When World War II began, there was at first a political reluctance to actually bomb German territory so British squadrons were sent by day against enemy naval units in the Heligoland Bight of the North Sea instead. German fighters tore huge gaps in the British formations and 12 out of 22 Wellingtons were lost on 18 December 1939, proving that 0.303 in. machine guns in turrets were no match for 20 mm cannon in a fast fighter. By early 1940 it was inescapable that if bombing raids on Germany were to continue, they could only do so under cover of darkness.

Meanwhile, the slow and difficult to fly Whitleys had been ranging freely across Germany dropping 'white bombs' (leaflets) with scant opposition. It was not until the night of 11/12 May 1940, after Germany had attacked France and the Low Countries, that a start was made on the strategic bombing of Germany when 37 aircraft attacked Mönchengladbach.

Nevertheless, the unopposed leaflet raids encouraged

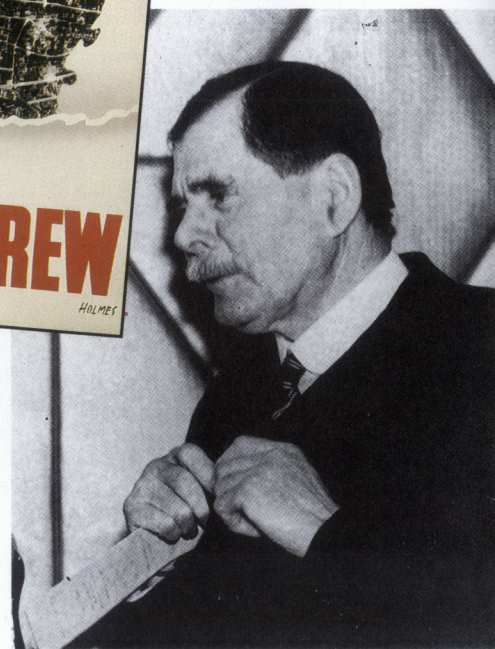


◀ British recruiting posters urged young men to volunteer for flying duties. More than 55,000 of those who did found death awaiting them in the skies.

Imperial War Museum; inset: Popperfoto

◀ The Lancaster's nose contained a turret with two .303 in machine guns and a bomb aiming position.

► Hugh, Lord Trenchard, was 'the father of the RAF' and a believer in strategic bombing.



Popperfoto

the belief that precision attacks could be carried out at night. So on 15/16 May, 99 'twin-engined bombers' flew to the Ruhr and claimed to have caused devastation. Suspicion that these and similar claims were false arose as early as December 1940, when photographic reconnaissance of Gelsenkirchen showed no damage despite several apparently accurate attacks. David Butt (a civil servant) produced a celebrated report in August 1941 which confirmed these doubts. Butt proved that only one-third of the crews attacking targets across the Channel were bombing within five miles of the aiming point. In the densely populated Ruhr, the main target of the strategic bombing campaign, that figure did not reach one in ten.

This was despite the fact that at first, the German defences were uncoordinated. But in autumn 1940 Major-General Joseph Kammhuber began to organise a belt of searchlights to illuminate bombers for the fighters.

This system was greatly improved when airborne radar became available for the fighters. By mid 1941, Kamm-



huber was using the coastal *Freya* radar sets with 100 miles (160 km) range for early warning, and two ground *Würzburg* radars to plot interceptions and guide the night fighter into a position where it could use its own airborne radar for the kill. This system was based on a series of overlapping defensive zones, but only one aircraft could be directed in each zone at a given time.

Nevertheless, by late 1941, special night-fighter squadrons of twin-engined aircraft were making inroads against the incoming bombers. An average of 506 bombers were available to Bomber Command during 1941, but on one single autumn night, 37 were lost. The War Cabinet decided to scale down the bomber offensive until the following spring.

Bomber Command had not evolved any ways to counteract the German defences. Aircraft still flew separately to their targets, as Flight Lieutenant Guy Gibson later recalled: 'We could choose our own routes; we could bomb at any height we liked'. This spread the raids over a long period of time, giving Kammhuber's zonal system a good chance of intercepting each aircraft.

Aware that individual interceptions took almost 10 minutes to complete within Kammhuber's box system, the RAF organised the 'bomber stream'. Squadrons were to fly together along a prescribed route in accordance with a strict schedule, which not only encouraged more concentrated bombing in the target area but passed a large number of aircraft through a few boxes.

### CHANNEL ESCAPE

Failure to prevent the German warships *Scharnhorst* and *Gneisenau* slipping through the English Channel in February 1942 gave Bomber Command's critics a further opportunity to query whether a worthwhile assault on German industrial targets could ever be carried out. The advocates of strategic bombing countered this by saying that four-engined bombers finally emerging from the factories at this time would tilt the balance to the attackers.

On 22 February 1942, Air Marshal Arthur Harris became Air Officer Commanding-in-Chief (AOC-in-C) Bomber Command, just as the new Gee navigational aid and four-engined Short Stirling were reaching the

▼ An 88 mm Flak gun, manned by the Luftwaffe, protects the approaches to the Reich.

► RAF apprentices learn how to piece together a photo-reconnaissance picture of a large area for use in target identification and damage assessment. Inset: A German searchlight crew.

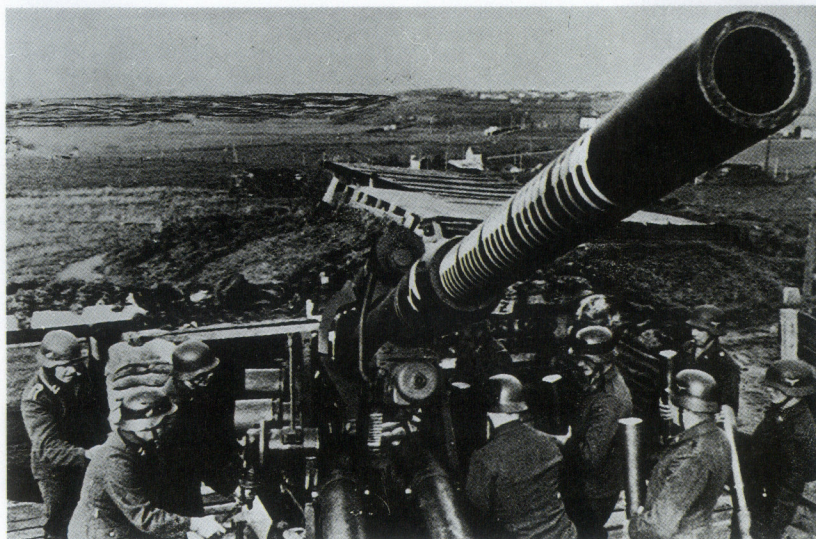


Popperfoto; Inset: Süddeutscher Verlag

### BATTLE DIARY

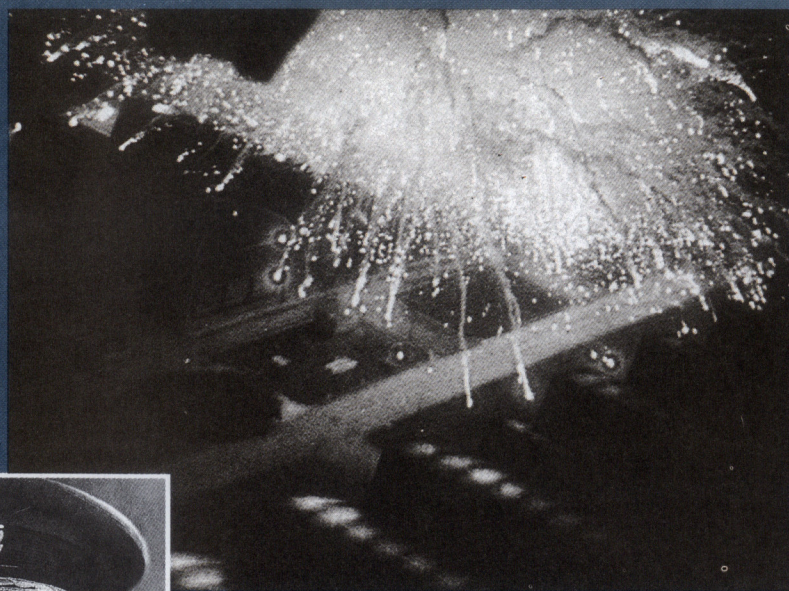
#### OPERATION GOMORRAH

MARCH 1941	DECEMBER
10/ Operational debut of the Halifax	20/ First operational use of Obbe over Lutterade
AUGUST	JANUARY 1943
11/ First operational use of Gee during raid on Mönchengladbach	30/ First use of H2S
FEBRUARY 1942	MARCH
22 Air Ministry issues area bombing directive	5/6 Battle of the Ruhr begins
MARCH	JULY
10/ Operational debut of Lancaster	9/ Battle of the Ruhr ends
28/ Incendiary attack on Lübeck	24/ Operation Gomorrah begin with first use of 'Window'
MAY	27/ Firestorm raid on Hamburg
30/ Thousand bomber raid on Cologne	29/ Third Gomorrah raid on Hamburg
AUGUST	AUGUST
11 Pathfinder force established	2/3 Fourth and final raid of Operation Gomorrah on Hamburg



Ullstein Bilderdienst





Imperial War Museum

## PATHFINDERS

The concept of a Pathfinder force to lead the way for the bombers was opposed by Sir Arthur 'Bomber' Harris because the expert pilots and navigators it would involve were exactly the men that he needed to lead the ordinary squadrons. But once ordered to organise such a unit, Harris appointed Donald Bennett, an Australian Wing Commander, to lead it. Bennett had undertaken many long distance flights during the 30s, and had served in flying boats commanded by Harris, so he was a known quantity. The Pathfinders' Mosquitoes and Lancasters were packed with the latest navigational and bomb aiming equipment, saving the main force crews the problem of target location.

◀ Air Vice-Marshal Donald Bennett (inset) was a natural choice to lead the Pathfinder Force. Its job was to position marker bombs (left) accurately on the target.



Popperfoto

▼ German night-fighter crews gather for a briefing in July, 1942. Assisted by airborne and ground radar, they were highly effective against the slower bombers, though the balance was later to tilt.

squadrons. Harris had a clear directive, issued on 14 February 1942, which underlined the commitment to area bombing as an alternative to precision attacks. The Air Staff laid down that 'the primary object' was to break 'the morale of the enemy civilian population and, in particular, of the industrial workers... The aiming points are to be the built-up areas not, for instance, the dockyards or aircraft factories.' Bomber Command then set out to vindicate the strategic bombing campaign in which Harris fervently believed.

After three inconclusive raids on Essen, Harris launched 234 bombers against Lübeck on 28/29 March 1942. Carrying Gee, leading aircraft used flares and incendiaries to illuminate the medieval town, constructed largely of wood. Over 200 acres and 2,000 houses were devastated and Winston Churchill enthused: 'Our new method of finding targets is yielding most remarkable results.' Located on the coast and on a moonlit night, Lübeck was easy to locate; moreover, its defences were poor. So this success only served to create a fresh climate of false optimism.

Churchill's scientific adviser estimated that similar attacks on 58 large German towns would break German morale. Cautious Air Ministry officers were aware,

however, that target identification and marking, even allowing for the improved aids, were still haphazard. So creation of a Pathfinder Force, devoted to the finding and marking of targets, was suggested, but Bomber Command would resist this idea strongly until August.

In the meantime, Harris employed more and more aircraft to prove the worth of night bombing. On 30/31 May, 1,047 bombers attacked Cologne in Operation Millenium. In 90 minutes, its centre was reduced to 'rubble and ruins': 469 people were killed, 45,000 made homeless, over 3,000 houses and 36 factories destroyed. Only 41 bombers failed to return.



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Ullstein Bilderdienst





# War Stories

**A**t the end of 1940, Ribbentrop, the German Foreign Minister, was meeting with a Russian diplomat in Berlin when a few British aircraft dropped some bombs on the city. As they descended the steps of the magnificent air-raid shelter, Ribbentrop turned to his companion and remarked, 'Of course, the English are finished!' Evidently unconvinced, the Russian glanced up to the sky and quietly asked, 'If the English are finished, why are we coming down here, and who is that dropping bombs on us?' A good question!



In July, photographic evidence revealed that, instead of hitting Wilhelmshaven, bombs from one operation 'had been dropped all over north-western Germany'. In 'Happy Valley' (RAF slang for the well-defended Ruhr), industrial haze added to the problem of target location. Furthermore, bomber losses were increasing.

More worrying still, the four-engined Stirling was already unpopular with crews because it was slow, hard-to-handle in the air and could not reach high altitude. It was not until the Lancaster with 4 Merlin engines and huge wing area arrived in March 1942 that the RAF had a truly satisfactory strategic bomber.



Ullstein Bilderdienst



The eventual formation of the Pathfinders in August 1942 brought some improvement, and the introduction of the Mark XIV bomb sight helped as well. So did even better electronic aids, such as Oboe and H2S. Carried in the aircraft, H2S sets produced a radar image of the ground and were especially valuable in distinguishing land from water. This improved target identification, while Oboe increased blind bombing accuracy.

During the Battle of the Ruhr, which lasted from March to July 1943, Düsseldorf, Dortmund, Bochum and Duisburg suffered, and the attacks also spread far into Germany. In all, 24,355 sorties were flown in 43 main attacks. 1,038 bombers were lost, excluding 2,216 damaged or lost after crossing the English coast. Still a daunting rate of loss.

To counter this American day bombers and Bomber Command night bombers were preparing to combine against selected targets. Hamburg was about to discover the effectiveness of this and, as the Battle of the Ruhr drew to a close, Operation Gomorrah was being planned.

▲ A hospital burns in Berlin after the first raid on that city in September 1940. Bombing at that stage of the war was rarely effective.

◀◀ German anti-aircraft guns light up the sky during an RAF raid in 1941. The main effect of the flak barrage was to intimidate pilots rather than to destroy large numbers of aircraft.

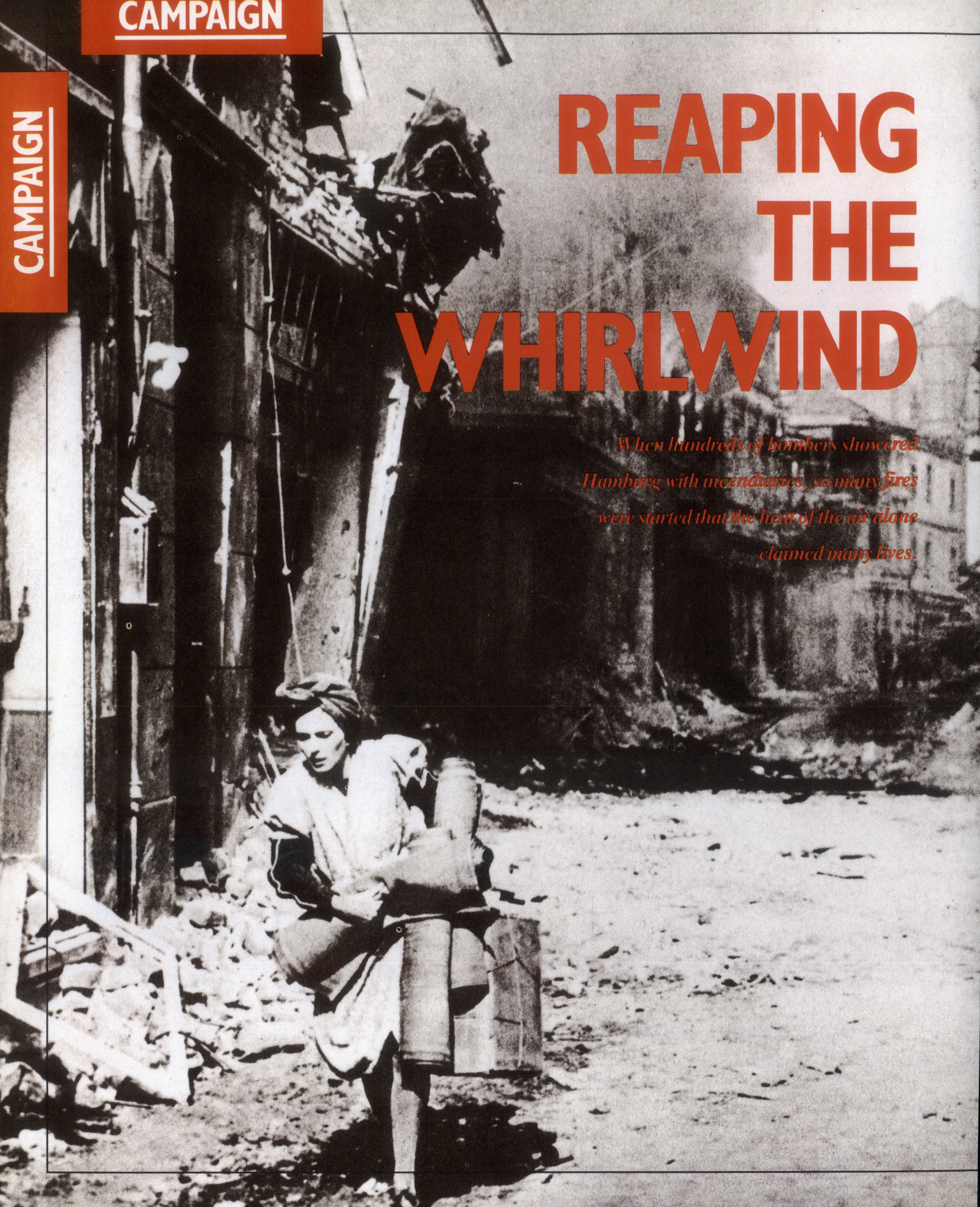


CAMPAIGN

CAMPAIGN

# REAPING THE WHIRLWIND

*When hundreds of bombers showered  
Hamburg with incendiaries, so many fires  
were started that the heat of the air alone  
claimed many lives.*





**G**ermany's second largest city was Hamburg, with a population of 1½ millions, lying 55 miles from the mouth of the Elbe river. Shipyards, docks, oil refineries and factories lined the banks as it wound towards the North Sea through marshes criss-crossed with canals. So although it was beyond Oboe range, the shape of the city showed up well on the RAF's H2S radar sets.

Hamburg's 23 residential districts sprawled east and west of the Alster Lake and north of the docks lining the river Elbe. Its defences were formidable: 54 flak batteries, 24 searchlights plus three smoke-generating units and even decoy fires provided strong protection. Many houses and apartment buildings had cellars and, elsewhere, there were public shelters with individual lighting and ventilating systems. Fire precautions were also comprehensive: auxiliary pumps and fire watchers in all the main buildings, over 300 fire engines, and several fire-fighting ships in the harbour. Some 20,000 men were on guard. By June 1943, the port had survived 137 raids without serious damage.

### TOTAL DESTRUCTION

RAF Bomber Command believed that 'the total destruction of this city would achieve immeasurable results in reducing the industrial capacity of the enemy's war machine. This, together with the effect on German morale, which would be felt throughout the country, would play a very important part in shortening and winning the war'—orthodox bombing theory applied to a single important town. They christened the attack on Hamburg 'Operation Gomorrah', after the city destroyed by flame in the Old Testament.

Thus on the evening of Saturday 24 July 1943, in a cloudless sky marred only by slight smoke haze over Hamburg after a scorching week, 791 British bombers approached the city from across the North Sea. The general alert sounded at 00.33 on 25 July. Some people began to make their way towards shelters. But many, lulled into a false sense of security by the failure of the previous raids, lingered to watch the searchlights as they swept the sky.

At 00.51 a few aircraft could be heard circling overhead. Then three minutes before 1 am 'a bright white light from flares' began to illuminate the city, followed by 'Christmas trees' as Germans dubbed the Pathfinder target indicators. Unknown to the watchers, though, the weaving



Popperfoto

searchlights were blind and the night fighters without guidance. For the first time, the bombers were using 'Window' to confuse the defences; and it was working. Getting no direction from the ground controllers, whose radar was neutralised by the metal strips spiralling slowly through the air, one pilot summarised the night fighters' despair: 'What's happening down there? I'm dizzy chasing my tail.' Later, Kammhuber admitted that 'the whole defence was blinded at one strike.'

After the flares, red markers started to fall, backed up by greens.

Though the aiming point was midway between the south end of the Alster Lake and the Elbe, the red markers dropped in a three-mile radius round it and the green markers confirmed the error. Although the searchlight commanders also reported their radars 'confused' and 'chaotic', 50,000 rounds of anti-aircraft ammunition were fired skywards—mainly in the hope of chance hits and to keep up civilian morale.

Because of inaccurate target marking, the 8,000 lb, 4,000 lb and 1,000 lb high-explosive bombs plus innu-

▲ Air Marshal Sir Arthur Harris (second from right, standing) inspects a reconnaissance picture at his HQ among the beech woods of High Wycombe, Bucks. This is February, 1944 but Harris seldom left High Wycombe unless it was to see his political masters at nearby Chequers.

◀ Clutching a few salvaged possessions, a woman flees from the buildings collapsing into the street behind her in Hamburg on 25 July 1943. Over 45,000 died within five days—far more than in all the raids on London.

▶ How the sides compared, 24/25 July 1943.

## BATTLE LINE-UP

73 Wellingtons  
125 Stirlings  
246 Halifaxes  
347 Lancasters  
Small number of Mosquitoes

60 Single-engined Bf-109 and Focke Wulf FW-190 'Wild Boars'  
90 twin-engined Bf-110 and Junkers Ju-88 radar-equipped night-fighters  
54 flak batteries  
24 searchlights



merable incendiaries were spread over a wide area. 'Creep back'—the tendency of anxious crews to drop their bombs before reaching the target—meant that some crews dropped their bombs up to seven miles before the target markers. Fire, however, quickly took hold of the old Altona, Hoheluft and Eimsbüttel districts west of the Alster. Soon St Pauli and the waterfront were alight, as houses began to collapse, blocking streets.

Within 15 minutes of the raid starting, the telephones stopped working and civil defence organisers were reduced to sending out motor cyclists to assess the damage. By 2.30 am water supplies began to falter, as the mains and emergency static tanks were breached. Fire appliances could not even reach the river through the blocked streets. As rescue teams struggled to tackle fires and free those trapped, 'raging fires completely gutted whole quarters of the town.'

### STRIPS OF FOIL

More fire brigades were summoned from outside the city, and a major disaster was declared at 4.10 am. Churches, cinemas, the Town Hall, factories and public buildings had also suffered. Trees lining the Isebeck canal were burning, and even at 9 am, several blazes were still burning unattended. Survivors bent to pick up the strips of metal foil which had negated the defences and took up the rumour that they were a

Popperfoto



### FOILING THE ENEMY

By 1942, the Germans had developed a system of defensive boxes based upon use of radar to guide night fighters towards attacking bombers. As one *Würzburg* set within a box tracked an individual bomber, another guided a fighter towards it until it was close enough for the airborne *Lichtenstein* radar to give a fix.

Aided by capture of a *Würzburg* set during a commando raid on Bruneval in February 1942, British scientists devised Window. This was a radar countermeasure consisting of strips of aluminium ('tin') foil designed to reflect radar signals back to the radar

receivers.

However it was feared that the Germans were working on a similar device, so if Bomber Command used Window, the Luftwaffe might respond by blinding British radar.

The Chiefs of Staff had cautioned against use of Window before the Allied invasion of Italy and Morrison, the Home Secretary, still worried about the possible German retaliatory action against British cities. On the other hand, despite attempts to brush off trials as failures, existence of Window was being openly discussed and a cartoon even appeared about it in the *Daily Mirror*. At length, on 15 July 1943, the cabinet authorised its use.

**A factory worker removes bundles of 'Window' from the machine used to slit the aluminium foil.**

Imperial War Museum







◀ Part of Hamburg hit by the RAF on 24/25 July 1943. Many will try to escape the fires by diving into canals.

▶ German poster urging citizens to protect themselves against air raids and pass the word mouth to mouth.

new German defensive device. But it was Bomber Command that Window served and it was hugely successful; only twelve planes had been lost.

'A big, greyish cloud' of ash and soot hung in the air over the smitten city, shielding the sun's rays until late in the morning. By mid-afternoon on 25 July, some semblance of order had begun to appear. Then at 4.34 in the afternoon, American daylight bombers arrived. It then dawned on the citizens of Hamburg

Bundesarchiv-Koblenz



Imperial War Museum

## War Stories

Natural rivalry between the Bomber Barons and the Fighter Glamour Boys was made worse by the fact that, due to their night and day operations, they saw nothing of each other in action. One fateful night, both groups visited the same pub and a minor tiff became a bloodless feud. Hampden pilots bombarded the Fighters' base with old propaganda leaflets and lavatory paper. In response, the Fighters flew to the Bombers' base, kidnapped the Wing Commander and made him pick up all the litter around the place!



that their ordeal was not yet over. More than 200 US Eighth Army Air Force bombers hit Hamburg in daylight during 25 and 26 July, with a few RAF Mosquitoes making nuisance raids at night to prevent the defences resting and regrouping.

Then, on the night of 27/28 July, the British bombers came back in force. 787 Lancasters, Stirlings, Halifaxes and Wellingtons took a different route to Hamburg, passing across the neck of the Danish peninsula before turning to attack from the north-east. Poor marking had produced the inaccurate results of 25 July, so 25 Pathfinder crews were detailed to drop yellow markers using H2S rather than visual identification. Green markers would back

▲ Incendiary bombs being loaded up in 1943. Concentrated incendiary attacks could swamp the fire-fighters.

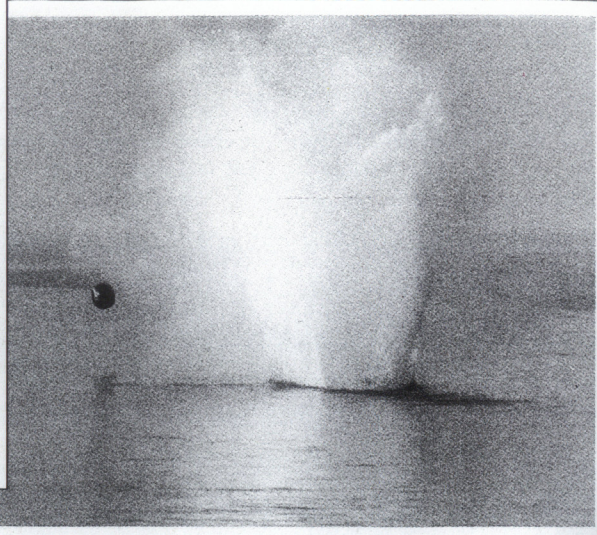
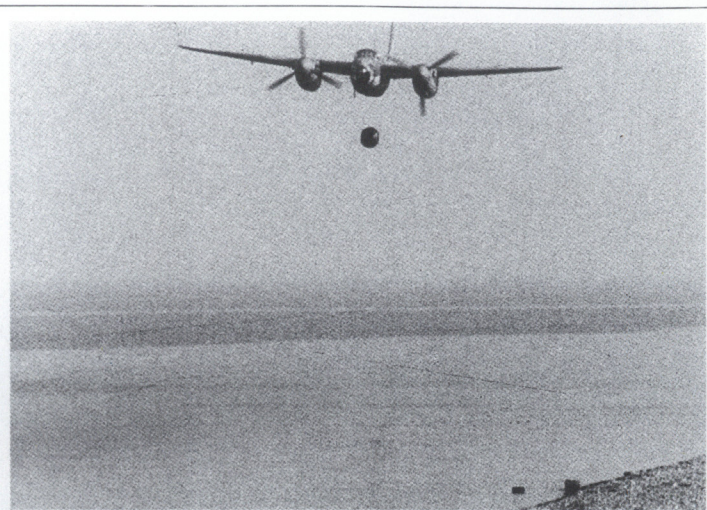
these up and Window was to be used again. The intention was for the main force to complete its bombing in 43 minutes.

At 00.55, the first yellow markers fell and, in spite of a few strays, the bulk dropped in the Billewader district some three miles south-east of the Alster Lake. The subsequent concentration of markers and bombs meant that this second RAF raid mainly affected the eastern part of Hamburg with very little 'creep back'. Nine districts east of the Alster and north of the Elbe were badly hit, the worst affected being Borgefelde,



▼ Squadron Leader Guy Gibson and his wife at their wedding. Gibson led the Dam Busters at the age of 25, while his pilots had an average age of 22. During the raid, Gibson orbited the dam, calling in each Lancaster in turn and correcting their aim as necessary.

Topham Picture Library



Topham Picture Library

ratures reached 1,000° Celsius in the middle of the conflagration. By 2 am, as the last bombers departed leaving a 'sea of flame' in their wake, four square miles were alight in which some 16,000 buildings were ablaze. 2326 tons of bombs were dropped that night, and the firestorm raged until 9 am, its embers still warm days afterwards.

A survivor spoke of 'a great flame ... shooting straight toward us. A flame as high as the houses and nearly as wide as the whole street.' One later report referred to people being 'torn away ... by the force of the hurricane and whirled into the fire'. Another noted that 'trees three feet thick were broken off or uprooted, human beings were being thrown to the ground or flung alive into the flames by winds which exceeded 150 mph. The fortunate were those up to their necks in water.'

### COUNTERMEASURES

There was a slight bonus for the Germans during this raid. With expe-

rience of the first raid and another on Essen on 25/26 July, they took countermeasures against Window. Realising that the *Würzburg* and airborne *Lichtenstein* radars were badly affected, they made greater use of the long-range *Freya* sets and gave up trying to direct fighters towards individual interceptions. Instead, ground controllers gave a running commentary on the course and height of the bomber stream. High above the incoming aircraft, German fighters were free to attack targets of opportunity because the German flak was restricted to firing below 18,000 feet. The new tactics had little success that night and only 17 British bombers failed to return to their bases on 28 July.

The RAF returned to Hamburg on 29/30 July and 2/3 August, though with less effect. In the third raid on 29/30 July, Window was deployed but the German night fighters made over 100 interceptions as a result of

▼◀ Squadron Leader F P Hill (standing) briefs Halifax crews of No. 51 Squadron RAF before the raid on Nuremberg, 30 March 1944. Within hours, Hill and 34 other aircrew from 51 Squadron are dead.

▼ Air photos of Hamburg, taken after the Gomorrah raids, are used to assess the damage done by the bomber attacks. Careful assessment of photographic evidence is vital in judging the effectiveness of tactics.

Hammerbrook and Hamm. These were densely packed with small houses, narrow streets and few open spaces. Camera evidence suggests that 325 of the 722 attacking aircraft bombed within three miles of the aiming point.

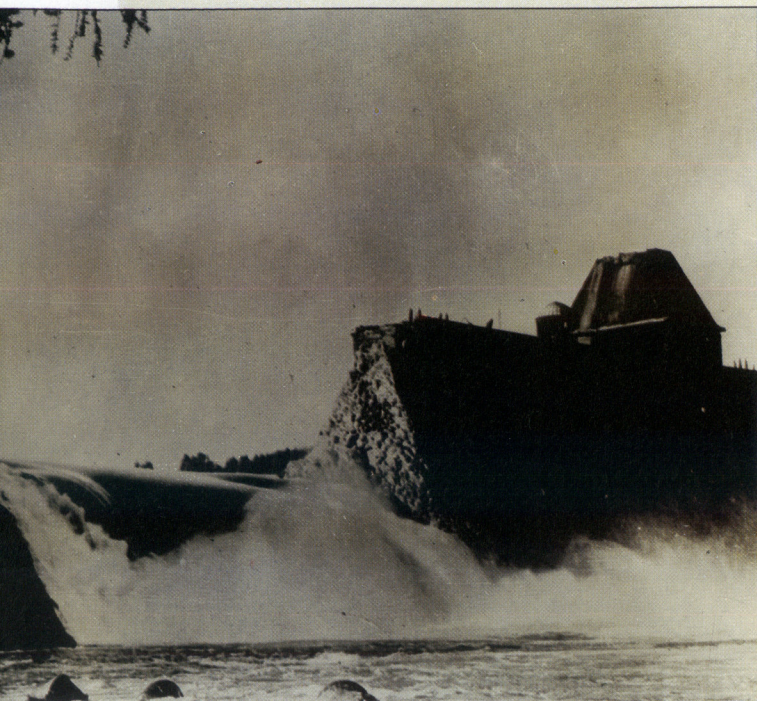
A major feature of this second phase of Operation Gomorrah was the 'firestorm'. Essentially, as a large fire burns, all the oxygen in the air gets used up. The hot gases rise and this draws in more air from outside the immediate area which causes the fire to burn more fiercely in the fresh oxygen. The air sucked into the blaze fans nearby small fires too, until they merge into one and the wind reaches tornado force.

This is just what the British planners hoped would happen on a grand scale at Hamburg. Estimated tempe-

Imperial War Museum







Topham Picture Library

## THE DAMBUSTERS RAID

Shortly after 9.30 pm (Double British Summer Time) on Sunday 16 May 1943, the first of nineteen Lancasters from 617 Squadron lifted slowly off the grass runway at RAF Scampton near Lincoln. Beneath it hung the strange silhouette of a 9,250 lb 'garden roller', designed by the civilian engineer Barnes Wallis.

The first five aircraft would attack the Sorpe Dam while Wg Cdr Guy Gibson led another nine to the Möhne. Destruction of both would 'paralyse the Ruhr industries' by emptying the reservoirs that supplied them. Once Gibson's wave had destroyed the

◀ Mosquitoes carry some versions of the 'bouncing bomb', which explodes against targets like the Möhne Dam.

Möhne, it would attack the Eder Dam to the south-east.

Shortly after midnight, a third wave of five aircraft took off bound for the Sorpe, Möhne and Eder Dams.

Gibson's wave of Lancasters tore a 76 x 22 metre gap in the Möhne, through which 116 million cubic metres of water escaped, and a 70 x 22 metre one in the Eder, where 154.4 million cubic metres drained away.

Spectacular photographs of devastation and flooding underlined the apparent success of the operation but the German factories quickly reorganised. More than anything the Dams raid was a propaganda success and a lift for British morale. Wg Cdr Gibson gained a well-merited VC.

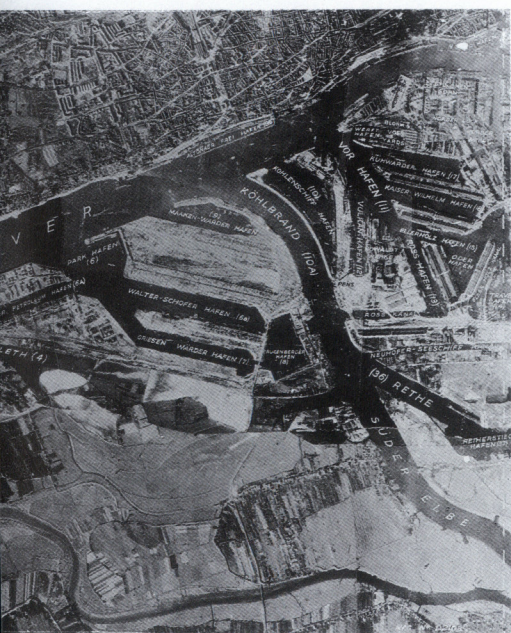
their tactical re-assessment. The final attack was disorganised by bad weather. In each of the last two raids, 30 bombers were lost. Nevertheless, 3,091 sorties were flown during the four night raids, with almost 10,000 tons of bombs (about half incendiary) dropped for the loss of 86 aircraft.

Hamburg was truly devastated: 30 per cent of its buildings were destroyed, 6,200 acres laid waste. 44,600 civilians and 800 servicemen died. On 29 July, all non-essential civilians were encouraged to leave: reputedly nearly one million did so. Small wonder, perhaps, that the city police chief declared; 'the damage

was gigantic' and, in retrospect, German historians have described Operation Gomorrah as *Die Katastrophe*. As Harris himself remarked, the whole operation wrought 'unimaginable destruction'; and, in Germany, officially 'the future looked grim'.

One important consequence of the success of Window was a complete reorganisation of the German fighter defences. The zonal system had outlived its usefulness. Building on

▶ The eagle on the crest of the German Night Fighter Division plunges down to seize Great Britain in its talons. Starting with purely stop gap aircraft, the night fighter units will eventually use excellent radar-equipped types like the Do-215B-5.



Popperfoto



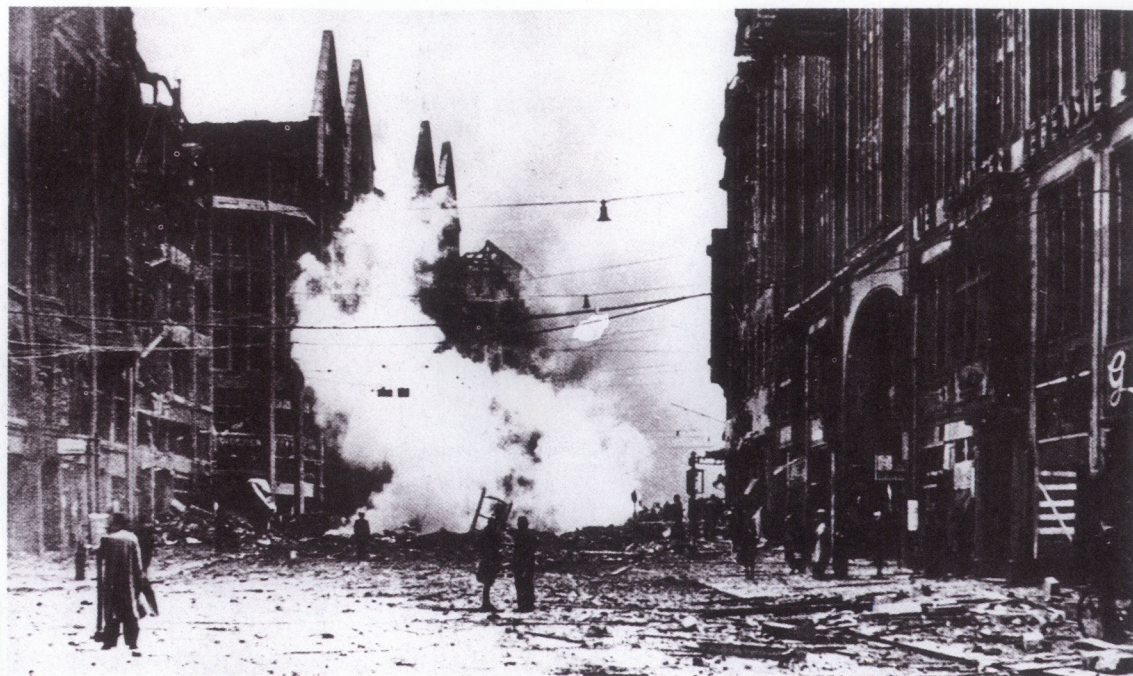
the tentative experience over Hamburg, 'Wild Boar' tactics were introduced in which fighters roamed above the bombers and the height-restricted flak in the target area, looking for targets of opportunity. Meanwhile 'Tame Boar' aircraft infiltrated the bomber stream to and from the target. The Germans also learnt to detect H2S emissions from Pathfinders in the van of any attack; and British efforts to jam radio transmissions to and from the fighters could be frustrated by frequent changes of wavelength.

Area attacks continued throughout the summer and autumn of 1943, though on 17/18 August the RAF carried out a successful precision night raid on the Peenemünde rocket-research site. Group Captain J H Searby acted as Master Bomber



directing the attack by radio, just as Wing Commander Gibson had done in the Dambusters raid. Extensive and crucial damage to the secret installations at Peenemünde was achieved, putting back the V2 programme for something like two months. That night, Mosquitoes mounted a decoy strike against Berlin to mislead the defending aircraft. By the time the final wave of bombers arrived, the ground controllers had realised that Peenemünde was the real target and 40 aircraft were shot down, 32 damaged.

However, Harris only had area bombing tactics for the mass of routine operations. In November, he set out to destroy Berlin by this method. The C-in-C told Winston Churchill that, if the Americans joined in with



▲ Buildings fall following the Allied raids on Hamburg in July/August 1943.



Bomber Command, 'we can wreck Berlin from end to end. It might cost between 400-500 aircraft, it will cost Germany the war.' Although out of Gee and Oboe range, the lakes surrounding Berlin provided a good H2S image.

So, between 18 November 1943 and 24 March 1944, Bomber Command flew 16 major operations against the enemy capital. Over four square miles of built-up area were devastated, and Goebbels complained: 'Hell itself seems to have broken over us'. These operations, though, cost Bomber Command 492 aircraft.

The last of these costly actions was against Nuremberg on 30/31 March 1944. Of 795 bombers involved, 95 failed to return, 12 more were lost after reaching England and 59 damaged. The German night fighters had clearly gained the upper hand, converging on the bomber stream from a wide area of Germany. 246 fighter sorties were flown, and flaming wrecks marked the routes to and from the target. The Luftwaffe believed this was 'the biggest night air battle of the war'. With fewer than 1,000 bombers available per month, Harris's force simply could not continue to absorb such punishment.

Once again, the future of Bomber Command was in question; and this crisis was sharpened by demands to divert the heavy bombers away from

◀ The aftermath of a raid—bodies of the victims are set out in rows for identification. Those caught in a firestorm are simply reduced to ashes.



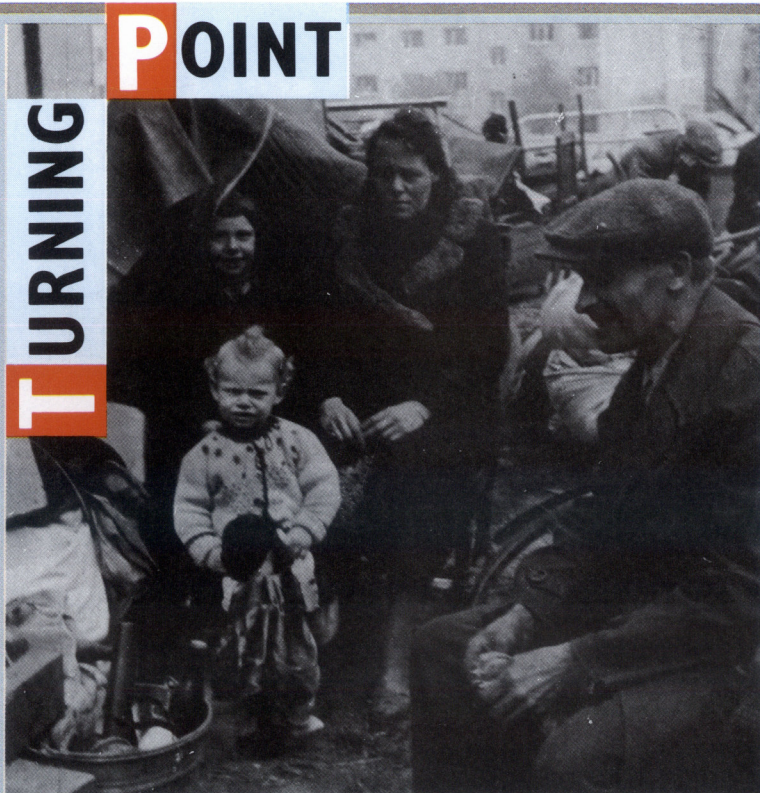
## HAMBURG 1943

Operation Gomorrah in late July/early August 1943 marked a dramatic development in the history of air warfare. For the first time, a 'firestorm' had been deliberately created and although the conditions were difficult to reproduce elsewhere, the devastation sent a shiver of apprehension through the Reich. Bombers had penetrated German airspace unopposed and dropped many tons of high explosives and incendiaries onto a defenceless city. The raid also boosted the efforts of Bomber Command, showing the sceptics that with an enormous investment of money and manpower, the bomber squadrons could contribute to the winning of the war.

► Homeless families, bombed out by the RAF, seek what shelter they can find amid a devastated Hamburg.

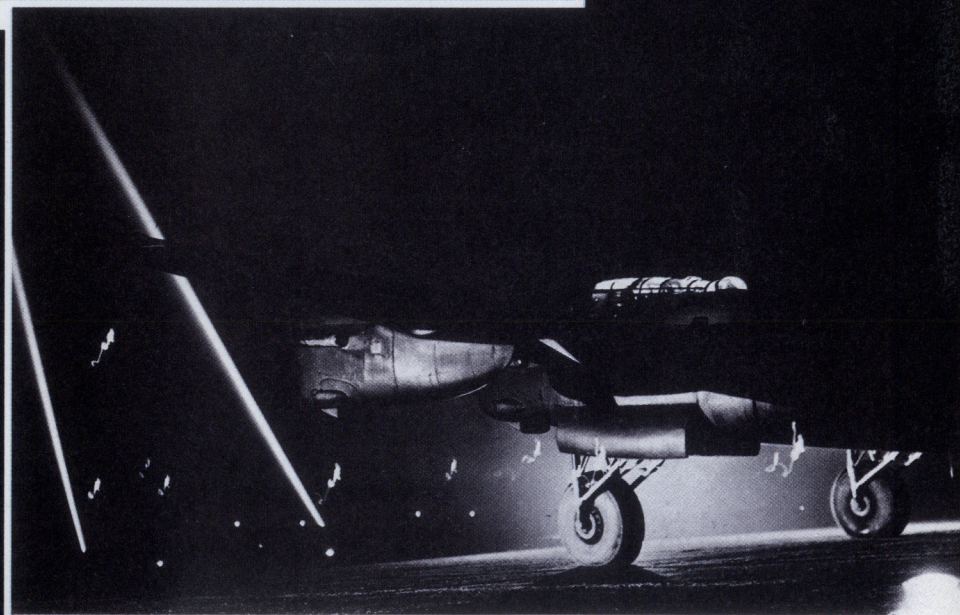
## TURNING

## POINT



▼ Taking off at night, a Lancaster is guided down the runway by the flare path. The Lancaster sits low on its undercarriage and is therefore fairly safe and easy to handle on the ground. But for the groundcrew, starting the engines is an awkward and hazardous job in the dark.

Ullstein Bilderdienst



strategic targets in Germany so they could help with the D-Day landings instead. Harris vehemently protested that pressure must be kept up on the enemy homeland, saying that medium bombers could deal with the needs of the invasion, but he was eventually overruled by Churchill against his own personal inclination. Although some bombing of Germany would continue, on 25 March (14 April officially) C-in-C Bomber Command temporarily lost control of his bombers to the Supreme Commander, General Dwight D Eisenhower.

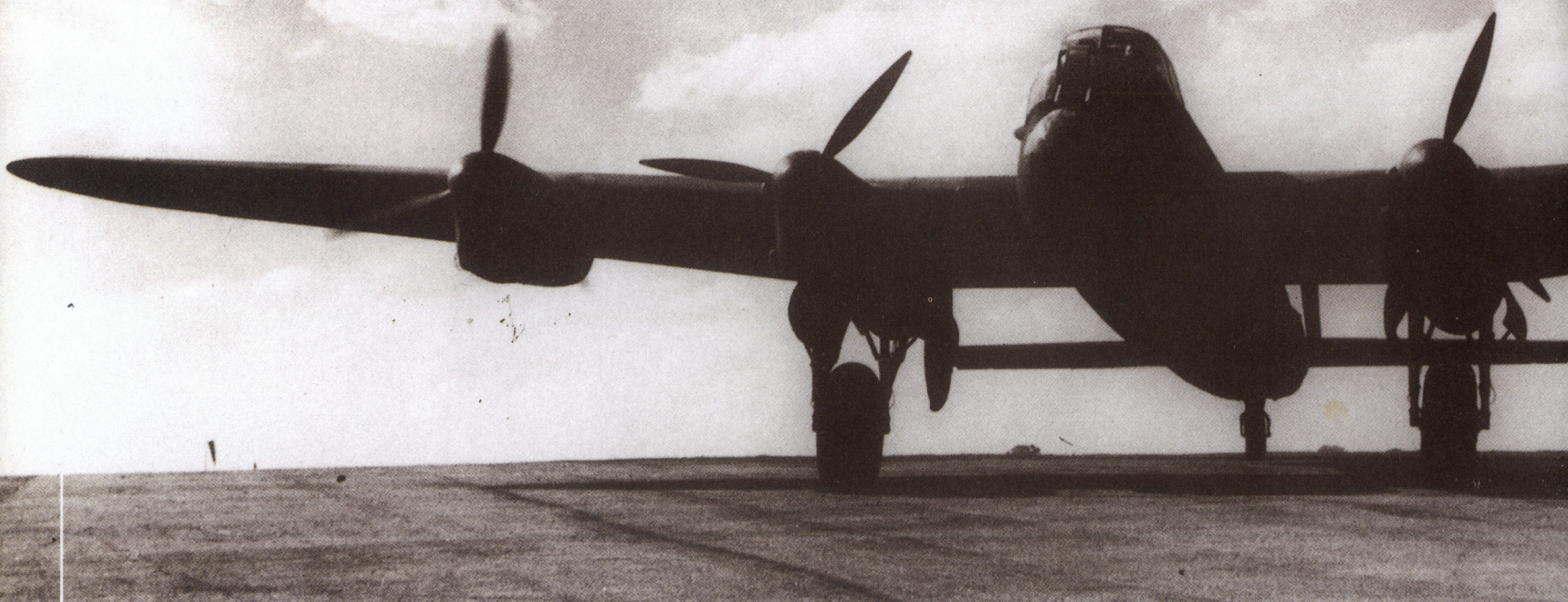
Imperial War Museum

◀ Those who wait back at the home station keep an anxious watch for the returning aircraft. IFF (Identification Friend or Foe) prevents bombers getting shot by British ack-ack as they cross the coast though the flare path is only switched on at the last moment.



# FEAR IN THE DARK

*For the men dealing it out and the civilians on the receiving end, the night bombing of the Reich called for endurance – and strong nerves.*



▼ Pathfinder pilot Frederick Saunders of 627 Squadron.



Fred Saunders

**T**he RAF's strategic night-bombing of the *Reich*, both for the men dealing it out and for the civilians on the receiving end, was a time never to be forgotten—a sustained spell of endurance where no-one could afford to his nerve. The stories speak for themselves.



**Flight Lieutenant Frederick Saunders, at the time a Flying Officer, was with 627 Pathfinder Squadron, flying Mosquitoes on vital missions to locate and mark targets for the bombers. He describes the form of operations.**

“When our briefing was over, the duty aircrews would know their specific role, who was to wind-find and who was to mark, and so on, and what the target was to be.

Later in the morning, the duty aircrews would assemble in the operations room, and there learn of the specific routes we were to take, code call signs, radio frequencies and timing of the events that comprised the operation.

The route out for us would be different from the main force and the pattern would also be different. For instance, neither we nor the main force would fly the direct route to the target. A number of ‘dog legs’ would be flown to keep the enemy guessing.

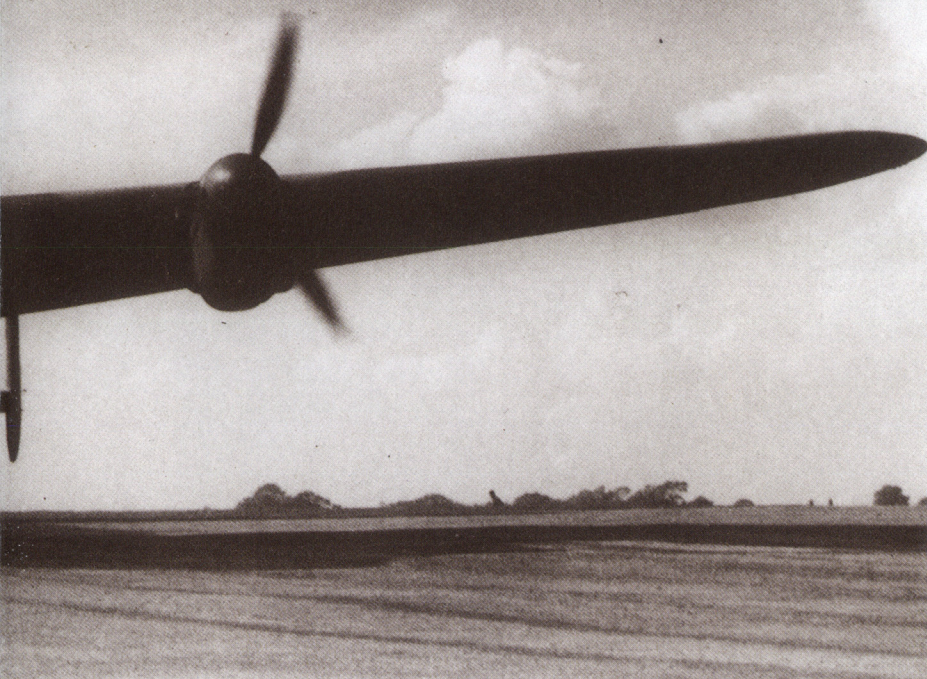
Of particular interest would be our

final run-in route at low level, on which would be marked various prominent land marks, like a particular chimney stack, stretch of water, railway line, church tower etc. More often than not, there would be blown-up photographs of these taken from reconnaissance aircraft at the heights we would also be flying at.

We would not be able to make notes of these, but they had to be committed to memory, and you could visit the ops room any number of times from now until the final briefing time to refresh your memory.

This would take up to about midday, and then it was just a question of lunch and await the time





Left and below: Popperfoto

on egg and chips, and I truly believe, somewhere in our battle honours, there should be a reference to the chicken and the egg.

Very often we would witness the forming up and departure of anything up to 800 heavy bombers in the Lincolnshire skies.

Then we would take off and fly our devious routes, overtake the main bombers and reach the target 12 minutes before the first bomber was due to arrive.

Simultaneous with our low-level arrival in our Mossies, would be a number of high-flying Lancs and/or Halifaxes (Halibags) also of the PFF (Pathfinder Force) Group. Their purpose was to release 'candles' as they were called. These were high-powered flares, descending on parachutes, which burned for about five or six minutes. The purpose of this was to illuminate the countryside and to keep it illuminated until we, the low-fliers, could sight and properly mark the target.

This part of the operation would be controlled by the Master Bomber, also in a Mossie, watching progress. When he was satisfied with the marking, he would call both us and the high-flying Lancs/Bags off away home. **”**

► A bombing map used by Frederick Saunders. Detail is remarkably scant—fine particulars were dealt with in close briefing sessions before each mission.



Fred Saunders

of the main and final briefing some time late in the afternoon or evening.

At the final briefing, all the latest information would be given, like where to expect opposition, and in what form, and so on. Times of take-offs, what petrol load, what colours of TIs (Target Indicators) and dozens of other important details.

When the final briefing was over, the next main event would be the 'Op supper'. For some aircrews it would be their last supper. The op supper never varied—it was always egg and chips. The medics said it was a substantial enough meal for a tensed up stomach to absorb, yet not too substantial that a fluttering stomach would reject it.

Bomber Command fought its war

▲ The Avro Lancaster—Bomber Command's powerful weapon in the strategic bombing of German cities and targets. Its reliability and easy handling made the Lanc a favourite with RAF pilots.

► A flight of Mosquitoes prepares to fly. Although mainly used for target marking, they also undertook light bombing work.



▲ The insignia of No. 627 Squadron, which was equipped with de Havilland Mosquito B.Mk IVs. Apart from Pathfinder duties, they flew as part of No. 8 Group's light bomber force on night operations.





▲ Pilot Officer Tony Bird, third from left, back row, with his bomber crew and their Lancaster, taken before their losses over Hanover.



*Pilot Officer Tony Bird of 61 Squadron and his crew were on their sixth mission together, bombing Hanover, when their Lancaster was attacked by German fighters. The action which followed earned Bird an immediate DFC.*

“ Shortly before arriving over the target we were attacked by two Messerschmitt 109 single-engine fighters, one after the other. I took violent evasive action and our gunners fired repeatedly.

The third fighter to attack was a Focke Wulf 190. Our aircraft was almost impossible to keep straight due to a large area of the tailplane and rudder having been shot away and the port outer engine was on fire.

A cannon shell from the Focke Wulf exploded in front of the fuselage and I was knocked out by the explosion in such a confined space, although saved from serious injury by the armour-plated steel back to the pilot's seat.

I evidently slumped forward over the control column, causing our aircraft to go into a steep dive, and at much the same time, a further cannon shell seriously wounded the mid-upper gunner in the chest.

The navigator quickly assessed the situation, seeing the engine on fire and the plane diving down out of control. Assuming me to be dead, he gave the order over the intercom to bail out. The bomb-aimer in the nose of the aircraft quickly released his escape hatch and parachuted safely down, as did the navigator.

Seeing the mortally wounded mid-

upper gunner attempting to crawl from his gun turret to the side exit, Jim Kemish, our wireless operator, helped to clip on the gunner's chest-type parachute and pushed him out.

As he was poised to jump out also, I regained consciousness and started to pull the Lancaster out of the dive. With great coolness, Jim reconnected his intercom to enquire if he should still bail out. As I had given no such order, he received a rather emphatic negative. 'Three of them have already jumped out', he replied defensively. My reply was unprintable.

Each engine had an emergency fire extinguisher operated from the pilot's position, and the flaming port outer engine was soon smothered in foam, which extinguished the fire, although that engine was now useless, and we had no hydraulics.

Witnessing our Lancaster diving down out of control and with an engine on fire, the three German fighter pilots who had attacked us were justified in claiming that our aircraft had been destroyed, especially when they saw the three crew members escape by parachute. They would have assumed that the remaining crew were either dead or too badly wounded to escape.

Fortunately for the remainder of us, the Germans decided to return to the main bomber stream above, rather than lose any more precious altitude by following us down any further. Had just one of them elected to ensure our destruction, he could hardly have failed to have done so, as we were, by this time, completely defenceless, with no hydraulics, our gun turrets immobilised, with no mid-upper gunner, the aircraft

almost impossible to control, and a bitter stream of ice cold air blowing in from the gaping hole in the nose where the bomb-aimer had jettisoned his escape hatch.

The target was now visible ahead, and as I checked the altimeter, I realised that we were down to 10,000 feet—half of our normal operational altitude. The main bomber force was ahead of us at 20,000 feet, their bombs exploding on target.

Although it would have been more prudent to abandon all thoughts of carrying on to the target, it seemed a shame to have got so far only to fail at the last moment, and we had to dispose of our bomb load in any event.

By the time we reached the target some five minutes later, limping along on three engines at 110 mph, ours was the only bomber still in the area, and despite our problems, we

► Main picture: on an extended-exposure photograph taken from below, a bombing Lancaster is suddenly silhouetted against the night sky by bursting marker flares, as tracer trails streak up on the right side. For a pilot the effect is one of utter confusion.



were amused to see the flak shells bursting harmlessly at 20,000 feet, way above us. As we had no bomb-aimer, we jettisoned our bombs immediately over the target area, which was well illuminated by the incendiary bombs dropped by the main bomber force minutes before.

The chances of us getting back to England without a navigator and with the aircraft almost impossible to keep straight seemed remote, especially as we were already lost. I had turned west off the target towards home so that at least we

front of the starboard rubber pedal so as to relieve me from the need to maintain continuous foot pressure on it, and for the first time I was able to stretch my legs and relax slightly.

We were now somewhere over the North Sea—but just where? Jim, our wireless operator, had for some time been taking radio bearings with his 'loop aerial' of transmissions from known stations in England, and by drawing on our chart the reciprocal of each bearing from the radio station, gave us a position line along which we were flying. Where the position lines crossed gave our approximate position. From this fix, Jim was able to give me an approximate heading to steer back.

As we crossed the English coast, we were momentarily fired on by our own anti-aircraft guns. We had forgotten to switch on our IFF, but almost immediately we switched it on, the firing ceased.

Ken began winding down the landing gear by hand as the hydraulic pump from the useless port outer engine was not working, and he then

were heading in roughly the right direction. It was impossible to turn to starboard, but the slightest slackening of pressure on the starboard pedal caused the Lancaster to swing violently to port.

'Ken' Kendrick, our enterprising flight engineer, found a metal bar, which he succeeded in jamming in

removed the metal bar which had been jamming the starboard rudder pedal. I found that by using both feet on the pedal I was able to exert sufficient foot pressure to keep the aircraft straight during the approach.

It was not until later that I learned that Ken had sustained a shrapnel wound to the back of his head when the cannon shell exploded, but he was saved from more serious injury by his leather helmet.

Harry Aspinall, our rear gunner, had been suffering from frost-bite on the return journey, but had remained cheerful, despite being in great pain, never once complaining.

Soon the runway of our aerodrome came in sight and the lights had never looked more beautiful. They had been kept on especially for our benefit, the main force having landed some time earlier.

As we entered the debriefing room, the Station Commanding Officer, who was probably anxious to get off to bed, enquired irritably to know why the remainder of our crew were not with us. He was rather a disciplinarian and took a poor view of any stragglers who kept him waiting.

'They jumped out over Hanover', I replied. I continued to walk over to the debriefing officer leaving the Group Captain momentarily at a loss for words.

Eventually he came over to me and asked, 'Did you mean that?' I assured him that I had not been joking, and although he said very little else at the time, next day he recommended me for the immediate award of the Distinguished Flying Cross, and my three remaining crew members the Distinguished Flying Medal."



▼ The night fighter emblem of the Luftwaffe's Nachtjagdgeschwader 4, the scourge of the RAF bomber squadrons over north west Germany.



German ack-ack gunners wait for searchlights to trap low flyers.







**Sergeant Pilot Rupert**  
(called 'Tiny' due to his  
considerable height)

*Cooling of No 9 Squadron  
was involved in operations in  
various campaigns, from bases  
in Britain and abroad. His  
impressions of the British bombing  
of Germany are poignant.*

▼ Sergeant Pilot  
Rupert Cooling at  
Honington in 1940.



▼ The insignia of  
No. 9 Squadron,  
with its bat emblem  
and motto, 'We fly  
through the night'.  
The squadron flew  
its night missions  
from Honington.



“ May 12, 1940 was the beginning of the bomber offensive, the first attack east of the Rhine—37 aircraft of Bomber Command struck at Mönchengladbach. Three were lost. Ironically, of the four people killed, one was an Englishwoman living in the town.

Wellingtons of 9 Squadron went to Bottrop on 15 May. The weather outbound was rough though the target was clear and, to our surprise, there was no opposition. Homeward bound was a different story. Electric storms rendered the wireless useless—St Elmo's Fire circled the spinning tips of the propellers in a garland of lilac blue flame, whilst an arc seemed to span between the gun barrels of the front turret. The compass needle swung from side to side as we stood or sat within the geodetic and fabric cocoon which was our immediate world—8,000 feet up in the dark, we were well and truly lost.

Who it was that suggested we might be back over England is irrelevant. We descended to some 3,000 feet and switched on the navigation lights. The blackness below was total. Tap out the aircraft's letter on the downward signal lamp—there was no response. Then suddenly a pool of light spread fanwise until the darkness soaked up the last grey glimmer. It was an airfield—but where? We touched down, rolled to a halt, then moved towards some dimly beckoning

All pictures: R Cooling



torches. The second pilot stood by with the signal pistol to set the Wellington afire, should we be in enemy territory. Happily it was Shoreham on the Sussex coast.

Three days later, we were one of six Wellingtons to attack Cologne and, with other crews, reported searchlights apparently flying above broken cloud. We never saw them

again. On August 25th, about 50 aircraft went for the first time to Berlin. Six Hampdens were lost. The only bombs to fall within the city limits destroyed a summer house and injured two people. These were puny efforts returning puny results.

Costs too were small—but costs then were. On 19 June a distress signal alerted 9 Squadron to the



▲ A pilot in his  
'office'—Rupert  
Cooling in the  
cockpit of his  
Wellington bomber.

◀ A Wellington  
Mark Ic of No. 9  
Squadron, who were  
the first to fly  
Vickers' brand new  
bomber.



plight of one of its aircraft. We took off to search the North Sea, almost to the coast of Holland. To and fro along the sides of a steadily expanding square we flew, peering at the relentless sage-green sea. A shout, a sighting, something on the waves. Elated, we flew towards it to find a barrel, a baulk of timber and a snarl of rope. We turned away, deflated, and resumed our search. The crew were never found. Each year, at the Runnymede Memorial, I look at the name of the navigator, whose room was next to mine, and remember that he was 20, and so was I. ”

 **Flying Officer Bill Ansell, an Australian, joined the RAF and was posted to a Lancaster squadron as an upper-turret gunner. It was on 19 February 1944 that he and his crew were briefed for their first bombing raid on a German target. As it turned out, even the best-planned operations can go wrong.**

“ Finally it was evening, and when we were all assembled in the briefing room, we were informed that instead of Berlin, as we had expected, tonight’s target was Leipzig. It was to be saturation bombing and, in order that the target would be just as big a surprise to the enemy as it had been to us, we would set off on the usual route to Berlin and at the last minute, alter course

for Leipzig. This was to be an 800-bomber raid in which Halifaxes and Stirlings would also be taking part, and we would all be going in at different ETAs (estimated times of arrival) and heights.

At the aircraft we stowed our parachutes, did our last-minute checks and were ready to move out. We finally taxied slowly out of our dispersal area and took our turn in the queue ready to take off.

At a signal from control, we were off and rolling—we lifted off.

‘Crack goes the whip, chaps’, said the skipper, then, ‘Undercarriage up!’

This had all the hallmarks of a copybook operation with surprise, maximum impact and minimum losses, but for one small detail—as we crossed the German coast, our navigator realised to his consternation that we were way ahead of schedule. He discovered that the forecast of a 50-knot headwind should have been a tailwind. We had to throttle back to a minimum safe cruising speed and go through endless circling and dog-legging in order to waste some time.

Finally, after this frustrating delay, we arrived over the target and at the right height.

The bomb-aimer, having dropped all his radar-confusing strips of Window, was getting ready to do his stuff. The target was already well alight, and at our level the flak was ‘well concentrated’—this is just a fancy term for bloody awful.

It was finally time, and bomb doors

Coming to this Theatre shortly...

# “TARGET for TO-NIGHT”



The film that tells you about the Service which needs you.

## JOIN THE R.A.F.

## OR THE W.A.A.F.

Imperial War Museum

were open, master switches on and bombs fused.

We were now completely vulnerable—a sitting duck. I could hear Frank saying, ‘Left, left, hold her steady’, then ‘Bombs gone. Bomb doors closed.’

The aircraft did its usual bounce upward as the bombs dropped away, and we all heaved a sigh of relief as we turned for home. ”

▲ A propaganda poster promotes a glamorous image of the RAF—but understates the desperate shortage of fully trained pilots available for bombing missions.



## PILOTS’ JARGON

With the fast-developing range of the RAF, there grew up a new vocabulary to express this special life-style—and if the RAF was seen both by themselves and others as an elite force, their language only served to underline their exclusivity.

**Bang on!** Perfect  
**Binds me rigid** Bores me stiff  
**Drop a goolie** Make a mistake  
**Erk** Lowest RAF rank  
**Gone for a burton** Completely ruined  
**Gong** Medal  
**Got the chop** Dead

**Gremlin**  
**In a flap**  
**Jankers**  
**Kite**  
**LMF**  
**Office**  
**On a 252\***  
**On a 295\***  
**On a fizzer**

**Prang**  
**Prune**  
**Reece**  
**Tapes**  
**Wizard**

Mystery bug, causing faults  
 In a panic  
 Some form of punishment  
 Aircraft  
 Lack of moral fibre  
 Cockpit  
 See ‘On a fizzer’  
 On a leave pass  
 On a disciplinary hearing  
 A crash  
 Accident prone man  
 Reconnaissance  
 Stripes  
 Excellent

◀ Sergeant navigator Jock Gilmour of No. 9 Squadron lights up as he sits, impervious, on a store of bombs.

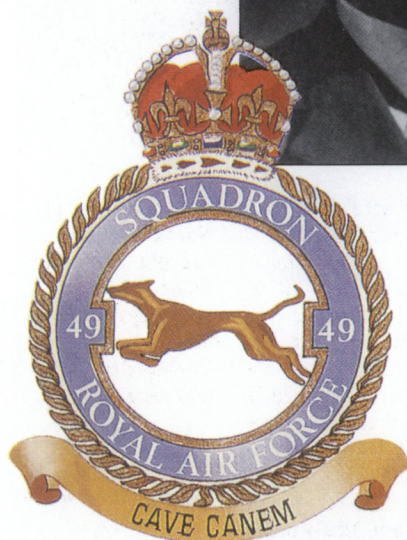
\* The numbers refer to the serial numbers of stationery forms which were in RAF use.



► Roderick Learoyd VC, of 49 Squadron. His 'gong' came as such a surprise to him, he thought it was a trick played by friends. The eventful mission was on 12 August 1940.



R Learoyd



◀ The insignia of No. 49 Squadron, with the motto, 'Beware of the dog'. A bomber squadron since its formation in 1916, 49 was based with No. 5 Group at Scampton until 1943.

► Halifax bombers prepare to take off. Bombers would set off in a stream to arrive on target at their allocated time and height.

▼ Bombing up. A 1,000 lb bomb is manhandled into the bomb bay of a Wellington.



*Flying Officer Roderick Learoyd of 49 Squadron was the first living Bomber Command VC of the war for a raid on the Dortmund-Ems Canal. Two aircraft preceding him were blown up, but he stayed on target then coaxed his badly damaged plane back, keeping airborne until daylight to land with no flaps or landing gear. His own memories are more modest.*

“ It was just routine really, as far as we were concerned at that time. We didn't like it very much. When we'd been on a trip we were always debriefed—sometimes it was about 2 o'clock in the morning. I remember sympathising with those people who were in France—we came back and after every debriefing we went and had a cup of coffee, or breakfast, and then into nice clean sheets to sleep until about 11 o'clock. We really had quite a comfortable war, apart from the actual flights themselves.

It was for the Dortmund-Ems Canal operation I got my gong. Two or three of us were chosen and we had to do night exercises over the Lincolnshire fens and practise low-

level night-flying and try to locate a little light in a canal, and do low-level flying round that. Then we were told what it was about. We were all supposed to volunteer, but we couldn't very well do anything else—it was 'You, you and you'.

The day came and there were five of us on five aircraft. I was the last of the five. There was an aqueduct carrying the canal over a river, and the idea was that we had to fly at very low level, about 150 feet above. We had special bombs—mine bombs, I think. The point was that the first one dropped his bomb, then we all came in at intervals. The first one went in at zero, the second at two minutes after, and I would have been at eight minutes after. The first one's bomb was supposed to go off in ten minutes, so I had to be accurate, otherwise I got blown up by the damn thing.

I remember going over there and we circled round at 7,000-8,000 feet. We'd all set our watches beforehand, of course—and I checked my watch.

You could see what was going on, especially I could, because all the searchlights were flashing and all the guns were firing on the first ones, and I had time to get down and get really lined up, and go down to my low

height. It was then that I realised that it wasn't the flak that was going to worry us so much as the searchlights. You couldn't see a damn thing! I mean, you'd got the searchlights straight in your face! I had to put my head down in the cockpit and try to see the instruments as much as possible. Then the bomb-aimer was saying, 'Left, left, right.' You know they weren't very sophisticated bomb-aiming arrangements—they sort of stuck out forward and you adjusted it if the wind was blowing such and such a way. After a bit the bomb-aimer would say, 'Bomb gone' and the blokes in the back would say, 'Yes, right in the middle!' or something like that.

Then I did a very steep turn to get away from everything—they see where you're going, they have you lined up, whether they've seen you or not—but if you do a quick turn you hope to get away with it. In the meantime, I'd seen other aircraft being shot down—two, actually. One pilot was killed, the other taken prisoner of war. They were both Australians, strangely enough. I got up higher and realised there were a few holes in the aircraft, and later, when I got near home, the undercarriage wouldn't come down. The



R Cooling





hydraulics or something had been hit. And so it was not far off daylight when I got back to Scampton. I was the most damaged of the aircrew who did get back—I think the others came in allright. I had to circle around for a time to get rid of fuel, then it was daylight, so it was much easier to have a smooth landing. They didn't have proper lighting equipment, you had a thing switched on at the last minute. You had very dim lights—it was all grass.

The flaps came down and the undercarriage came down, but I think there was no indicator that it was down. Anyhow, I landed and had no trouble about that. I was debriefed, then a few weeks later I was posted as PA to Sir Robert Brooke-Popham, who was Inspector General of the RAF. One day he came in and said, 'You're wanted on the telephone'. 'This is Air Chief Marshal Harris'—Bomber Harris—and he told me I'd got the gong. I didn't take any notice as I thought it was one of my pals. Then I began to wonder, because it was Popham who had told me. And it was true.

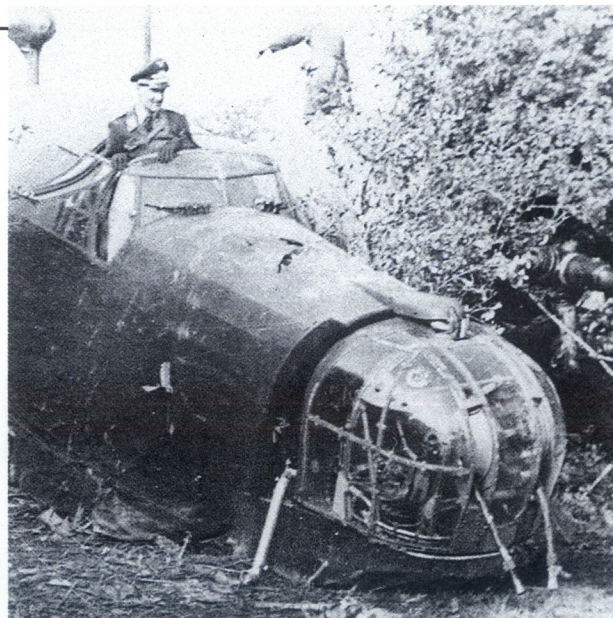
I was the first living VC—there were two in the RAF before me, but they were both killed at the time.



*Michal Leszkiewicz, a Polish pilot, escaped with his aircraft from Poland, went to Rumania and was a POW several times before finally reaching Britain, where he completed two full bombing tours with 300 Polish Squadron.*

“ First of all, we'd usually have about 15 operational aircraft in one squadron, but after operations you came back full of holes, absolutely riddled with bullets. Goodness gracious—I was terrified of moonlight because of the German fighters. At first they were not night operational, but eventually they picked up night flying skills and got quite good. They could spot you—and they were so much faster. We had only about 210 knots and they had about 400 and could outmanoeuvre you. We would try to go as high as 20,000 feet—but when you lost your height, you went down into searchlights and anti-aircraft fire. You had to throw your aircraft this way and that and dive.

I started my operational flying in 1941 and finished in 1943 after 53 missions. I had such adrenalin up



R. Cooling

while I was there, so after the first tour of 30 missions and the second of 20, they let me do another two trips. A squadron leader debriefing us at headquarters was very impressed with my knowledge and asked me, 'How many sorties have you done?' I told him 52, and he said, 'That's impossible'. I was a warrant officer—not even commissioned.

Coming back from a mission there was this wonderful elation—I've done it—and that's when the danger came, and you cannot help but relax. You were tensed up going over the target, then you'd done it and you relaxed—and by Jove, that was the danger.

I had a nervous breakdown when I went out of the squadron. I lived with no tomorrow. I watched all these people disappearing—my friends. You thought to yourself, 'You may be lucky to make another trip, but your time must come'. So you were not quite yourself—it was as if you were on drugs. I didn't sleep at all. When you finished, you went to bed and you lived through it all again in your mind. I never felt I was killing people—all Germans were sworn enemies of the Poles. They started it all, and it was so unnecessary.

I was already a trained pilot in Poland. On 1 September [1939] we just heard that this airfield was bombed and so on. We couldn't believe it—it was without warning or a declaration of war. They jumped on us like an animal in the jungle which you don't see and which lands on you.

All this is with me deep down, it is my personality. I want to run away from it because it completely ruined my life. I am a war casualty. The things which happen to me at night. I lived so much, it has ruined me, squeezed me out—drained me out—every bit of juice out of me.

▲ A Wellington of No. 12 Squadron, brought down over France after a mine-laying mission off St Nazaire, is inspected by the Luftwaffe.



▲ The insignia of No. 300 Polish Squadron Mazowiecki, formed on 1 July 1940, at Bramcote, before moving to Swinderby, near Lincoln, where Michal Leszkiewicz served his two tours.



Imperial War Museum



▼ British leaflets dropped on Germany explain the futility of Hitler's fight against the might of Britain and America and point out the elementary tactical errors made by Hitler in his ill-judged offensives.



Angelica Toms, née Söhn, was a girl of only 11, living in Düsseldorf, when war broke out. The bombing of

her home town was so traumatic that it has left permanent scars—she owns that she still can't hear a thunderstorm without the old fear returning, just as it did in those days of the war.

► Printed in England, a leaflet alerts the French to the fate of such German towns as Düsseldorf—to oppose the Allies would be nothing short of suicide.

▼ Lübeck, 1942—a sight not dissimilar to that seen throughout Britain's cities in 1940 and '41. Now the tables have turned.

# Dreifrontenkrieg



## Ost-Front

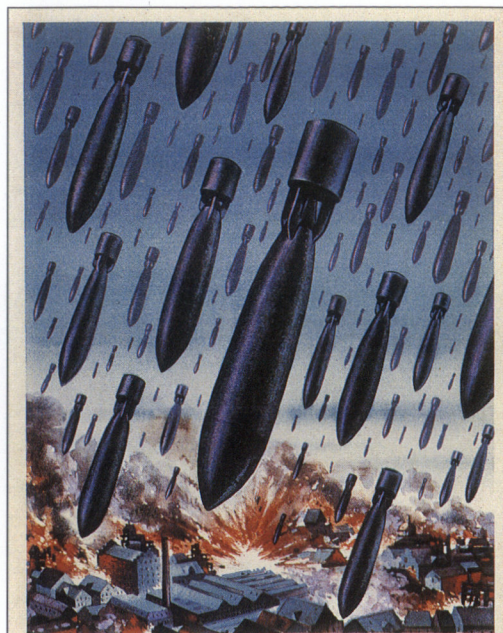


“ Düsseldorf was not made up of little houses—it was high flats. One cellar was made into an air-raid shelter and fortified—they made a soft wall in them so that if something happened, you could knock through to next door, or the other way around.

It wasn't so bad until 1942—then it really started. Don't forget, we had three enemies, the Americans in the daytime, the British at night and the Gestapo every day. If you saw a stranger, you treated him with mistrust—say even someone who came from a different part of Düsseldorf. You never knew, if you said, 'This damn war,' if they would report you. People had been arrested for showing a bit of light in the blackout. They were accused of guiding the RAF in—but we didn't need to tell them—they knew where we were. All they had to do was find the cathedral of Cologne, go up the Rhine, and there they were. Everything you said was picked up—even if you grumbled about the food. You had to be careful—you were really afraid. In the factories they put Gestapo in among the workers in boiler suits. If there was a meeting, if someone voiced a wrong opinion, they were arrested.

Within yourself you felt resentful about having to suffer the war, but you could only talk to the family—but sometimes you couldn't even trust them. There were no squeakers in my family, but there were occasions when children had reported their parents.

The drive to recruit young people was towards the end of the war. I was involved in that. I learned to shoot—after the war I could go to the fairground and win prizes—and I taught my children to shoot with air rifles. But I never fired a shot in anger.



150 Bombes de deux tonnes s'abattent sur la cité allemande de DUSSELDORF en 50 minutes



A gauche est une photographie montrant la taille gigantesque des bombes britanniques. L'explosion de l'une de ces bombes sème la dévastation dans tout un quartier.

The difference between our two countries was not hate. You see, the British always classed the army as the Nazi Army—but we looked on the Nazi Army as the SS. Even the Germans were afraid of them. The *Wehrmacht* was just the same as your army—conscripted people. You would hear old soldiers after the war saying that the SS stood behind them and pushed them into the front line. Officers had been shot for disobeying orders from the SS. You nursed the myth that all Germans were bad—but we didn't want the war. I didn't want to lose my friends. My school was bombed—in my street



Ullstein Bilderdienst; above: Will Payne Collection

Popperfoto



there were 144 houses, and after the war there were just three shells left.

When the bombings started, I went down to the Rhine where I felt safe—I didn't want to be buried alive. I was in a flat with an air-raid shelter underneath, but it was claustrophobic—which was why I wouldn't go down there. As soon as the siren went, it was only five minutes to the Rhine, and there was a big green there, where we felt safe. If a bomb dropped it was a million to one chance it would drop on you—but for a big house to drop on top of you, that's a bit different.

I had no hate, even in those days, and I have none now. We knew that someone had been given a job to do, and they were doing it. The Americans came over during the day at the sort of height that you see aeroplanes flying over now. They always did carpet bombing—never target bombing. In the winter you would see a great vapour trail—then you knew there was a load coming towards you. If you heard something whistling while they were coming towards you, you ducked—if they were passing you, you knew you were safe. The RAF tried to hit the target, but in our street there were just the three houses left standing. Two streets further down it was the barracks, but it was our street which was obliterated. We all said we thought it was the bomb-aimer's fault. It's an easy mistake, at night in a wind. We put it down as a mistake.

When you came out after a raid, the first thing you did was make sure who was underneath, who you could help to get out, and you counted your friends—so and so had not come out—they must be under the rubble. The soldiers in the barracks came and helped—an elephant from the zoo came and helped—and the zoo was bombed too. Police, air-raid wardens, army, civilians, anybody who could possibly help, helped. If a dog heard a knocking, you'd dig until you found where that knocking was coming from. Quite a few got killed, but you tried to get out as many as you possibly could. The only places where the cellars were actually damaged was where the landmines went. We lost our water supply and had to go down to the Rhine to get a bucket of water to wash. The Rhine was beautiful in those days—but I wouldn't put my toe in it now. We call it a cess pit now, but in my days it was really lovely.



**Hildegard Teal, née Burr, was 10 when Hamburg was bombed. As an unwanted child when her mother remarried, she was put in a children's home at the age of two and was moved from one home to another throughout childhood. In the home she was strangely cut off from the bombing.**

“ In 1943 I was in a children's home run entirely by women, somewhere outside the centre of Hamburg. I don't think the women were in the 'Party'—I think it was just a local authority home. Of course there were pictures of Hitler everywhere, and we had to salute the picture, and sing *Fahne hoch!* (Raise the Flag) and *Deutschland Über Alles* and we celebrated Hitler's birthday.

Neither my mother nor my grandmother ever visited me in the home before, but a few months after the bombing when my grandmother took me to the station that I saw for the first time what had happened to the city, a lot of ruins, a lot of flattened buildings, burned out houses or just rubble. It was sad to see it all gone, but in a way this had all happened as if at another time—I was there but it was as if I wasn't there. It was different being in a 'home', if I'd been at home with my mother and half sisters and brothers I would have felt it all much more directly.

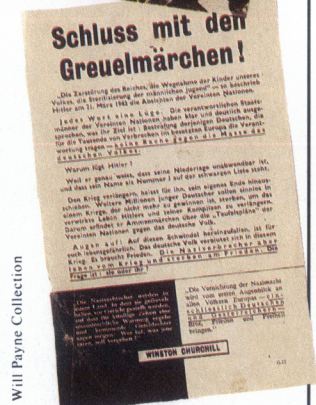
But I do remember one bombing raid in the home. We were woken up at night by one of the 'teachers', I don't know what time it was, nobody had a watch then. We were just told *Schnell, schnell*, out of the beds, everybody down the cellar. Alarm, but quietly, quietly! Of course, we

► **British propaganda blacklists the 'black' outrage of the SS, the odd ones out.**

were all excited, not scared at all, just excited. Everything was dark upstairs, all the lights were off, but there were lights in the cellar. We got used to this, it happened several times, of course, in the home you didn't actually see anything that was going on outside. So, we were taken down to the cellar, settled down there, told to be quiet, and, of course, you were quiet—there was no answering back in those days—and then you went back up again. In the cellar there were straw sacks, blankets, it was fairly big. There were about 30 kids and the grown-ups.

I don't know how long we were down there, it seemed like a long time. We went back to sleep. I vaguely remember being woken up again, it was still night, it must have been about three in the morning. They told us, when you finish breakfast, get your coats on, you're being taken to another home. I must have heard about this bomb which hadn't exploded from the grown-ups. Of course we were all excited again—this was like a day trip. We didn't have any gear, only one set of clothes, and we just put a coat on top and were marched out to the lorries.

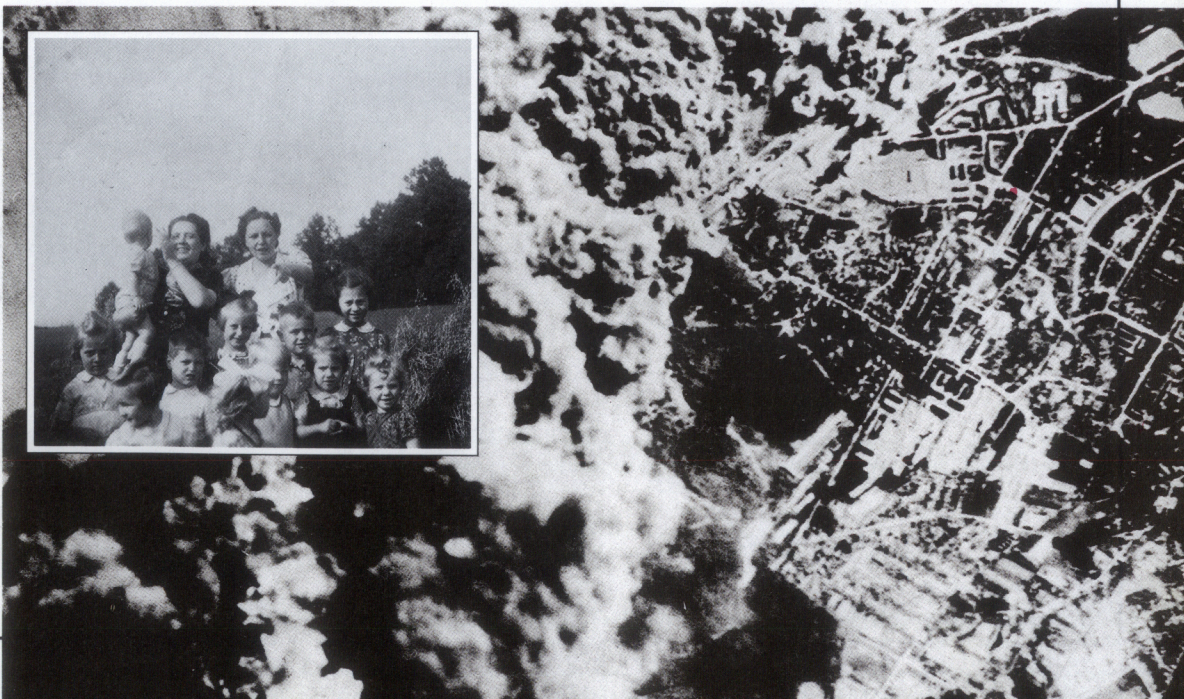
I don't actually remember seeing anything outside the building—nor could we see anything out of the lorry. The journey must have been about an hour. I think we were there about three weeks, then went back to the other place—I don't remember seeing anything of the town even then.



Will Payne Collection

▲ **More propaganda, calling for an end to Hitler's horror story that the Allies wish only to destroy the Reich and the lives and homes of its folk. Hitler lies because he knows his downfall is inevitable, but in the meantime more innocent lives will be lost.**

▼ **Hamburg in flames. The original caption to this German photo echoes all the outrage and fury felt in Britain during the Blitz. Inset: Hildegard Teal (far right).**



◀ **Before the devastation, the city of Düsseldorf and the Rhine Bridge—a skyline soon to be drastically changed.**

Süddeutscher Verlag; inset: H Teale





# DOWN THE LINE

▲ Three British airmen, with members of the Pat O'Leary escape organisation in September 1942. The airmen's 'wanted' poster is on the door.

*Throughout occupied Europe individual citizens were willing to aid the Allies, fired by the hope that their efforts would bring forward the day of liberation.*

**O**ccupied Belgium, 1942. Over darkened, unfamiliar countryside, a young RAF pilot parachutes desperately out of his Lancaster bomber, his comrades already dead. They had been returning from an attack on the Ruhr when German anti-aircraft fire hit the plane.





RAF Museum, Hendon



coming down in a hostile foreign country, for a shocked, disoriented and often demoralised man even to think about escape, let alone get to his feet and begin an adventure straight out of some movie. This may be his first visit to the Continent, now policed by a German military force and controlled by the dreaded and extremely efficient Gestapo.

He had to find help – and fortunately this proved to be on hand in the form of escape routes which extended from his operational area to the neutral countries of Sweden, Switzerland and, most important of all, Spain.

#### HOME FRONT HELP

These routes were manned by brave patriots in the Low Countries and France who, unable to fight the Germans directly, devoted themselves to aiding the Allies to the best of their abilities. The early escape routes came into being when small groups of the Resistance, without outside help or money, rescued and hid survivors of the British Army and Royal Air Force after Dunkirk.

The first routes were somewhat haphazard, with little planning. There was a British intelligence unit, MI9, devoted to finding ways of bringing people back, but they were faced with great problems without a network of helpers on the Continent. Then, in August 1941, a fiery young Belgian woman called Andrée

(‘Dédée’) de Jongh arrived without warning at the British Consulate in Bilbao, bringing with her a British soldier and two Belgians. A startled vice-consul listened as the girl described their 625-mile (1000 km) journey from Brussels through occupied France and over the Pyrenees.

The British had only dreamed of such a breakthrough. MI9 soon agreed to Dédée’s terms: Britain would finance the escape route, but she would have complete control over it.

Dédée was then a very fit 24-year-

▲ **RAF aircrew study a map before going on a mission.** The existence of escape routes for shot-down airmen was a boost to morale, and the return of a man to his squadron was a huge tonic to crews leaving on missions over occupied territory.

## War Stories

On a test flight in mid summer, the pilot of a Lancaster and his crew headed for Old Trafford at the suggestion of the wireless operator—there was a cricket match on, between England and Australia. Doing their own reconnaissance, they circled over and over the ground in a clear blue sky, watching from 500 ft. Suddenly the play stopped—the players left the field. The wireless operator, listening to the radio commentary, decided they’d better move away—play had been stopped because a plane was circling overhead!



He lands in an open field. Fighting shock and injury, the airman remembers the instructions drilled into him. ‘It is your duty to evade capture. Hide your parachute, flying suit and Mae West (lifejacket). Then get away from your landing point and travel.’

It was virtually impossible, after



► Flying Officers Bill Alliston (centre) and Maurice Steel (right) beside the wreckage of their Halifax bomber, shot down in the Berzy-le-Sec area of France on 10 April 1944. A local helper, Henri de Brossard (left), has brought a change of clothing. Both men were spirited down an escape route across the Pyrenees, and eventually reached Britain.



Courtesy of Alan Cooper from Free To Fight Again

▼ 'Patrick O'Leary', alias Capitaine Albert-Marie Guérisse of the Belgian army, pictured by a street photographer in Marseille while travelling incognito. The O'Leary escape line took hundreds of servicemen to freedom. Guérisse was betrayed in 1943 but survived.

old, with a natural flair for secrecy. After she smuggled an entire bomber crew to Spain in only a few days, MI9 dubbed her route 'the Comet Line'.

The Germans eventually managed to infiltrate Comet in 1943, and Dédée was sent to the Ravensbrück concentration camp which, fortunately, she survived. By this stage she had personally escorted 118 airmen across the Pyrenees. But the line was

rebuilt by Dédée's Basque guide, Florentino Goicoechea, who had been a peacetime smuggler over the Pyrenees. By the end of the war, over 1,000 Allied airmen had passed safely down the Comet Line.

Another great route was the Pat O'Leary Line, set up in 1941 by Captain Ian Garrow, a Seaforth Highlander, after Dunkirk. His route wound south into Vichy France, and from there towards Spain. The line was named after the man who succeeded Garrow, a 'Lieutenant-Commander Patrick Albert O'Leary,' who, in reality, was a Belgian army doctor, Capitaine Albert-Marie Guérisse.

There were many other effective escape routes, operating mostly in rural areas, which collected and hid aircrew until they could be fed into the trans-continental lines. All these organisations, whatever their size, stuck rigorously to the job of helping aircrew evade capture, rather than branching out into general resistance and sabotage. The aim was to get aircrew quickly back to their units to fight again. That is why all major routes led to Spain and on to Gibraltar from where the evader could be repatriated rather than to Sweden or Switzerland where the rules of the Geneva Convention were strictly applied and he would be interned for the duration.

#### DUTY TO EVADE

By spring 1942, when Air Marshal Sir Arthur Harris became Commander-in-Chief of Bomber Command, it was made absolutely clear that evasion of capture was a duty. The techniques of running away, hiding and moving across country were taught when-

ever possible. At each operational briefing before a raid, the Intelligence Officer would give details of recent evasion operations and issue escape kits. These were a pair of transparent plastic boxes filled with items calculated to help a man on his way – benzedrine pills, boiled sweets, chocolate, Horlicks tablets, water-purifying tablets, a rubber water bottle, needle and thread, razor, compass, fishing line, silk maps and, perhaps most important, bank notes, usually French and Belgian francs and Dutch guilders. The escape gear was complemented by an assortment of miniature compasses designed as collar studs, cuff links and even fly buttons which were sewn into the battle dress on his arrival at the squadron.

But all this equipment was of limited use without help from the Belgian and French Home Fronts.

#### THE WATCHERS

Across German-occupied lands, ordinary people kept an eye open for anything unusual. The operators of escape routes, while going about their everyday lives, used watchers to collect information on crash sites, strangers, natural hiding places and concentrations of German search patrols. Some watchers ignored the curfew to scour the countryside at night beneath the streams of Allied bombers bound for Germany, or returning from a run. This was how many evaders made contact with escape routes; others were simply lucky, approaching a villager for help and finding shelter and food.

Important tasks were carried out

▼ A Nazi van broadcasts in a French provincial street. Escape helpers were told they could be shot.



Popperfoto



Courtesy of Vincent Brome



before evaders could start the twisting journey home. They were concealed, often for weeks on end, in 'safe houses,' all carefully selected and made secure. These might be cottages, farm houses or monasteries in the countryside, or apartments and tenement buildings in big cities.

The escape operators brought in doctors to treat and assess all evaders. A well-adjusted man with a broken limb could be helped, but a demoralised and temporarily mentally unbalanced one was a liability to the entire network, who would have to be abandoned to the Germans.

Evaders also had to convince the escape networks that they were not German infiltrators. This could usually be done quite simply, by identifying discs and astute interrogation. But occasionally there were borderline cases. One Canadian airman, who had enlisted just before being shot down, was under dark suspicion. His life was saved only when a service friend vouched for him.

### KNOWING THE SCORE

In another case, in 1942, Comet used its British contacts to find out one evader's highest cricket score at school, before questioning him. When the airman replied '51 not out,' his interrogators smiled with relief.

Once cleared, the escape routes prepared evaders for travel, which would be done quite openly, in daytime. It was necessary both to act and look the part of a Belgian, Dutchman or Frenchman. Many were trained as salesmen or travelling businessmen - people who had good reason to be on the move. Forged papers, such as passports or travel documents and ration books,

were provided.

One of the hardest tasks was to train British and American airmen to use these documents and react to routine challenges by Germans or French police. Most aircrew spoke little French, and no Flemish, Dutch or German. Fortunately, few German soldiers could speak other languages, so very limited responses would do.

Obvious British traits and customs were removed or hidden. The evaders' hair was allowed to grow and was then trimmed in local styles, and the men had to learn not to lounge around, hands in pockets, whistle British tunes, or hold knives or forks as they were used to. And the evaders had to guard against over-reacting as soon as they discovered the comparative ease of travelling. Careless patter, nervous laughter, a chance swear-word in English could ruin everything.

### DISCIPLINE

The escape-route operators explained before a journey that discipline would be ruthless. At every stage, the evader must obey the guide, no matter what happened. The guide was taking the biggest risk. Nazi posters made it clear that anyone assisting evaders would be



Librairie Académique Perrin, Paris

shot or sent to a concentration camp.

The guide would never be next to the evader but nearby, on the other side of the street, in a different compartment of the same railway carriage, or at the other end of a bus. If there was trouble, the guide would abandon the evader to his fate.

Once a guide and his evader, or a group of them, reached the foothills of the Pyrenees, the tactics changed.

▲ Identity checks on the border of Occupied France.

▼ The de Greef family, who ran the southern stretch of the Comet Line.

Inset: Comet's founder, Andrée de Jongh-Dédée.



Librairie Académique Perrin, Paris



Courtesy of Alan Cooper from Free To Fight Again





Popperfoto



▲ Traders and families, hoping to get back to their homes inside Occupied France, queue at the border checkpoint.

◀ The legendary Basque escape guide, Florentino Goicoechea (right), reunited in 1977 with Group Captain Bill Randle, one of more than 300 evaders Goicoechea and his wife Katalin (centre) escorted across the Pyrenees for the Comet line. Goicoechea died in 1980.

British authorities. If the evaders successfully slipped from safe house to safe house, and finally reached the British Embassy in Madrid, they could be declared as successful evaders and openly taken home.

Ask one of these lucky servicemen what it was like to cross Europe, and he's usually honest enough to admit it was remarkably easy and by no means heroic. After the strain of the bombing runs, there was a feeling of relief, and the evader will always pay tribute to the courage of those who took the risks by operating the routes. The airman could plead the Geneva Convention, if captured, and become a prisoner-of-war. But those helping them would be tortured.

Five hundred 'friends' lost their lives in this way in concentration camps. A much larger number survived Belsen, Auschwitz, Ravensbrück and Buchenwald only to die of their wounds soon after.

But the Royal Air Force has never forgotten those who got its men back. Altogether, some 12,000 patriots in northern Europe were decorated, some posthumously, and in 1946 the Royal Air Forces Escaping Society was formed. Its motto: 'Let us never forget those who helped us in our hour of need.'

The bogus identity was abandoned. The evaders would change usually into the denims, espadrille shoes and beret of the Basques.

By night, the group entered the frontier's 4-mile *Zone Interdict*, a perilous passage because the German, Spanish and French guards considered any suspicious movement as fair game and shot first. Once

across, there was no time for celebration – it was vital to find a safe house by dawn.

Many evaders were shot along the frontier, and many more were captured. The unlucky ones were sent to German concentration camps; others spent a wretched six months inside a Spanish camp but were then usually handed over to the



# COMING IN PART 22 SICILY

10 JULY to 17 AUGUST 1943

*After their combined effort to drive the Axis forces out of North Africa, the Allies now plan the biggest amphibious operation so far in the war.*

Sicily 32-page magazine.  
Colour Campaign map  
featuring the invasion of  
Sicily.  
News Chronicle  
12 July 1943.

## BACKGROUND

With preparations going ahead, can the Allies keep their chosen target secret?

## CAMPAIGN

Will the large-scale  
Operation 'Husky' take the  
island's defenders by storm?

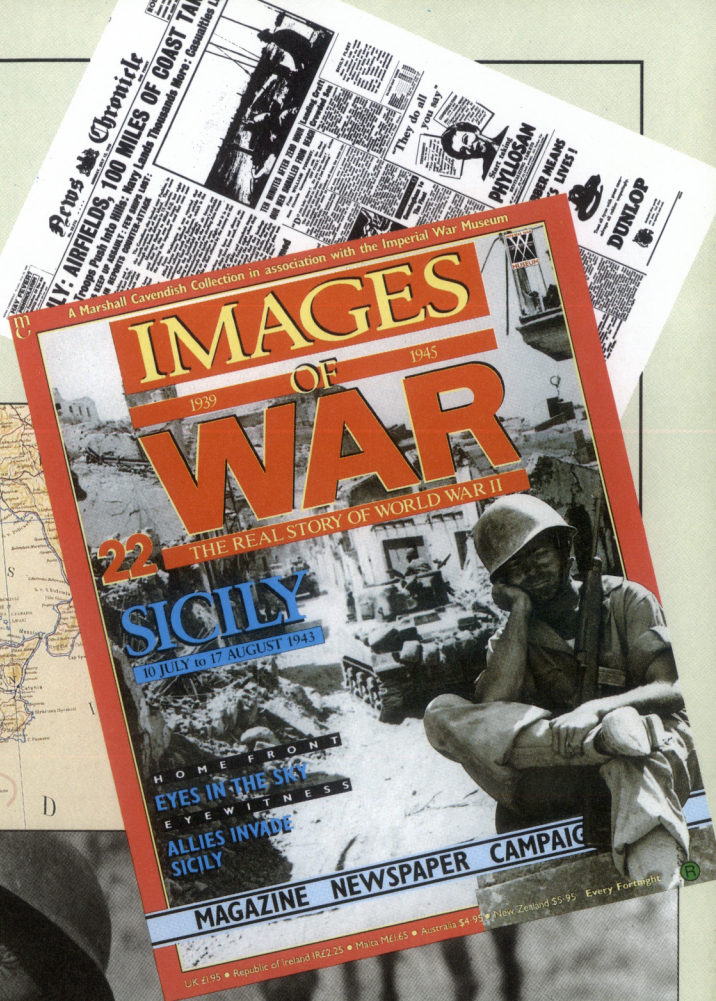
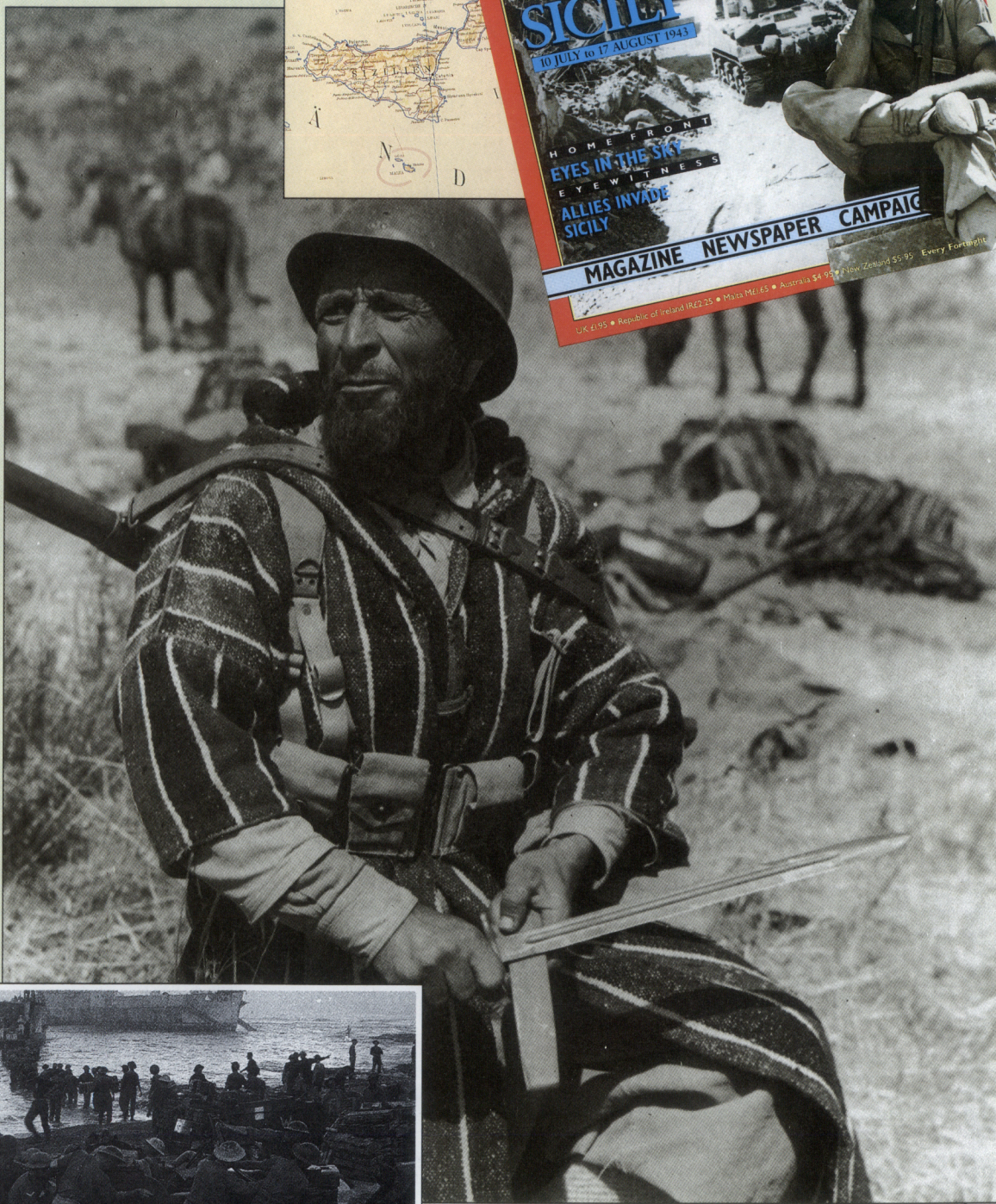
## EYEWITNESS

From their own personal  
memories, survivors paint a  
vivid picture of the battle.

## HOME FRONT

How could lone pilots and  
teams in offices in Britain  
play a vital part in the war?

Main picture: US Army; inset left: Imperial War Museum; inset right: Popperfoto





# HARDWARE

## Avro Lancaster

*The Avro Lancaster was the most effective bomber ever built in Britain.*

*Flying mainly at night, the Lancaster could survive heavy combat damage.*

The Lancaster had a profound impact on the war in Europe. Developed from the twin-engined Manchester, it carried a crew of seven—pilot, flight engineer, navigator, wireless operator, bomb aimer and two gunners. The plane first flew in early 1941.

The Lancaster made 156,000 sorties over Europe, attacking every important target in Germany. A total of 7,377 were built and specially modified examples carried the heaviest bombs used in the war.

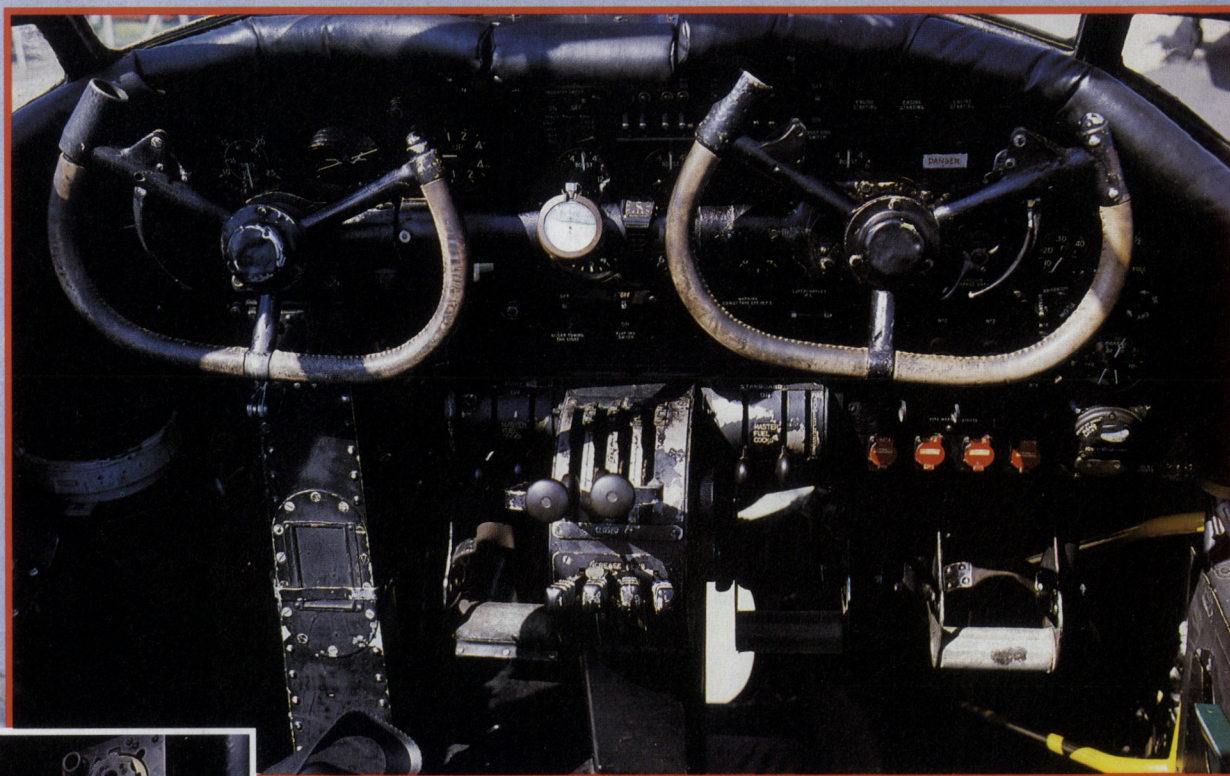


▲ All the Lancaster turrets were hydraulic-powered. The mid upper had two .303 Browning machine guns.

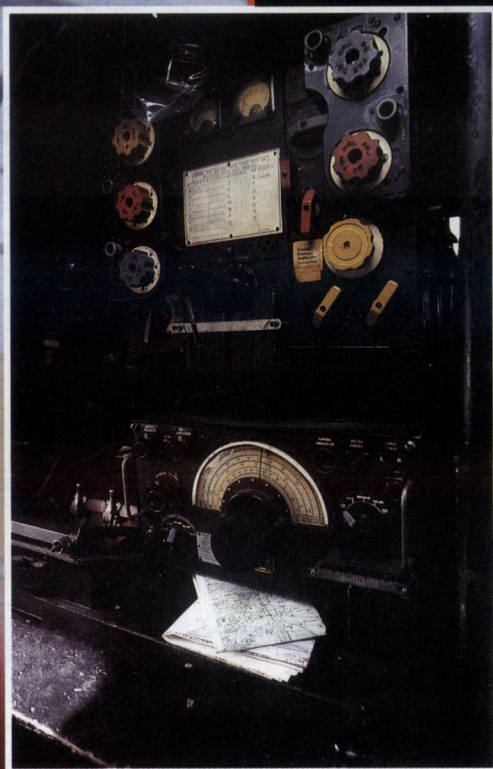
► The pilot flew with a flight engineer to the right (out of view) and a navigator behind him.

On operations, Lancasters had no co-pilot, though a newly trained pilot might, if lucky, get one bombing run as observer before taking his first flight. The dual control stick to the right was installed after 1945.

Below the cockpit lay the forward end of the Lancaster's huge bomb bays.



▼ With a wing span of 102 feet and four Merlin engines, the Lancaster proved a durable performer. It carried fuel for five hours' flying at 15,000 feet.



◀ The wireless equipment was fixed behind the navigator. Later Lancasters carried electronic jamming devices to counter the radar carried by German fighters.









# OPERATION GOMORRAH

24 JULY to 31 JULY 1943

800 bombers unleashed  
defences were pushed to their limits

## VERDICT ON 'GOMORRAH'



“Attacks on cities are strategically justified in so far as they tend to shorten the war and so preserve the lives of Allied soldiers.”

**AIR CHIEF MARSHAL  
SIR ARTHUR HARRIS**  
29 March 1945



“In the burning and devastated cities, we daily experienced the direct impact of the war. It spurred us to do our utmost... the bombing and the hardships that resulted from them (did not) weaken the morale of the populace.”

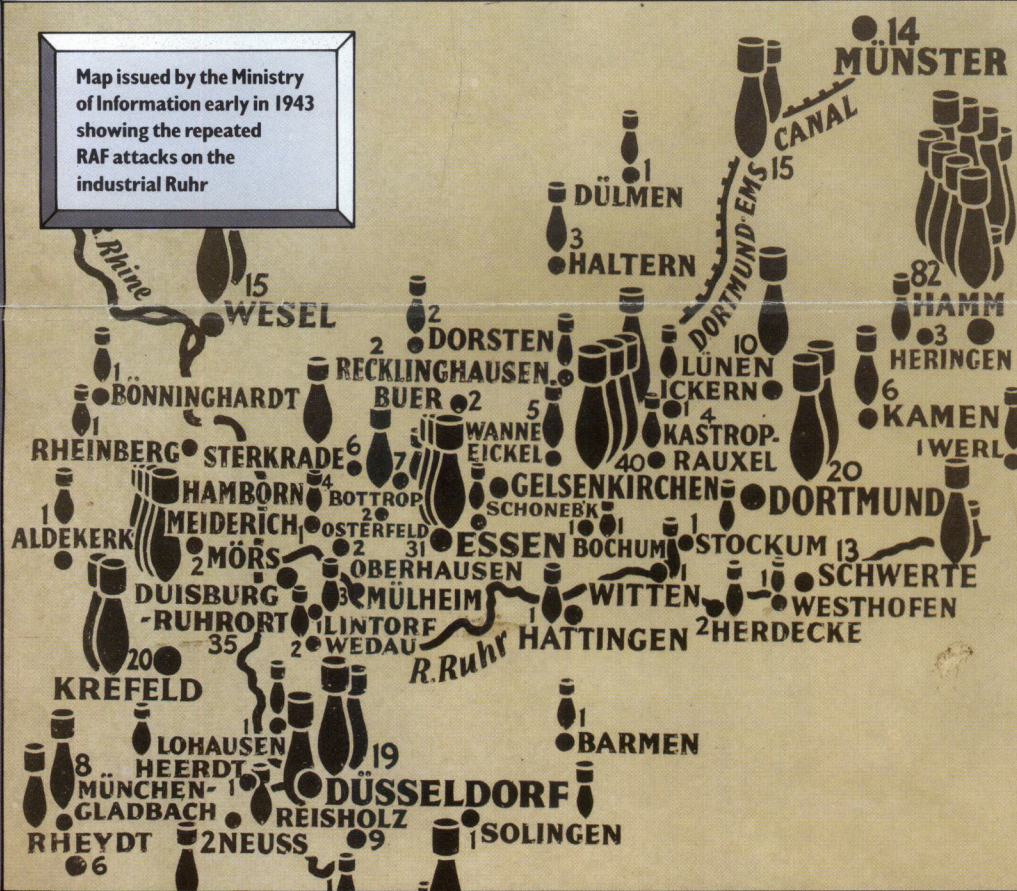
**CHIEF OF THE GERMAN WAR  
ECONOMY, ALBERT SPEER**

## 50 YEARS ON

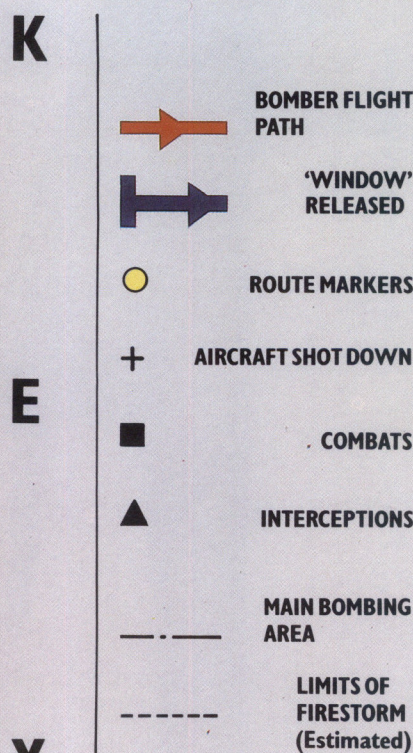
According to the pre-war theorists, strategic bombing should have been a war-winner, destroying the enemy's ability to sustain a modern technological war by flattening his factories and demoralising his people. Neither aim had been achieved by the RAF over Germany by 1944,

although this does not mean the campaign was a total failure. The actions of Bomber Command reflected the British desire to hit back at the enemy, and also inflicted a growing weight of damage on the Reich, weakening it in its fight against the encroaching Allied armies.

Map issued by the Ministry of Information early in 1943 showing the repeated RAF attacks on the industrial Ruhr



## FLIGHT PATH OF SECOND GOMORRAH RAID 27-28 JULY 1943



The second raid flew a dog-leg out over Schleswig, turning south and then south west to Hamburg

## BOMBER ASSEMBLY POINT

### OUTGOING FLIGHT PATH

### RETURNING FLIGHT PATH

A force of 787 British bombers left bases in Lincolnshire and Yorkshire on the evening of 24 July 1943. Early next morning, 722 of them arrived over Hamburg on a hot and dry night – the temperature had been 30°C the previous evening. Out of 2,500 tons of bombs dropped, 550-600 tons fell within a 2x1 mile area. The resulting firestorm lasted for hours. Only 17 planes were lost during the raid, with four others damaged on arrival in Britain.

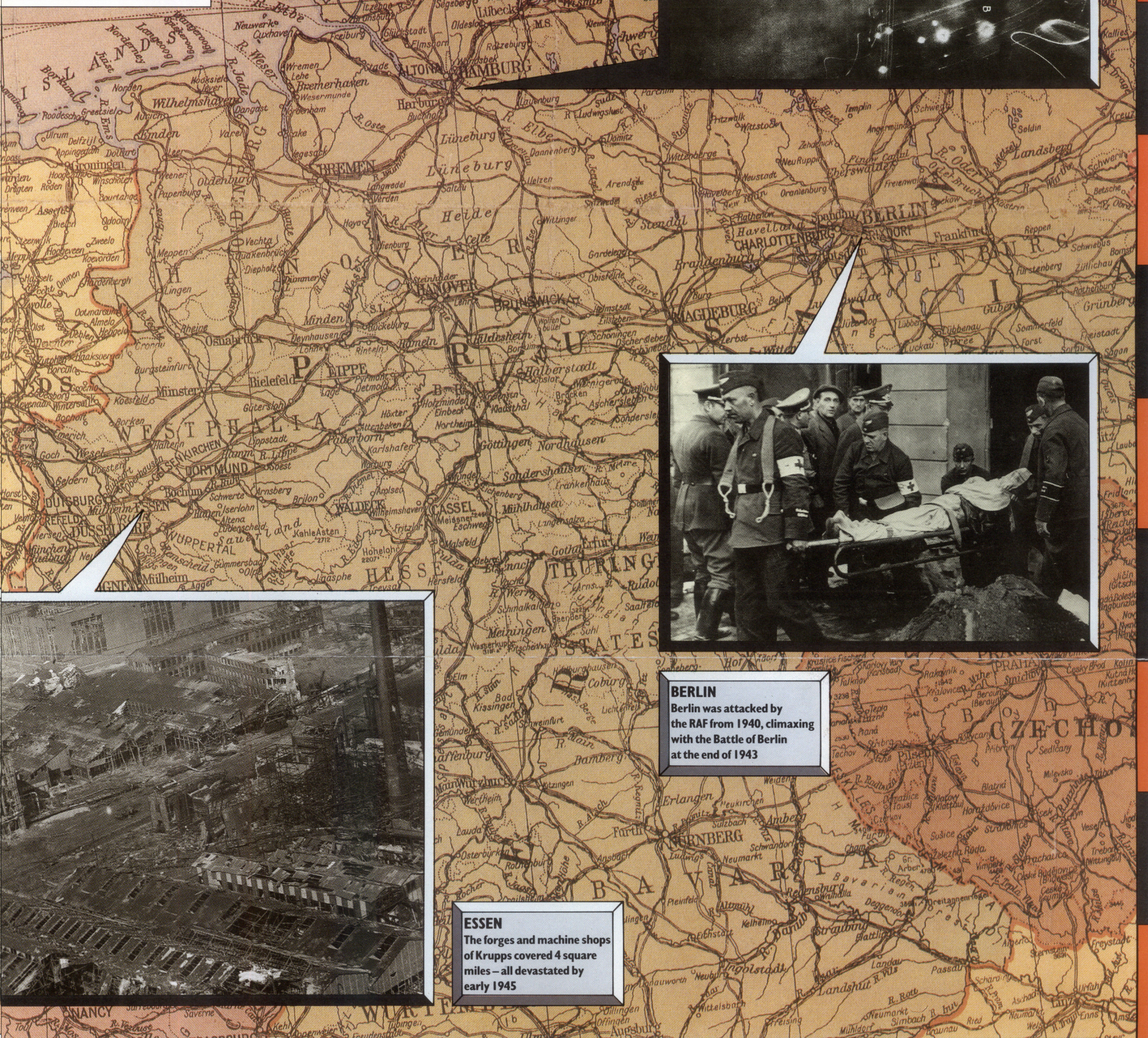


# ATION RRAH

3 AUG 1943

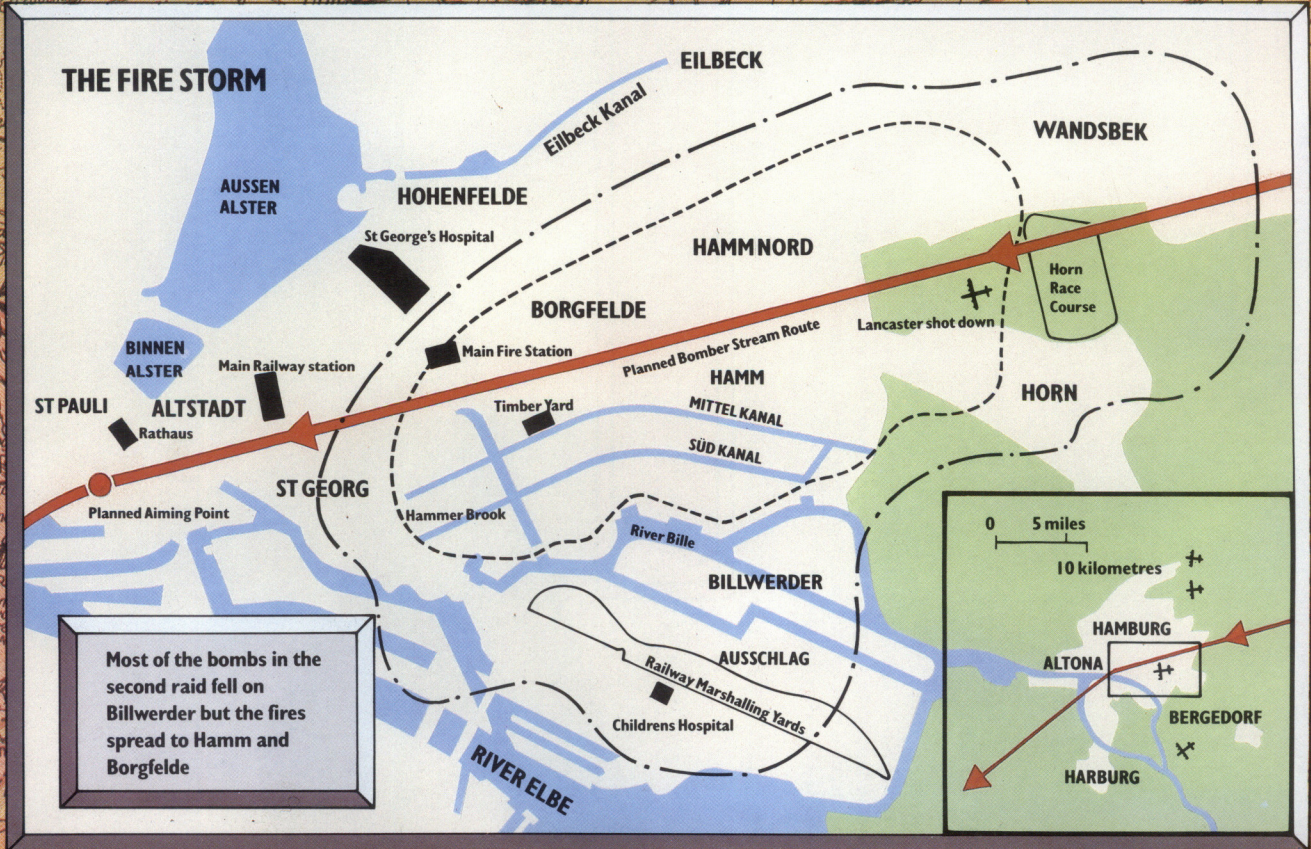
hed on a city whose  
nged into chaos.

**HAMBURG JULY 1943**  
2 night raids by the RAF,  
plus daylight raids by USAAF  
took out Germany's largest  
port facility



**BERLIN**  
Berlin was attacked by  
the RAF from 1940, climaxing  
with the Battle of Berlin  
at the end of 1943

**ESSEN**  
The forges and machine shops  
of Krupps covered 4 square  
miles – all devastated by  
early 1945





# TECHNOLOGY OF WAR

*Bristling with machine guns and cannon, the bombers and night fighters were equipped to fire on each other from almost any angle. One lucky bullet was sometimes enough to down an aircraft but these aircraft would often limp back to base with enormous amounts of damage.*

## LANCASTER

Regarded by many RAF bomber crews as the 'Queen of the Skies', the Lancaster was the backbone of the RAF's bombing offensive against Germany from 1942 onwards. Capable of lifting a heavy bomb load and carrying it a long distance, the Lancaster had a high ceiling and was relatively easy to fly because it had a large wing area.

## LANCASTER



### AVRO LANCASTER B Mk I

**TYPE:** Heavy bomber with crew of 7  
**ENGINES:** Four 1,460 hp ('M gear') Rolls Royce Merlin XX or 22; or 1,640 hp ('M gear') Merlin 24 12 cylinder liquid-cooled engines.  
**DIMENSIONS:** Wingspan 102 ft 31.09 m Length (on ground) 68 ft 10 in (20.98 m) Height (on ground) 20 ft 4 in (6.19 m)  
**WEIGHT:** Empty but with equipment 41,000 lb. Maximum take-off weight 72,000 lb (32,688 kg)  
**ARMAMENT:** Eight 0.303 in Browning machine guns in Fraser Nash turrets at nose, tail and in dorsal position. 14,000 lb (6,350 kg) bomb load  
**PERFORMANCE:** (with Merlin 24 engines) max speed 281 mph (452 km/h) at 11,000 ft (3,353 m). Service ceiling 20,000 ft (6,100 m). Range 1,040 miles (1,673 km) with standard load

## MOSQUITO

### DE HAVILLAND MOSQUITO B Mk IV

**TYPE:** Two-seater high speed light bomber  
**ENGINES:** Two 1,280 hp Rolls Royce Merlin 12 cylinder liquid-cooled engines  
**DIMENSIONS:** Wingspan 54 ft 2 in (16.51 m) Length (on ground) 40 ft 11 in (12.47 m) Height (on ground) 15 ft 3 in (4.65 m)  
**WEIGHT:** Typically 22,380 lb (10,160 kg) fully loaded  
**ARMAMENT:** Internal bomb bay holding 1x 1,000 lb (454 kg) and 2x 500 lb (227 kg) bombs. Mosquitoes fitted with the Mod 473 bulged bomb bay could carry a 4,000 lb (1,816 kg) bomb. No guns were fitted  
**PERFORMANCE:** Max speed 341 mph (549 km/h) at 20,000 ft (6,100 m). Ceiling 27,000 ft (8,230 m). Range 1,110 miles (1,786 km)



### MOSQUITO

The B Mk 4 was the first bomber version of the Mosquito to enter squadron service. Built from plywood components produced by a myriad of sub-contractors, twin Merlin engines made the Mosquito one of the fastest bombers of the war, able to out-run many fighters. The Mosquito's biggest contribution to Bomber Command's war effort was when it equipped 8 Group's Light Night Striking Force.

## OPERATION

# GOMORRAH

24 JULY-3 AUGUST 1943

*Bomber Command mounted continuous operations throughout the war, but pre-war promises of victory through bombing alone were not fully realised*

### BATTLE DIARY

#### SEPTEMBER 1939

3 Declaration of war: leaflets dropped at night over Ruhr

#### OCTOBER

1/2 Whiteleys drop leaflets on Berlin at night

#### DECEMBER

18 12 out of 22 Wellingtons lost in daylight shipping attacks in Heligoland Bight

#### MAY 1940

11/12 First bombing attacks on Germany at night  
 15/16 99 bombers attack the Ruhr

#### AUGUST

25/26 First bombs land on Berlin

#### FEBRUARY 1941

10/11 Operational debut of the four-engined Stirling

#### MARCH

10/11 Operational debut of the Halifax bomber

#### FEBRUARY 1942

14 Air Ministry issues area bombing directive

#### MARCH

10/11 Operational debut of the Lancaster  
 28/29 Devastating incendiary attack on Lübeck

#### APRIL

17 7 out of 12 Lancasters lost in raid on Augsburg

#### MAY

30/31 1,000 bomber raid on Cologne

#### JUNE

1/2 1,000 (956) bomber raid on Essen  
 25/26 1,000 bomber raid on Bremen: last operational use of twin-engined Manchester and Whitley bombers

#### AUGUST

11 Pathfinder Force established

#### SEPTEMBER

14/15 Last operation for Hampden bombers

#### DECEMBER

20/21 First operational use of Oboe during raid on Lutterade

#### JANUARY 1943

25 No 8 (Pathfinder) Group RAF formed

#### MARCH

5/6 Battle of the Ruhr opens

#### JULY

24 Beginning of Gomorrah raids on Hamburg

#### AUGUST

17/18 Attack on Peenemünde rocket-research site

#### NOVEMBER

18/19 Battle of Berlin begins

#### MARCH 1944

24/25 Battle of Berlin closes  
 25 Pre-D-Day planning conference: Eisenhower's effective control of heavy bombers

#### APRIL

30/31 96 out of 795 bombers lost on Nuremberg raid

#### APRIL

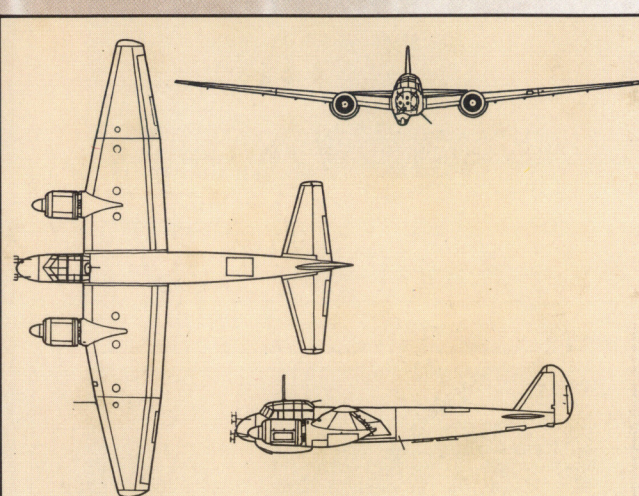
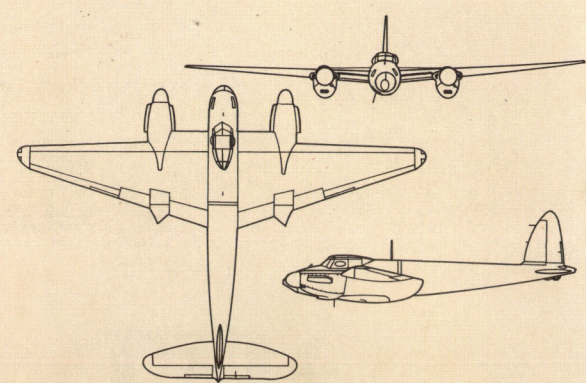
14 Eisenhower gains formal control of heavy bombers for D-day

Mosquitoes locate the target by 'Oboe' and drop parachute flares and bombs to mark the target. Extreme accuracy is vital at this stage because the bombers that follow will try to bomb on the aiming point.

Waves of bombers arrive over the target and drop a mixture of high explosive (HE) bombs, land mines and incendiaries. The HE bombs blow off roofs and shatter windows.

Lancasters and other heavy bombers shower the marked target with incendiaries. Many are dealt with by civilians but the civil defence forces are already being strained.

The land mines have delayed-action fuses, so they explode after the bombers have left and hinder the efforts of the fire fighting and rescue forces.



### JUNKERS Ju88R

**TYPE:** Two- or three-seat night fighter  
**ENGINES:** Two 1,700 hp BMW 801 D 14 cylinder, air cooled radial engines  
**DIMENSIONS:** Wingspan 65 ft 7 1/4 in (20 m) Length 47 ft 2 3/4 in (14.40 m) Height 15 ft 11 in (4.85 m)  
**WEIGHT:** loaded weight 25,358 lb (11,500 kg)  
**ARMAMENT:** Three 20 mm cannon and three 7.92 mm machine guns in the nose. Some aircraft fitted with two 20 mm cannon firing forwards and upwards (Schräge Musik)

### FuG 202 LICHTENSTEIN BC

**TYPE:** Airborne interception radar in nose of Ju88R.  
**FREQUENCY:** 490 MHz  
**POWER OUTPUT:** 1.5 kW  
**EFFECTIVE RANGE:** max 11,480 ft (3,500 m) min 656 ft (200 m)  
**DISPLAY:** Three cathode ray screens showing range, direction and height

### JUNKERS Ju88R

Entering service in late 1942, the 88R was a night fighter variant of the Luftwaffe's best medium bomber. The Ju88R was fitted with improved BMW radial engines to improve performance. One example was flown to Britain by its crew who wished to defect, enabling the RAF to evaluate its Lichtenstein radar and so devise immediate countermeasures.

## JUNKERS Ju88R



*"In the burning and devastating cities, we daily experienced the direct impact of the war. It spurred us to do our utmost... the bombing and the hardships that resulted from them (did not) weaken the morale of the populace."*

CHIEF OF THE GERMAN WAR ECONOMY, ALBERT SPEER