

ROYAL AIR FORCE
BOMBER COMMAND

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SQUADRON PROFILES

NUMBER 88



420 (SNOWY OWL) SQUADRON
ROYAL CANADIAN AIR FORCE

PUGNAMUS FINITUM

RESEARCHED, COMPILED AND WRITTEN
BY
CHRIS WARD

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BOMBER COMMAND
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420 SQUADRON



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GENERAL NOTES

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GENERAL NOTES

This profile is a reference work on the activities of the squadron during the Second World War. Bomber Command operated exclusively from stations in the UK, and used overseas bases purely for shuttle operations, or as advanced staging posts for specific purposes. For this reason, periods spent on detachment, or permanent postings to overseas Commands, do not fall within the scope of this work.

This profile is not intended to serve as a comprehensive squadron history, but to provide as much information as possible in a non-anecdotal form. The brief history narrative is basically an account of Bomber Command's war, with the individual squadron's involvement interwoven into it. The publications listed in section 5 are not only recommended reading, but represent the best available sources of information for serious students of the subject. The operational record is based almost entirely on the figures provided in *The Bomber Command War Diaries* by Martin Middlebrook and Chris Everitt, and I am indebted to Martin Middlebrook for allowing me to use them.

An aircraft is included in section 3 if; a) it spent time on squadron charge, no matter how briefly, and irrespectively of whether or not it operated. b) the type was used operationally by the squadron. Where a squadron has a Conversion Flight involving a type with which it is intending to re-equip, but then does not, as in the case of 101 and 460 Squadrons, these have been included, on the basis that they sometimes found themselves on operations. Information is restricted in most cases to; where from, where to, unless it completed its service with the squadron, in which case, some detail of its demise appears. Aircraft which failed to return have the date and target recorded. Where no information follows the serial number of a type still in use when the squadron departed Bomber Command, or at war's end, it can be assumed that the aircraft was still on squadron strength. However, where there is a blank space following the serial number of a type which has been withdrawn from service with Bomber Command, it signifies that I don't know its ultimate fate. An absence of information does not imply that the aircraft flew no operations during its time with the squadron.

Those squadrons which served with the AASF in France between the outbreak of war and the fall of France, were not technically part of Bomber Command from January 1940. Nevertheless, their service is deemed to be on behalf of Bomber Command for the purpose of the relevant Profiles, and their experiences are, therefore, detailed, and their aircraft listed. The Blenheim squadrons of the AASF are also treated as if under Bomber Command.

Finally, information has been drawn from a variety of sources, ranging from Records Branch to individuals with squadron connections, and I am grateful for their contributions. There will inevitably be errors and omissions when dealing with a subject as vast as Bomber Command, and I am happy to be corrected and/or updated by readers.

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SECTION 1



BRIEF HISTORY

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420 (SNOWY OWL) SQUADRON

MOTTO **PUGNAMUS FINITUM** (We fight to the finish).

Code **PT**

420 Squadron Royal Canadian Air Force was born out of Article XV of the British Commonwealth Air Training Plan (BCATP) Agreement, which was signed on the 7th of January 1941, and called for the formation of twenty-five Canadian squadrons by May 1942. All such units were to be numbered in the 400 - 450 series, and 420 Squadron was the fourth to be formed in Bomber Command after 405, 408 and 419 Squadrons. The first mentioned found its initial home in 4 Group, and the second in 5 Group, while 419 Squadron became the first from Canada to enter 3 Group. 420 Squadron was formed in 5 Group at Waddington on the 19th of December 1941 under the command of W/C Bradshaw. Although many of the Group's squadrons had converted to the ill-fated Avro Manchester by this time, and 44 Squadron was about to begin the process of working up to operational status as the first Lancaster unit in the Command, 420 Squadron was to begin its operational career on the trusty, if obsolete Hampden.

The squadron's formation came during what was almost certainly the Command's lowest point of the entire war. Back on the 18th of August civil servant, Mr D M Butt, completed his analysis of recent Bomber Command operations, and its disclosures were to send shock waves reverberating around the Cabinet Room and the Air Ministry. Having studied more than four thousand photographs taken during a hundred night raids in June and July, he concluded that only a tiny fraction of bombs were falling within miles of their intended targets. This swept away at a stroke any notion that the Command had in any way reduced Germany's capacity to wage war thus far, and demonstrated the claims of the crews to be wildly optimistic. These revelations would not only forever unjustly blight the period of tenure as C-in-C of Sir Richard Peirse, but would also provide ammunition for the detractors, who believed that bomber aircraft could be more gainfully employed by other Commands in other theatres of operation. Typical of the effectiveness of the Command at this period was an operation launched on the night of the report's publication, against Cologne. The aiming point was the West Station, and returning crews reported many fires on that side of the Rhine. In fact, only one building in the city was damaged, and the fires were probably decoy sites. An attempt to hit Kiel on the 19/20th was equally ineffective, and it was a similar story at Mannheim on the 22/23rd. Düsseldorf was bombed through cloud on estimated position by a mixed force on the 24/25th, and this was the occasion on which six Hampdens performed a flak suppression role with some success.

Under extreme pressure, and possibly frustrated by the recent persistent bad weather, and failure to gain a decent success, Peirse planned a major night of operations for the 7/8th of November in which Berlin was to feature as the main course. The original intention was to commit over two hundred aircraft to the Capital, but doubts about the weather brought an objection from the 5 Group AOC, AVM Slessor, and he was allowed to withdraw his crews, and send them instead to Cologne. In the event, 169 aircraft would take-off for Berlin, seventy-five Hampdens and Manchesters for Cologne, while fifty-three Wellingtons and two

Stirlings of 1 and 3 Groups were assigned to Mannheim. Together with the extensive minor operations also mounted that night, the total number of sorties was a new record of 392. Sadly, this huge effort was not to be blessed with success, and the night degenerated into a disaster, particularly for Peirse. Less than half of the Berlin force reached the target area to release their bombs, and they succeeded in destroying fourteen houses, and damaging a similar number along with sundry other buildings. This scant return was gained for the loss of twenty-one aircraft, and although the 5 Group contingent suffered no losses at all, only two houses were classed as destroyed in Cologne. Finally, no bombs from the Mannheim force fell within the city, and seven Wellingtons failed to return, and when these were added to the nine aircraft missing from the minor operations, the loss figure for the night amounted to thirty-seven, more than twice the previous highest in a single night. This was the final straw for the War Cabinet and the Air Ministry, and Sir Richard Peirse was summoned to a meeting with Churchill on the evening of the 8th to make his explanations. On the 13th the Air Ministry instructed Peirse to carry out only limited operations until further notice, while the future of the Command was debated at the highest level.

Throughout the remainder of November and then December the Command adopted a pattern of small-scale operations, largely against ports, interspersed with mining for some of the Hampden crews. The first major raid of December was directed at Aachen on the 7/8th, and took place in poor weather conditions. Only sixty-four out of 130 crews claimed to have bombed in the target area, and they managed to land just five high explosive bombs within the town. The main theme for the month, however, was Brest and its resident enemy cruisers, Scharnhorst, Gneisenau and, periodically, Prinz Eugen. No fewer than fifteen operations of various sizes were mounted against the port, but none seems to have been effective. This summed up a very unsatisfactory year for the Command, and it was difficult to point to any major advance in performance on the previous year. The new aircraft types introduced to operational service early in the year had all failed to meet expectations, and each had undergone lengthy periods of grounding while essential modifications were carried out. The year ended with a black cloud hanging over the Command, and its future hanging in the balance, and the only bright spot was the commitment and courage of the crews, which had never once been found wanting. They and Sir Richard Peirse had done their utmost to fulfil the often unrealistic demands of the policy makers, but their best had not been good enough in the face of an, as yet, all conquering enemy. After a shaky start, the New Year would bring changes in the form of a new leader, and, importantly for him, a new aircraft, which would prove to be the shining sword in his armoury.

1942

The New Year began with a continuation of the obsession with the German cruisers at Brest, and eight operations were launched against the port and its guests during the first two weeks of January. This long-running situation would resolve itself in February, but in the meantime it would claim more Bomber Command lives. It was during this period, on the 8th of January, that the long-suffering Peirse departed Bomber Command to take over the RAF in South-East Asia. He was replaced temporarily by AVM Baldwin, the incumbent AOC 3 Group, until a permanent C-in-C was appointed. 420 Squadron went to war for the first time on the night of

the 21/22nd when contributing five of twelve Hampdens for an attack by a total of thirty-eight aircraft on Emden. Three Hampdens and one Whitley failed to return, among them AT130, the aircraft captained by 420 Squadron's B Flight commander, S/L Wood. It was brought down by flak over Holland, but the entire crew survived to fall into enemy hands.

There was no major activity at the start of February, minor operations taking the Command through to the 12th. Brest was targeted by Wellingtons and Stirlings on the 6/7th, and again on the 10/11th, and a small force of Wellingtons returned there on the evening of the 11th. It had always been known, that a breakout by the German cruisers would be the inevitable consequence of the failure to sink or severely damage them in port, and in anticipation of this, Operation Fuller had been devised. Unfortunately, it seems that many of those at grass roots level who would be charged with putting the plan into effect, were largely ignorant, not only of its requirements, but even of its existence. Within hours of the last mentioned raid, and in atrocious weather conditions, the Scharnhorst, Gneisenau and Prinz Eugen slipped anchor and headed for the Channel, surrounded by an escort of destroyers and other craft. It was not until 10.30 hours on the following morning that the fleet was spotted, when only 5 Group was standing by at four hours readiness. The first sorties were launched three hours later, and these were followed by others throughout the course of the day. Despite the largest daylight commitment of aircraft to date, amounting to 242 sorties, including six by 420 Squadron Hampdens, the squally conditions and low cloud base made it almost impossible for crews to deliver an attack. One 420 Squadron crew is known to have attacked a cruiser, but three made no contact with the enemy and two others failed to return. P4400 was lost without trace with the crew of P/O Topping, and AT134 crashed into the sea killing S/L Harris and his crew. The enemy fleet eventually passed through the Straits of Dover to make good its escape into open sea, and although the Scharnhorst and Gneisenau both struck mines recently laid by 5 Group aircraft, which slowed their progress a little, they never the less arrived safely in home ports on the following morning. In all, Bomber Command sacrificed fifteen crews to Operation Fuller, adding to all the others wasted during this long-running and ill-fated saga, and the "Channel Dash" episode was a huge embarrassment to the government and the nation. On the credit side, this annoying itch had at least been scratched for the last time, and the Command's resources could now be concentrated against more suitable targets.

On the 14th, a new Air Ministry directive reaffirmed the assault on the morale of the enemy civilian population, particularly its workers, and paved the way for the blatant area bombing of Germany's urban areas. This had, of course, been going on for some time, but the pretence of aiming for specific industrial and military targets was now swept away. Waiting in the wings was the leader who would pursue this policy with a will. A few days earlier, on the 10th, the armed merchant ship Alcantara had departed Boston, on America's eastern seaboard, and set course for England, carrying among its passengers ACM Sir Arthur Harris. He had spent the previous eight months as part of a diplomatic and military mission to the United States, and had played a major role in cementing relations between the two nations. He was coming home to assume the post of Commander-in-Chief Bomber Command, having spent the war up to November 1940 as AOC 5 Group. From then until the American interlude, he had been a Deputy Chief-of-the-Air-Staff to Sir Charles Portal, and was a bomber baron to the core. He had been a squadron commander in the twenties and thirties in the Middle East, and spent

much of his time developing the theory and practice of bombing by both day and night. On the 22nd he was installed as the new Commander-in-Chief, arriving at the helm of Bomber Command with firm ideas already in place on how to win the war by bombing alone. Harris knew, that to strike a telling blow at a city target, it was necessary to overwhelm the defences and emergency services by pushing the maximum number of aircraft across the aiming point in the shortest possible time. This would signal the birth of the bomber stream, and an end to the former practice, whereby crews determined for themselves the details of their sorties. He also recognized that built-up areas are most efficiently destroyed by fire rather than blast, and it would not be long before the bomb loads carried by his aircraft reflected this thinking.

By the time of Harris's enthronement, 420 Squadron had suffered a further loss. AD915 failed to return from a mining sortie to the Frisians on the night of the 18/19th, after flak had forced P/O Kee to ditch in the target area. He and one other survived, but the remaining two crewmembers lost their lives. For the remainder of the month, Harris persisted with the small-scale attacks on Germany's ports, and it was during one such raid, that the war threw up one of its ironies. While attacking the floating dock at Kiel on the 26/27th, one of the participating Wellingtons, Hampdens and Halifaxes landed a bomb on the bows of the Gneisenau, now supposedly in safe haven after enduring eleven months of constant bombardment at Brest, and this ended her sea-going career for good. The remainder of February passed without further loss to 420 Squadron, and then March began with an operation on the 3/4th, which was a sign of things to come for German industry. A detailed plan was prepared for the largest force yet employed against a single target. The 235 aircraft were to be divided into three waves, led by experienced crews, and with extensive use of flares to provide illumination. The target was the Renault lorry factory at Billancourt in Paris, and in the face of what was expected to be a scant anti-aircraft defence, the crews were to bomb from low level, both to aid accuracy, and to avoid unnecessary casualties among French civilians. 223 crews bombed the target as briefed, and the operation was an outstanding success, which destroyed 40% of the buildings, and halted production for four weeks. This was achieved for the loss of just one Wellington, and was marred only by the heavy casualties among French civilians living nearby. It was somewhat paradoxical, that Harris, as a champion of area bombing, should gain his first major victory by way of a precision target.

Essen was to feature prominently in Harris's future plans, and a series of three raids on consecutive nights began on the 8/9th. Over two hundred aircraft were dispatched, those in the van equipped with the Gee navigation device, but the operation was a complete failure. The succeeding Essen raids were also disappointing, and it would be a further twelve months before the means were to hand to deliver a telling blow against this and other Ruhr cities. The first successful Gee-led raid fell on Cologne on the 13/14th, and damaged fifteen hundred houses along with a number of war industry factories. Two more operations were directed at Essen, on the 25/26th and 26/27th, and both were dismal failures. 5 Group did not participate on the latter occasion, but sent twenty-four Hampdens mining instead. Two failed to return, one of them 420 Squadron's AE298, which was lost without trace with the crew of Sgt Groff. The 27/28th was the night of the St Nazaire raid by commandos, and while elements of the Whitley and Wellington force supported this, fifteen Hampdens conducted mining sorties around German ports. The first major success for the area bombing policy came at Lübeck on

the 28/29th, in an operation conducted along similar lines to those employed against the Renault factory at the start of the month. Selected for its ease of location on the Baltic coast, this ancient city port, with its narrow streets and half-timbered buildings around its centre, was ideal for a fire-raising attack. 234 aircraft took off, and 191 crews claimed to have carried out their assigned tasks, delivering four hundred tons of bombs, two thirds of them incendiaries. The flak defences were light, and many crews came down to 2,000 feet to ensure accuracy. Fourteen hundred buildings were destroyed, a further ten thousand were damaged to some extent, and this amounted to approximately 30% of the city's built-up area. Of the twelve aircraft missing from the operation just one was a Hampden, AE246 of 420 Squadron. S/L Tench ditched the aircraft in the Kattegat, and he and his crew were taken into captivity. It was a sad fact that, of the six crews lost by the squadron thus far, three had been captained by Flight commanders, men of experience, but this was also indicative of the quality and style of leadership from the front.

April began with small-scale operations, mostly to targets in France, and it was not until the night of the 5/6th that the Command operated in numbers. It was, in fact, a new record force of 263 aircraft that set out for Cologne, but much of its effort was wasted, and the attack failed to gain any concentration. This was followed by Essen on the 6/7th, when severe storms en-route persuaded many crews to abandon their sorties, and only a third of the force reached the target area. These failed to inflict any damage of note, and similar weather conditions ruined an attempt on Hamburg by another record force two nights later. Essen escaped all but superficial damage yet again on the 10/11th, and was then once more selected as the main target for operations on the 12/13th. Although results were far less than hoped for, the Krupp works did at least record some hits by high explosives and incendiaries on this night. P1239 failed to return from the operation, however, and was lost without trace with the crew of F/S Johnson. According to Bill Chorley's Bomber Command Losses Vol 3, Hauptmann Helmut Lent, the German night fighter ace, claimed a Hampden near the Frisian island of Terschelling at around 00.30 that night, and it seems very likely that it was the 420 Squadron aircraft. Forty-eight hours later the first of two attacks on consecutive nights was carried out against Dortmund. It was an ineffective operation, which scattered bombs over a forty-mile stretch of the Ruhr, and damage in the target city was slight. It was a bad night for 420 Squadron, for whom the problems began before its aircraft had even left Lincolnshire. Just seven minutes after take-off AT219 suffered engine failure and crashed south of Lincoln, killing P/O Murray and his crew. AT128 was then shot down over Germany with the loss of F/S Johnson and his crew. The second attack on Dortmund produced even less damage than the first, but better results were obtained at Hamburg on the 17/18th, when numerous fires were left burning. A training accident cost the squadron another crew on the night of the 19/20th. Moments after taking off for a night cross-country exercise AD869 crashed and caught fire with fatal consequences for Sgt Davis and his crew. A large mining effort in northern waters acted as a diversion for a smallish experimental raid on Cologne on the 22/23rd, which was conducted by Wellingtons and Stirlings to gauge the suitability of Gee as a blind bombing device. It was not a successful trial. In an effort to repeat the success of Lübeck, Rostock was raided four times in four nights from the 23/24th. This was also a port on the Baltic coast, and had as an added attraction the nearby Heinkel aircraft factory, to which an element of the force was assigned. The first raid was a disappointing failure, but the subsequent attacks brought major

destruction, amounting to 60% of the main town area, and over seventeen hundred buildings were reduced to rubble. The second raid cost 420 Squadron P5330, which crashed onto a Danish island, killing Sgt Potter and two of his crew, while the lone survivor was taken prisoner. It was during the third raid that some hits were scored on the Heinkel factory by 5 Group's 106 Squadron, led by their soon to be famous commanding officer, W/C Guy Gibson.

May opened with an unusually effective attack on Hamburg on the 3/4th, which was delivered through cloud by a modest fifty-four aircraft. Over a hundred fires were started, half of them large, and eleven apartment blocks were destroyed. This was followed by three raids on consecutive nights on Stuttgart beginning on the 4/5th, all of which failed to produce more than isolated scattered damage. This first operation was eventful for 420 Squadron, which had two of its aircraft limp back to England with severe damage courtesy of the enemy defences. P1314 was hit by flak over the Belgian coast, wounding the pilot, Sgt Maitland, and setting fire to the port engine. The pilot immediately set course for home, and landed at Martlesham Heath shortly before 00.30. Meanwhile, P1187 had reached the Luxembourg border on the way home when it was damaged by flak and then attacked by a night fighter. The pilot, Sgt Hiley, was wounded in the exchange and one of the gunners was killed. However, it is believed that the return fire from the Hampden accounted for the BF110. Sgt Hiley nursed the aircraft back to England, where he carried out a crash-landing in Essex without further damage to the surviving crewmembers. For his courage and determination the pilot received the immediate award of the DFM. Three nights later AE389 failed to return from a mining sortie in northern waters, and only the pilot, Sgt Carson, survived to fall into enemy hands. An ill-fated operation to Warnemünde on the Baltic coast on the 8/9th cost nineteen aircraft, or 10% of the force, and one of the three missing Hampdens belonged to 420 Squadron. AT144 was brought down by flak near Germany's Baltic coast, and S/L Campbell DFC and one other survived to fall into enemy hands. A major raid was launched against Mannheim on the 19/20th, and despite the enthusiastic claims of the crews, most of the bombing was wasted in open country. On the afternoon of the 20th a 44 Squadron Lancaster suffered a structural failure as it was racing along the Waddington runway to take off for an air test. It slewed off onto the grass, and collided with two parked 420 Squadron Hampdens, writing off P2094 and damaging X3149. Thereafter, the bulk of the available Bomber Command aircraft remained on the ground amidst much speculation, which was heightened when aircraft from training units began to assemble on bomber airfields from Yorkshire to East Anglia.

Since the damning Butt report of the previous year the existence of an independent bomber force had been questioned in high places, notably the Admiralty, which believed that Harris's aircraft could be put to better use to combat the U-Boat menace in the Atlantic. Others thought the Middle East theatre of operations more important, where recent reversals needed to be redressed, and the fact that such claims were being made on bomber aircraft was a source of concern to Harris. When he took up the reins of the Command he asked for four thousand bombers with which to win the war, and while there was not the slightest chance of getting them, he needed to ensure that those earmarked for him were not spirited away to what he considered to be less deserving causes. He needed a major victory, and, perhaps, a dose of symbolism to make his point, and out of this was born the Thousand Plan, Operation Millennium, the commitment of a thousand aircraft in one night against a major German city,

for which he had pencilled in Hamburg. Harris did not have a thousand front-line aircraft, and in order to achieve the magic figure, he would need the support of other Commands, principally Coastal. This was forthcoming in a letter on the 22nd, but following an intervention by the Admiralty, Coastal Command underwent a change of heart and withdrew its contribution.

Undaunted, Harris, or more likely his able deputy, the genial AM Sir Robert Saundby, scraped together every airframe capable of controlled flight, or something close to it, and pulled in the screened crews from their instructional duties. Come the night, not only would the magic figure of one thousand aircraft be achieved, it would be comfortably surpassed. The only remaining question concerned the weather, which was in no mood to co-operate. As the days ticked inexorably by towards the end of May a real danger arose that the giant armada might draw attention to itself and compromise security, and the point was fast approaching when the operation would have to either take place, or be postponed for the time being. It was in this atmosphere of frustration, that "morning prayers" began at Harris's HQ at High Wycombe on the 30th, when all eyes were turned upon the chief meteorological adviser, Magnus Spence. At last, he was able to give a qualified assurance, that conditions over the Rhineland would be sufficiently good after midnight to even allow some moonlight to filter through, while north-western Germany would be swathed in heavy cloud. Thus did the fates decree that Cologne would bear the doubtful honour of hosting the first one thousand-bomber raid in history. The teleprinter messages went out to the bomber stations with details of timings, fuel and bomb loads, and the whole process was set in motion.

The plan called for the now familiar three-wave attack, with the genuine heavy bombers bringing up the rear. Seven 5 Group squadrons were either fully or partially converted onto Lancasters, and some were sending a mixture of these and Manchesters, while 49 Squadron was operating Manchesters only, and only 408 and 420 Squadrons of the RCAF were still going to war in the Hampden. 1047 aircraft took off roughly between 22.30 and 00.40, some of the older training hacks doing so somewhat reluctantly, and were lifted more by the enthusiasm of their crews than by the power of their engines. A number of these, unable to climb to a respectable height, would fall easy prey to the defences, or drop from the sky through mechanical failure. 420 Squadron contributed fifteen aircraft, one of which was forced to return early. The remainder participated in what by any standards was an outstandingly successful operation, which destroyed over 3,300 buildings, and damaged to some extent over 9,500 others. 420 Squadron's aircraft all returned, but AE399 collided with a parked 44 Squadron Conversion Flight Lancaster, injuring F/S McDermid and one of his crew. The cost to the Command was forty-one aircraft, a new record loss, but the formally loud criticism directed at the Command was reduced to a whisper, and Harris could now concentrate on moulding his force into a war-winning weapon. While the massive fleet of aircraft was still assembled, Harris used it again on the 1/2nd of June to raid Essen. Only 956 aircraft were available on this occasion, and in contrast to events at Cologne, the operation was a dismal failure, which sprayed bombs all over the Ruhr, while few fell in Essen. Thirty-one aircraft failed to return, but 420 Squadron came through unscathed. A smaller-scale follow-up raid against Essen on the following night again failed to find the mark, while four Hampdens went mining off the French coast. 420 Squadron's AE260 crashed on the

mainland, and the sole survivor from Sgt Harrison's crew was taken into captivity. A moderately effective raid was delivered on Bremen on the following night, before another failure occurred at Essen on the 5/6th. A raid on Emden on the 6/7th proceeded according to plan, and a reasonable amount of damage resulted, but two further raids on Essen on the 8/9th and 16/17th again failed to impress, and these brought the number of operations against the city during the month to five. The former operation cost 420 Squadron AT136, which was lost without trace with the crew of F/S Reid. The statistics for the Essen campaign made grim reading, with over sixteen hundred sorties producing no industrial damage, while just a few houses had been destroyed and eighty-four aircraft had been lost.

An attempt to capitalize on the damage caused at Emden early in the month came in the form of three raids against the port in four nights from the 19/20th. Despite the numbers of aircraft involved in the series damage was only modest, and the second raid on the 20/21st resulted in the loss to 420 Squadron of AT185, which was shot down by a night fighter to crash onto the Frisian island of Ameland, and F/S Ellis and his crew all lost their lives. The now F/S Hiley had returned to duty following his exploits during the Stuttgart operation at the start of May, and his was one of fifty-two assorted aircraft heading for mining operations along the occupied coast on the night of the 23/24th. He and his crew were just twenty minutes into their flight to Lorient when they came down in Lincolnshire. For the second time in less than two months the pilot sustained injuries but cheated death, sadly, though, his crewmates perished. The final Thousand Plan operation was directed at Bremen on the 25/26th, for which 960 aircraft were available, but having been ordered by Churchill to take part, Coastal Command also despatched 102 aircraft in what was classed as a separate operation. The numbers converging on the target, however, exceeded those sent to Cologne, and while not repeating the success gained there, the results far surpassed those at Essen. 572 houses were destroyed, and over six thousand others were damaged to some extent, while some war industry factories were also hit. The loss of forty-eight aircraft was the heaviest to date, but the 420 Squadron participants all returned safely. Three follow-up raids on the 27/28th, 29/30th and 2/3rd of July left further useful damage in their wake, but Hampdens were included in only the last mentioned. Twenty-eight of the type took part, of which two failed to return, both of them from 420 Squadron. Each was dispatched by a night fighter over Holland, P5332 crashing into the Ijsselmeer killing F/S Wilde and his crew, while F/L Brown was the only survivor of his crew in AE248, and he became a PoW.

A raid on Wilhelmshaven on the 8/9th of July included twenty-four Hampdens from the two remaining operators of the type, and it achieved a modest degree of success, although most of the bombing was wasted in open country. The same number went mining on the following night without loss, and then twelve were engaged in similar activities on the 12/13th. 420 Squadron's Sgt Hannah and crew were briefed for French waters, and they failed to return in AE390 after flak brought them down in the target area killing all on board. A series of four raids on Duisburg began inauspiciously on the 13/14th, without a Hampden presence, and continued on the 21/22nd, when seventeen of the type took part. The raid was modestly successful, and more damage occurred there on the 23/24th and 25/26th, the latter involving fourteen Hampdens, all of which returned safely. After this, attention shifted to Hamburg, at which two raids were directed over a three night period beginning on the 26/27th. The first

operation produced particularly good bombing and widespread damage, but it proved costly for 420 Squadron after two aircraft failed to return. AE202 crashed in Germany killing three of the crew, the pilot, P/O Rayne alone surviving in enemy hands. AE267 was lost without trace, and took with it the crew of F/S Johnstone. The second raid against Germany's Second City took place on the 28/29th with a large contribution of aircraft and crews from the training units. The operation was hampered by bad weather conditions, which reduced the number of aircraft reaching the target from an original 256 to sixty-eight. Never the less, it was another effective attack, which left many fires burning, fifteen of them classed as large. The month ended with a raid on Saarbrücken on the 29/30th involving seventeen Hampdens, before the training units contributed once again to a large force of over six hundred aircraft, which was sent against Düsseldorf on the last night of the month. Many crews placed their bombs within the target area, although some loads spilled over into neighbouring Neuss, and over 450 houses were destroyed in the two built-up areas. 420 Squadron's AE355 was one of twenty-nine missing aircraft, and was lost without trace with the crew of F/S Kaufman. This proved to be the final operation and loss for the squadron as a 5 Group unit, and it was stood down from operations pending its posting to 4 Group.

420 Squadron left 5 Group for 4 Group on the 6th, and took up residence at Skipton-on-Swale. It would take some time to fully re-equip with Wellington IIIs, but the first one, BJ644, arrived immediately, to be followed on the 11th by X3808 and X3809. Three more were taken on charge on the 19th, X3814, Z1724 and BJ717, while X3963 arrived on the 27th and BJ966 on the 28th. The remainder were received in September, chronologically X3800, BK235, BJ915, BK295, BK296, BK297, BJ917 and BK331, but it would be the following month before the squadron was declared operational. Meanwhile, August's first operation of note involved over two hundred aircraft at Duisburg on the 6/7th, when further moderate damage was inflicted in what was the last of the current series against Germany's largest inland port. Eighteen houses were destroyed, and this brought the tally of destruction to a little over two hundred houses from 1,229 sorties over three weeks, for the loss of forty-three aircraft. The target on the 9/10th was Osnabrück, for which almost two hundred aircraft were detailed. The operation took place in good visibility, but the flares were not concentrated, and this led to a general scattering of bombs across the town. Two hundred houses were destroyed, while a further four thousand were damaged to some extent, and a number of industrial concerns were hit, as was the docks area, which sustained considerable damage. Two raids on Mainz followed on the 11/12th and 12/13th, which left extensive damage in central districts, where the railway station was hit, and also in industrial areas. The two operations cost a total of eleven aircraft, but a disproportionately high loss rate among Halifaxes in recent times had led to an investigation, which pointed to rudder-overbalance as a major cause of accidents. It was decided to modify all tail units, and this took place during August, thus grounding squadrons for periods, and reducing the Halifax contribution to the offensive.

On the 15th the Pathfinder Force came into existence under the then G/C Don Bennett, who proved to be a controversial but inspired choice by Harris. Bennett's pre-war experience as a pilot and navigator was unparalleled, and his grasp of all matters pertaining to engineering and technology left most floundering in his wake. He would set standards that few could achieve, but despite this, and his well-documented humourless personality, he was to attract a fierce

loyalty among his squadrons, which would one day include the Canadian 405 Squadron. The appointment of such a junior officer ruffled a few feathers among the AOCs, all but one of whom shared Harris's opinion, that the formation of an elitist target locating and marking force was both unnecessary and ill-advised. Once overruled, of course, Harris, in typical fashion, gave the new organisation his unstinting support, and was eager to bring it into battle at the first possible opportunity. Each heavy Group provided one squadron as a founder member, and would be responsible for maintaining a steady supply of the best crews from its front line units. Only 4 Group's AVM Roddy Carr was initially kindly disposed towards the Pathfinders, and he would ensure that his Group "played the game" with regard to the posting of quality crews to 35 Squadron. He also proved to be a useful ally to Bennett, who had served under him while commanding 77 and 10 Squadrons. The new force would fall nominally under the control of 3 Group until being granted Group status in its own right, and would, therefore, lodge somewhat uneasily on the stations of AVM Baldwin, one of those least well disposed towards it. 1 Group was represented by the former 3 Group unit, 156 Squadron, with its Wellingtons at Warboys, while 3 Group nominated 7 Squadron, which remained with its Stirlings at Oakington. 35 Squadron came from 4 Group to Graveley with Halifaxes, and 5 Group's 83 Squadron flew its Lancasters into Wyton, where Bennett set up his HQ. This all took place between the 15th and the 17th, and 109 Squadron, already at Wyton since the 6th, joined the Pathfinder ranks to continue its pioneering work in marrying the Oboe blind bombing device to the Mosquito.

A raid on Osnabrück on the night of the 17/18th had been intended as the maiden operation for the new force, but in the event, it went ahead as a standard operation by over a hundred aircraft and achieved moderate success. On the following night the Pathfinders went to war for the first time with thirty-one aircraft ahead of eighty-seven from the main force bound for the port of Flensburg. Situated on the narrow neck of land where Germany and Denmark meet it should have been relatively easy to locate, but the only bombs to fall on this night were reported by Danish towns. It was not a distinguished beginning to what would become an illustrious career, and there was little improvement at Frankfurt on the 24/25th, when the city proved difficult to locate in cloudy conditions. A few bombs found it, causing fires and some property damage, but most fell into open country to the north and west. The third Pathfinder-led operation took place against Kassel on the 27/28th, when sparse cloud allowed the city to be illuminated sufficiently for the main force crews to identify the aiming points, and over 450 buildings were either destroyed or seriously damaged. Thus far, path-finding had amounted to locating the target, and illuminating it with flares. The process evolved somewhat on the 28/29th, however, when rudimentary target indicators in 250lb bomb casings were used for the first time at Nuremberg. The Pathfinder crews carried out their briefed task accurately, but the main force crews produced scattered bombing, and damage was fairly modest. Meanwhile, an experimental raid was in progress at Saarbrücken, employing Wellingtons, Hampdens and twenty-four Halifaxes from 4 Group, which were still being rested from main force operations while undergoing modifications. No Pathfinder aircraft were present, and the operation was almost a complete failure.

4 Group returned fully to operations at the start of September, and contributed aircraft to a raid intended for Saarbrücken on the night of the 1/2nd. In an ignominious beginning to the

month's operations, the Pathfinders posted a "black" by marking the nearby non-industrial town of Saarlouis in error. For once, the main force bombing was accurate, and dealt a severe blow to the town. The Pathfinder blunder might have been seen as an ill omen for the remainder of the month, but in the event, it heralded an almost unprecedented series of effective operations over the ensuing two weeks. On the 2/3rd, Karlsruhe was rocked by an accurate attack, which left two hundred fires burning for the loss of twelve aircraft. Two nights later over two hundred aircraft destroyed 480 buildings in Bremen, and seriously damaged a further fourteen hundred. This was the occasion on which the Pathfinders introduced the three-phase technique of illumination, visual marking and backing-up, which was to form the basis of all future operations. On the 6/7th over a hundred buildings were destroyed in a scattered raid on Duisburg, and although this was a relatively modest haul, it still represented something of a victory at this elusive target. The run of successes was temporarily halted at Frankfurt on the 8/9th, another notoriously difficult target to locate, when most of the bomb loads fell miles away. The force of 479 aircraft bound for Düsseldorf on the 10/11th included a contribution from the Training Groups, and the Pathfinders employed "Pink Pansies" in 4,000lb bomb casings for the first time. Accurate marking and bombing resulted in the destruction of over nine hundred houses in the city and nearby Neuss, and many thousands more were damaged to some extent. Bomber losses were high, however, amounting to thirty-three aircraft.

After a two-night rest, 446 aircraft took off for a return to Bremen, the numbers again bolstered by an element from the training units. Almost 850 houses were destroyed, and a number of highly important war industry factories were damaged sufficiently to cause a loss of production. This impressive success for the Command exceeded that gained by the Thousand Force back in June, yet employed a force only half as large. On the 14/15th, Wilhelmshaven recorded its heaviest and most destructive raid to date, during which, 408 Squadron, the second Canadian unit to form in Bomber Command, carried out the final bombing sorties of the war in the venerable old Hampden. Even Essen was hit harder than ever before when attacked by over three hundred aircraft on the 16/17th, and fifteen high explosive bombs fell into the Krupp complex, along with a crashing bomber. Despite the improvement in accuracy, however, many bombs were sprayed onto other Ruhr towns, and the answer to pinpoint accuracy over the region had still not been found. The burgeoning effectiveness of the Ruhr defensive screen was also apparent from the loss of a massive thirty-nine aircraft. It can be no coincidence, though, that this period of more effective operations had come at a time when the fledgling Pathfinder Force was coming to terms with the complex and demanding requirements of its role. The crews had been pitched into the offensive without dedicated training, and had to learn their trade during the heat of battle. If any period can be identified as the turning point in the long metamorphosis to becoming a war-winning weapon, then perhaps these two weeks in September was it. There would be no overnight transformation, and failures would continue to outnumber successes for some time to come, but the signs were there, and it boded ill for German towns and cities in the future. The weather during the second half of September was not helpful to bombing operations, and a number of nights were devoted to small-scale raids conducted without a Pathfinder presence. Flensburg was to feature prominently for the Halifax brigade, and twenty-eight of them set out for the port on the night of the 23/24th. Only sixteen crews reported bombing as briefed, and

five aircraft failed to return. Another attempt was made on this target on the 26/27th, but all but one crew responded to a recall signal and abandoned their sorties.

October began with yet another operation to Flensburg on the night of the 1/2nd, this time by twenty-seven Halifaxes, but by the time returning crews had completed their debriefing, it was evident that 4 Group had suffered a disastrous night, losing twelve Halifaxes. On the 5/6th, over 250 aircraft took off in bad weather conditions that persisted all the way to the target of Aachen. The attack was only modestly effective, and many of the bombs fell seventeen miles away onto the Dutch town of Lutterade. *(This was not appreciated at Bomber Command HQ, which would select a power station in the town for the first Mosquito Oboe bombing operation in December, believing it to be free of bomb craters, and, therefore, suitable for use as a calibration check on the device's margin of error.)* This raid marked the return of 420 Squadron to operational duties, and its participating crews all returned safely from both this operation and another against Osnabrück on the following night. It seems likely that the squadron's move from Skipton-on-Swale to Middleton-St-George occurred at this time, although the next few operations would be launched from Leeming

There were no major operations during the following week, and it was not until the night of the 13/14th that the next one took place. The target for almost three hundred aircraft was Kiel, where a nearby decoy fire site had been prepared. This was highly effective in attracting at least half of the bomb loads, while the remainder inflicted moderate damage within the town. This was the last time that 420 Squadron operated out of Leeming, and all of its participants returned safely to home airspace before problems arose for two of them. P/O Adilman overshot the approach when trying to put X3963 down at Docking in Norfolk, and the Wellington ultimately crashed near the airfield, although fortunately without serious injury to the crew. F/S Croft and his crew, on the other hand, had no luck, and all were killed when DF636 crashed during an attempted landing at Leeming. Two nights later a force of similar size was prepared for a raid on Cologne, where another decoy site was equally successful in luring the crews away from the real objective. Only a handful of high explosive bombs landed in the city, and damage was consequently minor. This failure was achieved at a cost of eighteen aircraft, and 420 Squadron suffered again, when X3808 was lost without trace with the crew of F/S White. This was the squadron's first operation launched from Middleton-St-George.

A new phase of the bomber offensive now beckoned, as Harris was forced to switch to Italian targets in support of Operation Torch, the landings in North Africa. The campaign opened with a 5 Group attack on Genoa on the 22/23rd, with 3 and 4 Groups following up twenty-four hours later, although actually bombing the coastal town of Savona in error. Later on the 24th 5 Group raided Milan to good effect in daylight, to be followed by elements of 1 and 3 Groups after dark, and this effectively ended the month's operations. The Italian campaign continued with four raids on Genoa during the first half of November and four on Turin in the second half. The month's only major attacks on German cities were against Hamburg on the 9/10th, and Stuttgart on the 22/23rd, neither of which was outstandingly successful. The former cost 420 Squadron another crew, however, that of Sgt Beale, who all died when Z1679 crashed into the sea. December began with a failure at Frankfurt on the 2/3rd, and another one at Mannheim on the 6/7th, and these preceded the final three operations to Italy, which were all

directed at Turin between the 8/9th and the 11/12th. The most significant operation in December was that mentioned earlier by six Mosquitos of 109 Squadron against the power station at Lutterade in Holland. Led by W/C Hal Bufton, three aircraft bombed successfully, while the other three suffered failure of their Oboe equipment and joined in the main force attack on Duisburg instead. It proved impossible to identify the fall of the Oboe-aimed bombs because of the craters left by the stray bombs intended for Aachen a few months earlier. Further calibration tests would be flown over the succeeding weeks, however, and the device would be ready in time for the forthcoming Ruhr offensive.

It had been a year of highs and lows for the Command, with a number of spectacular successes punctuated by many failures. There had, though, been a marked improvement on the performance of the previous year as Harris's tactics evolved, while the advent of the Pathfinders and the development of electronic bombing aids promised much for the future. As far as the Canadians were concerned, there were now sufficient operational RCAF squadrons to constitute a Group, and the official formation of 6 Group would be the first act of the coming year. As the clock ticked towards midnight on New Year's Eve, Canada's government prepared for a moment of significance. They awaited not so much the New Year, but that which came with it, the birth of 6 Group RAF Bomber Command, a shining symbol of the burgeoning status of the independent Canada. There were many non-British squadrons in Bomber Command, but this was the first foreign organization to muscle in, and while in public there was harmony between the two high commands, in private it was a different matter. Harris was strongly opposed to the formation of a Canadian Group. He valued Canadian airmen and welcomed their presence in the war, although he found it difficult to come to terms with their lax attitude in matters of RAF etiquette and discipline. He wanted to distribute them throughout the existing RAF Groups, but Whitehall wanted otherwise, and Whitehall won. Harris also had an intense dislike for Air Marshal Edwards, the Commander-in-Chief of Canada's overseas Air Force, and for the man who would initially be Air-Officer-Commanding 6 Group, AVM Brookes. Both were British born, and neither, as far as Harris was concerned, was worthy of holding a position of authority, particularly anywhere near his Bomber Command. A Headquarters was established in the baronial Allerton Hall on the two thousand acre estate of Allerton Park, the ancestral home of Lord Mowbray, four miles east of Knaresborough. Its dark, somewhat angular and forbidding aspect soon saw it renamed Castle Dismal by the Canadians.

1943

As the Year turned, not all RCAF squadrons in Bomber Command were immediately posted to 6 Group. It began life with eight operational squadrons, all based on former 4 Group stations in Yorkshire and County Durham, while a few other units remained in 4 Group for the time being. The founder units were 408 and 419 Squadrons, each equipped with Halifaxes, and 420, 424, 425, 426, 427 and 428 Squadrons, which were soldiering on with the trusty Wellington. The Canadian government was demanding Lancasters, and the type would eventually become dominant in the Group, but that would be by war's end. In the meantime, most of the existing Wellington units, and those awaiting posting in or still to form, would find themselves converting to the unpopular Halifax. There was no fanfare to herald the

operational debut of the new Group, in fact, it was a damp squib, as the appalling weather conditions forced the cancellation of the intended maiden operation on New Year's Night. It was not until the 3/4th that half a dozen 427 Squadron Wellingtons disappeared into the murk at the end of the runway at Croft on the Group's first sorties to lay mines off the Frisians. Another squadron should have contributed six more to the occasion, but was dissuaded by the conditions from taking part. Inhospitable weather was to characterize January, and there would be no major activity during the first half of the month. 420 Squadron dispatched F/S Lundeen on a lone mining sortie on the 8/9th, its first under 6 Group, but he was recalled. A number of the squadron's aircraft joined others from the Group on the following night to lay mines in the Frisians, when F/S Townsend returned early with engine failure. A recent resurgence in U-Boat activity continued to take a heavy toll of Allied shipping in the Atlantic, and confirmation of this came with a new Air Ministry directive on the 14th, which authorized the area bombing of those French ports providing bases and support facilities for U-Boats. A target list was drawn up headed by Lorient, and that night, 122 aircraft took off for the first of eight attacks against it over the ensuing month. This was 6 Group's first bombing operation, sixteen aircraft taking part in what was at best only a modestly effective raid.

Bomber Command's year had actually begun with a series of small-scale operations as part of the Oboe trials programme. Seven raids on Essen and one on Duisburg involving 109 Squadron Mosquitos and Lancasters from 1 and 5 Groups were mounted during the first two weeks of January alone. On the 8th the Pathfinder Force was granted Group status as 8 Group, and the stations under its occupation were transferred over from 3 Group. Six 420 Squadron Wellingtons were dispatched to Norden by daylight on the 15th, but they were recalled after reporting an absence of cloud cover. Sgt Sanderson failed to hear the signal, however, and bombed the target from 600 feet. That night Lorient was raided for the second time, and more than eight hundred buildings were destroyed. Weather conditions at home were poor, and four of the squadron's crews landed at Tangmere. Two disappointing attacks were mounted against Berlin by predominantly Lancaster forces on the 16/17th and 17/18th, and the only matters of significance arising out of the former was the complete destruction of the Deutschlandhalle, the largest covered arena in Europe, and the loss of a single Lancaster. The latter raid produced no useful damage, but cost twenty-two aircraft. The squadron suffered its first loss under 6 Group on the 21/22nd, on the anniversary of its very first failure to return. Sgt Gergly and his crew were part of a mining effort in the Frisians, and no trace of BJ966 was ever found. Later on the 22nd, 420 and 425 Squadrons sent six Wellingtons for a daylight attack on Essen, which was bombed from between a thousand and two thousand feet. One 420 Squadron aircraft was damaged by flak and another attacked a railway station from a hundred feet before shooting up a train on the way home. Further attacks on Lorient took place on the 23/24th, 26/27th and 29/30th, the last two-mentioned with a 420 Squadron presence. P/O Stanton and his crew were lost without trace in DF615 on the latter occasion, and then tragedy struck the already mentioned Sgt Sanderson. After almost seven hours in the air DF626 approached Exeter with at least part of its bomb load still on board. This was seen to be jettisoned shortly before the Wellington crashed, killing the pilot and three others, while the two survivors sustained injuries. In between these assaults on Lorient the first Oboe ground marking ahead of the heavy Pathfinder aircraft was attempted on the 27/28th. This led to an

effective raid on Düsseldorf, in which over 450 houses were destroyed, along with a number of industrial and public buildings.

As Harris sought the most effective method of target marking, the first H2s attack of the war was mounted against Hamburg on the 30/31st. It was not an entirely successful debut for the device, but with time and practice it would emerge as a useful addition to the Command's armoury of electronic aids, particularly for use against targets beyond the range of Oboe. A combination of path-finding techniques was employed against Cologne on the 2/3rd of February with disappointing results, and the weather spared Hamburg from a telling blow on the following night, by forcing many crews, including five from 420 Squadron, to return early, and providing difficult conditions for the Pathfinder markers. The campaign against Lorient continued on the 4/5th, while on the 6/7th 420 Squadron's entire mining effort failed to find the target in the conditions. It was Lorient again on the 7/8th, when BK235 was attacked inconclusively by an enemy night fighter. Two nights later two 420 Squadron crews were dispatched to mine the waters around Texel. The weather defeated P/O Dunn, while S/L Smith's aircraft was struck by lightning, which left a tear in the fuselage fabric. Wilhelmshaven was subjected to its most destructive raid to date on the 11/12th, when complete cloud cover forced the Pathfinders to employ parachute flares as skymarkers. This was the least reliable of all techniques, but despite the difficulties, the marking and bombing was accurate and concentrated. One bomb load hit a naval ammunition dump, and the resulting explosion devastated an estimated 120 acres, and caused extensive damage in the dockyard and town. That same night four 420 Squadron aircraft returned early for various reasons from a mining expedition. The penultimate attack on Lorient was delivered on the 13/14th, and it resulted in the loss of another 420 Squadron Wellington. BK330 crashed in the target area, and there were no survivors from the crew of P/O Gibson. The following night was devoted to Cologne and Milan. The former operation enjoyed only modest success, and two of the squadron's crews reported being attacked by enemy night fighters without damage. The latter operation was more effective, and created fires visible from a hundred miles away.

Lorient was pounded for the final time on the 16/17th, and was left a deserted ruin after eight raids, in which almost seventeen hundred aircraft had dropped four thousand tons of bombs. The first of two follow-up raids on Wilhelmshaven took place on the 19/20th, when F/S Taylor's DF637 was seriously damaged by flak before being attacked by a night fighter which put the port engine out of action. One of the crew, Sgt Beresford, baled out in the confusion, but the remainder stayed with the aircraft and they landed safely at Coltishall in Norfolk. Another raid on Wilhelmshaven on the 24/25th failed to capitalize on the earlier success, and poor weather conditions over Nuremberg on the 25/26th helped to push the bombing onto its northern fringes and beyond into open country. The south-western districts of Cologne sustained moderate damage on the 26/27th in return for the loss of ten bombers. Among them was 420 Squadron's BK468, which crashed near Mönchengladbach, killing Sgt Hansen and his crew. St Nazaire became the second of the French ports to be attacked under the latest directive on the last night of the month. This was a successful operation, which caused heavy damage in the port area, and left an estimated 60% of the town's built-up area in ruins.

March would bring with it the first major campaign of the year against Germany, and the first offensive of the war for which Bomber Command was truly prepared and adequately equipped. Most of the front line squadrons were now operating genuine heavy bombers, although Wellingtons would continue to feature prominently until well into the second half of the year. The magnificent pioneering work on Oboe carried out by 109 Squadron had born fruit, and whilst the device was not yet problem free, it was ready to be used against the Ruhr. Tactics had been honed to the point where only actual operational experience could bring about fine-tuning, and enough target marking techniques were to hand to cope with most contingencies. This said, bombing was by no means yet a precise art, and would remain something of a lottery for a long time to come, particularly at the more distant targets. The Ruhr offensive would begin on the night of the 5/6th, but in the meantime, major operations were mounted against Berlin and Hamburg. Both lay well beyond the range of Oboe, and H2s would provide the reference point for the Pathfinder crews. Three hundred aircraft took off for the Capital on the night of the 1/2nd, and the shortcomings of H2s became apparent over the target. Confronted by the massive urban sprawl of any large city, it was extremely difficult for the H2s operators to interpret what they were seeing on their screens, and to pick out the specific area designated as the aiming point. On this night, the main weight of bombs fell into the south-western districts, but the attack in general was scattered over a hundred square miles. Despite this, it was the most effective raid on Berlin of the war to date, in which almost nine hundred buildings were destroyed, and many factories sustained serious damage. Even before 420 Squadron opened its month's account it lost a crew to a training accident on the 1st. Z1724 suffered structural failure and broke up in the air over Yorkshire, and none of the crew of F/S Townsend had time to save themselves. The squadron dispatched a few mining sorties to the Frisians on the 2/3rd, and then came its first major operation of the month. Hamburg was the target on the 3/4th, but the small town of Wedel, thirteen miles downstream of the Elbe, received many of the bombs intended for it, again largely through misinterpretation of the H2s returns. Hamburg did not escape entirely, however, and the fire department had to deal with a hundred fires before going to the aid of its neighbour.

There was feverish activity on the bomber stations on the 5th, as aircraft were made ready for the opening of the Ruhr campaign. 442 aircraft took off for Essen, but an unusually high number of early returns and the bombing of alternative targets reduced the numbers actually bombing the city to 362. The three wave attack was opened by Oboe Mosquitos, which marked the city centre with great accuracy, paving the way for the all Halifax first wave, Wellingtons and Stirlings in the second, and the Lancasters bringing up the rear. Oboe nullified the industrial haze that had always protected the city in the past, and the operation was a resounding success. Over three thousand houses were destroyed, and the mighty Krupp complex received hits to fifty-three of its buildings. Losses were relatively light at fourteen aircraft, but among them was 420 Squadron's HE280, which crashed in Germany killing P/O Graham and his crew. It was a highly satisfactory start to what would be a five-month long offensive, but as round two would not be launched for another week, Harris turned his attention upon southern Germany, and sent forces against Nuremberg, Munich and Stuttgart on the 8/9th, 9/10th and 11/12th respectively. No Wellingtons were involved in any of these operations. Bombing at Nuremberg was spread along the line of approach, in an example of the creep-back phenomenon, which was an almost ever-present feature of large raids, but six

hundred buildings were never the less destroyed, and a number of important war industry factories were damaged. At Munich, a strong wind pushed the emphasis of the raid into the western half of the city, where almost three hundred buildings were reduced to rubble, and 2,800 others were damaged to some extent. The Stuttgart operation was not a success, for which the first recorded examples of dummy target indicators were partly blamed. The main force arrived late at this notoriously difficult to locate target, and a modest 118 buildings were destroyed in the south-western suburbs.

The Ruhr offensive resumed on the following night with a return to Essen by over four hundred aircraft including those from the Wellington squadrons, although two from 420 Squadron returned early with technical problems. Even though the bombing was generally less accurate than that of a week earlier, the Krupp complex sustained 30% more damage, and around five hundred houses were destroyed in central and north-western districts. HE690 failed to return to Middleton-St-George after being shot down by flak over Holland, but Sgt Cooke survived with all but one of his crew to fall into enemy hands. On the following night BK296 was lost without trace while mining in the Frisians, and the crew of Sgt Tidy was duly posted missing never to be seen again. The second raid on St Nazaire took place on the 22/23rd, when 283 crews reported a concentrated attack on the port area. After another three-night lull, 455 aircraft set out for Duisburg, 6 Group dispatching more than a hundred aircraft for the first time. Of these, its three Halifax units contributed thirty aircraft, but their effort was largely in vain, as problems afflicting the Pathfinder Oboe element forced five of its Mosquitos to return early, while a sixth was lost. The subsequent sparse marking in cloudy conditions led to scattered bombing, and the city escaped with superficial damage. One note of concern for 6 Group on this night was a 10% rate of early returns, and this, together with a higher than average loss rate over a considerable period, would characterize the opening phase of its operational career. In time this would change, and by war's end, 6 Group would achieve an impressive record of efficiency and reliability, but in the meantime, crews saw little prospect of surviving a tour of thirty operations. Disappointing raids on Berlin on the 27/28th and 29/30th sandwiched another accurate assault on St Nazaire, in which the Group's Halifax units played a relatively minor part, putting up just fifteen aircraft between them. The 29/30th was devoted to an attack on Berlin by the four-engine contingent, while 149 Wellingtons carried out a diversionary raid on Bochum in the Ruhr. 420 Squadron took part in the latter and registered three early returns, while another of its crews bombed Emmerich as an alternative after an engine failed. Neither operation was successful, and Bochum proved expensive for 420 Squadron. X3814 crashed in Germany killing Sgt Brandow and his crew, while MS484 was shot down by a night fighter over Holland, and just one man survived as a PoW from the crew of P/O Grant.

April would be the least rewarding month of the Ruhr offensive, largely because of the number of operations directed at targets outside of the region, and consequently beyond the range of Oboe. It began for 420 Squadron on the 2/3rd with participation in the final small-scale operation against Lorient under the January directive, and three days later the Command was released from further responsibility. The month began in promising fashion for the Command generally, with another successful tilt at Essen on the 3/4th, when, in clear conditions, over six hundred buildings were destroyed in central and western districts. On the

following night Harris dispatched 577 aircraft, the largest non-1,000 force to date, to Kiel. Sadly, the massive effort was not rewarded with success, as heavy cloud, strong winds and decoy fire sites conspired to nullify the Pathfinder attempts to mark the target accurately, and only eleven buildings were destroyed by the few bombs finding the mark. 420 Squadron's MS479 was attacked by a night fighter, but no damage was sustained, and P/O Walkinshaw brought the Wellington home safely. It was to be a short-lived reprieve. Almost four hundred aircraft were sent back to Duisburg in difficult weather conditions on the 8/9th, when 27% of the 6 Group participants returned early. Cloud over the target reduced the attack to a shambles, and at least fifteen other Ruhr towns reported bombs falling on and around them. This time MS479 didn't make it home after crashing in Germany, and P/O Walkinshaw and his crew all perished. A follow-up raid by Lancasters twenty-four hours later was equally unrewarding as Duisburg's charmed life continued. Frankfurt had also proved a difficult target to hit effectively, and a raid by five hundred aircraft on the 10/11th went the way of the others. A few bombs fell in the suburbs, but this was a poor return for the effort of mounting such a large-scale operation and the loss of twenty-one aircraft. 420 Squadron had four crews return early, and then lost one of its pilots in tragic circumstances. P/O Jackson and crew became lost on the way home, and ended up out of fuel over the Welsh coast. Forced to abandon HE422 to its fate, four of the crew survived, but their pilot drowned in the Irish Sea. Later on the 11th W/C Bradshaw's long tenure as commanding officer came to an end, and he was replaced by W/C McIntosh.

On the night of the 14/15th, Stuttgart provided the target for over four hundred aircraft. The Pathfinders claimed to have marked the centre of the city, but the main weight of bombs was concentrated in the north-east along the line of approach. The creep-back phenomenon could work for or against the success of an attack, and on this night it was for. The bombing spread across one industrial suburb and two of a more residential nature, and almost four hundred buildings were destroyed. The route to and from Stuttgart required a long flight across France, and enemy night fighters were waiting on the return leg to catch the unwary and tired crews. Two 420 Squadron Wellingtons fell into the trap. HE550 contained the crew of S/L Taylor, who ultimately evaded capture, as did another member of his crew, while a further man fell into enemy hands and two others lost their lives. The crew of HE863 was less fortunate, however, and Sgt Cozens and his colleagues were all killed. The 16/17th proved to be a night of heavy operational activity, when Harris sent over three hundred Lancasters and Halifaxes to distant Pilsen in Czechoslovakia to bomb the Skoda armaments works, and a diversionary force of predominantly Stirlings and Wellingtons to Mannheim. Confusion over the Pathfinder route markers led to a complete failure at Pilsen, from which thirty-six aircraft, eighteen of each type, failed to return. The Mannheim force also lost eighteen aircraft, among them HE682 from 420 Squadron, which fell to a night fighter over Luxembourg on the way to the target, killing Sgt Horahan and three of his crew, and delivering the sole survivor into enemy hands. Seven of the squadron's aircraft landed at Westcott, probably short of fuel after their long flight. The total of fifty-four missing aircraft from the two operations represented the highest loss in a single night to date.

The port of Stettin, right at the eastern end of Germany's Baltic coast, hosted a successful attack by three hundred four-engine heavies on the 20/21st. It was perhaps the only urban

target in Germany never to escape lightly at the hands of the Command. On this night it suffered the destruction of thirteen industrial premises and 380 houses in an area of devastation in its central districts estimated at a hundred acres. Fellow Canadian unit, 405 (Vancouver) Squadron, made its Pathfinder debut at Duisburg on the 26/27th, its crews acting as supporters, and carrying only bombs to “beef-up” the Pathfinder presence. In time they would graduate to the role of backer-up, in which they would maintain the aiming point with fresh target indicators throughout the course of the raid. Experienced crews became illuminators, blind markers and ultimately visual markers, if they were able to survive and reach the required standard. The force of 561 aircraft taking off between midnight and 01.00 hours included an element from 420 Squadron, which was operating for the final time before being posting to the Middle-East. At the target the Oboe ground marking appeared to progress according to plan, crews returning at dawn reporting fires visible from a hundred miles away, and a pall of smoke hanging over the city. However, photographic reconnaissance later revealed the main weight of the attack to have fallen across the north-eastern districts, where three hundred buildings were destroyed. Sadly for 420 Squadron, its final operation under Bomber Command for ten months would result in casualties, and although difficult to establish for certain, it seems likely that it was launched from Croft, the home of 427 Squadron. HE693 was shot down by a night fighter over Holland, and Sgt Newbury and his crew were killed. HE771 was a 427 Squadron aircraft borrowed for the occasion, and it crashed on return while landing at Croft. One man was killed, but the pilot, Sgt Hall, and four others survived with injuries. The last night of the month brought the fourth raid of the campaign against Essen, for which three hundred aircraft were prepared. As the target was expected to be cloud-covered, Oboe Mosquitos were to drop sky markers for the following main force crews. It was impossible to assess the results of the bombing during the operation, and Harris had to wait for reconnaissance photographs. These showed fresh damage right across the city, with further hits on the Krupp works, but no point of concentration, and many other Ruhr towns again found themselves under the bombs.

May would see a return to winning ways with a number of spectacular successes. Operations began at Dortmund on the 4/5th, for which a new record non-1,000 force of 596 aircraft took off in the late evening. It was the first large-scale raid of the war on this city, and it opened in promising fashion with accurate Pathfinder marking. Some of the Pathfinder backers-up allowed their markers to fall short as the attack progressed, and a decoy fire site also drew off a proportion of the effort. Despite this, at least half of the bomb loads fell within three miles of the aiming point, inflicting extensive damage in central and northern districts. More than twelve hundred buildings were classed as totally destroyed, while two thousand others were seriously damaged, and the death toll of around seven hundred, which included many prisoners of war, was the highest yet at a German urban target. It was not a one-sided affair, however, as the defenders fought back fiercely to claim thirty-one bombers. For the following week minor operations held sway, allowing the Pathfinder and main force squadrons to concentrate on training. It was not until the night of the 12/13th that the next major raid was mounted, and this was the fourth attempt of the Ruhr offensive to deliver a telling blow on Duisburg, Germany’s largest inland port. 572 aircraft took off, and for once everything proceeded according to plan, accurate Pathfinder marking being exploited by the main force, which followed up with concentrated bombing of the city’s central districts and the port area.

Almost sixteen hundred buildings were reduced to rubble, a number of important war industry factories were hit, and sixty thousand tons of shipping was either sunk or damaged in the port. The value of the region to the German war effort always guaranteed a hot reception for the crews, however, and the Ruhr would come to be known as "Happy Valley". A record loss for the campaign to date was sustained on this night of thirty-four aircraft. On the following night, over four hundred aircraft from all but 5 Group raided Bochum to moderately good effect, despite decoy markers drawing off some of the effort. Almost four hundred buildings were destroyed in return for the loss of twenty-four bombers. A nine-day lull in main force operations followed, and it was during this period, on the 16th, that 420 Squadron dispatched its ground crews to Tunisia by sea, accompanied by those from 424 and 425 Squadrons. The ferrying of aircraft would begin on the 5th of June, and by the 23rd all would be installed at Kairouan to begin operations three days later as 331 Wing. Also during this break in main force activities 617 Squadron entered bomber folklore with its epic attack on the dams on the 16/17th, a raid in which many Canadians played their part magnificently. 420 Squadron's time overseas does not fall within the scope of this work. However, it is necessary to continue to document Bomber Command's war until the Snowy Owls' return in November.

Refreshed and replenished, the Pathfinder and main force crews returned to the fray with another record non-1,000 raid against Dortmund on the 23/24th. A massive number of 826 aircraft took off, and those reaching the target delivered a stunning blow on this important industrial city, leaving central northern and eastern districts devastated by accurate bombing, and two thousand buildings, mostly houses, in ruins. Industrial premises also took a pounding, and a large steel works was put out of action. Bomber losses continued to climb, and this night saw thirty-eight fail to return, almost half of them Halifaxes. Two nights later, over seven hundred aircraft attacked Düsseldorf, and failed to find the mark in a major operation for the first time during the month. Two layers of cloud prevented the Pathfinders from identifying the aiming point, and decoy markers and fire sites may have attracted a large number of bomb loads. The result was a widely scattered raid, which destroyed no more than a hundred buildings, and the death toll among the crews far exceeded that on the ground. The fifth raid of the campaign on Essen took place on the 27/28th, and involved a little over five hundred aircraft. The target was cloud-covered, and the use of skymarking led to scattered bombing across central and northern districts. Almost five hundred buildings were never the less destroyed for the loss of twenty-three aircraft. The final operation of the month was mounted on the 29/30th against the town of Barmen, which, with its twin Elberfeld, forms Wuppertal. Over seven hundred aircraft set off on that Saturday night either side of 23.00 hours, and delivered one of the two most devastating attacks of the entire offensive. Concentration was always the key to success, and both the Pathfinder marking and main force bombing satisfied this criterion. The narrow streets in the old centre soon became engulfed in a fire, which ran out of control, and would ultimately account for 80% of the town's built-up area. Fire and blast destroyed four thousand houses, five of the six largest factories and scores of other industrial premises. Almost nineteen hundred other buildings, mostly houses, were left seriously damaged, and the death toll was eventually set at 3,400 people. Some of the shocked and homeless residents of Barmen might have been cheered by the news, that thirty-three aircraft carrying around 250 of their tormentors would not be returning to England that night, but it would have been scant consolation.

On the 31st, 2 Group carried out its final operations as part of Bomber Command. Since the outbreak of war, it had carried the fight to the enemy predominantly by daylight, and in generally outdated and outclassed aircraft. Only with the advent of the Boston, Mitchell and, most crucially, the Mosquito, had its crews been blessed with equipment up to the task. The raw "courage by daylight" displayed by its crews in the finest traditions of the Service, particularly during 1940 and 41, remains unsurpassed. 2 Group no longer fitted comfortably into an organization committed to transporting the maximum tonnage of bombs to Germany by night, and on the 1st of June, it became the nucleus of the 2nd Tactical Air Force, with which its outstanding tradition would continue.

At around 23.00 hours on the 11th of June, over 780 aircraft set off for Düsseldorf, while seventy-two other 8 Group crews took part in a massed H2s trial at Münster. An errant Oboe marker fourteen miles from the main target inevitably caused some bomb loads to be wasted in open country, but the bulk of the effort fell into the city's central districts, where around forty square kilometres were severely affected by fire. Over fourteen hundred separate large fires were recorded, dozens of factories suffered a complete or partial loss of production, and eight ships were either sunk or damaged in the inland port. In human terms, almost thirteen hundred people lost their lives, while a further 140,000 were bombed out of their homes. The death toll among the bomber crews was also high, as the losses equalled the campaign's highest to date of thirty-eight. On the following night Oboe enabled the centre of a cloud-covered Bochum to be accurately bombed, and this resulted in an estimated 130 acres of destruction. Twenty-four crews paid the price for this success, and a further seventeen were missing from an all-Lancaster heavy force, which pounded Oberhausen on the 14/15th, and this amounted to a hefty 8.4% of those dispatched.

1, 5 and 8 Groups delivered a moderately useful attack on Cologne two nights later, and then it was the turn of the Lancasters to stay at home, while Halifaxes and Stirlings of 3, 4, 6 and 8 Groups attempted the precision bombing of the Schneider armaments works at Le Creusot in France on the 19/20th. This was the scene of an epic daylight raid by 5 Group in the previous October, when only moderate success had been achieved against the factory buildings. A second target, the nearby transformer station at Montchanin, had been targeted by a small formation led by W/C Guy Gibson, then the commanding officer of 106 Squadron, but it escaped virtually intact. Main force crews were not used to bombing small targets, however, and found great difficulty in identifying their aiming points. The result was that only 20% of the bombs hit the factory at Le Creusot, while the crews of the second force misidentified the transformer station, and it again remained intact.

A hectic round of four operations in five nights began at Krefeld on the 21/22nd, when over seven hundred aircraft were dispatched. The Pathfinder marking was flawless, and most of the 619 main force crews delivered a total of 2,300 tons of bombs with great accuracy and concentration within three miles of the aiming point. The central districts became a raging inferno, which consumed 47% of the city's built-up area, and more than five and a half thousand houses were destroyed. A thousand people were killed on the ground, but the attackers also suffered heavy losses at the hands of night fighters, which found their prey

easily in the moonlight. Forty-four aircraft were shot down, a new record for the campaign, and six of them were from 35 Squadron, one of only two Pathfinder units equipped with Halifaxes. On the following night 557 aircraft set off for Mülheim, and it developed into another outstandingly accurate attack, which left devastation in central and northern districts, and in the eastern districts of the neighbouring town of Oberhausen. Over eleven hundred houses were destroyed, a further twelve thousand were damaged to some extent, and scores of industrial and public buildings were also hit, disrupting war production and city administration. 64% of Mülheim's built-up area was estimated as destroyed, but the Command again paid a heavy price for its success, the losses amounting on this night to thirty-five. After a night's rest, and a month after the destruction of Wuppertal's Barmen, over six hundred aircraft turned their attention upon its twin, Elberfeld. Despite a modest creep-back, the majority of the main force crews exploited the accurate Pathfinder marking, and their bombs destroyed three thousand houses and 171 industrial premises. Thousands of other buildings were severely damaged, and the death toll reached eighteen hundred people. When the smoke had cleared, photographic reconnaissance revealed that at least 90% of the town had been reduced to rubble. On the debit side the Command lost another thirty-four aircraft and crews. The run of successes came to an end at the oil town of Gelsenkirchen on the 25/26th, when, in an echo of the past, bombs were sprayed liberally around the Ruhr. It had always been among the most elusive of targets, and on this occasion malfunctioning Oboe equipment contributed largely to the failure, which cost another thirty aircraft.

There were no operations over the succeeding two nights as Harris prepared for a three raid series against Cologne spanning the turn of the month. A force of 608 aircraft took off for the Rhineland Capital late on the 28th, and despite cloud cover over the target, the failure of Oboe equipment in five out of the twelve Mosquitos and the use of skymarking, which was late in starting, Cologne was subjected to its most destructive assault of the war. The degree of devastation far exceeded that inflicted by the Thousand Force a year earlier, and, in fact, almost twice as many buildings were completely destroyed. The death toll of over 4,300 people was a thousand more than the previous highest, recorded at Barmen a month before. The second Cologne raid took place on the 3/4th of July, when 650 aircraft were involved. This attack was aimed at that part of the city situated on the east bank of the Rhine, and it was again stunningly successful, reducing a further 2,200 houses to ruins, along with twenty industrial premises. Thirty aircraft were lost, to add to the twenty-five missing from the earlier raid. The series against Cologne concluded at the hands of an all-Lancaster force on the 8/9th, again with great success, and this attack reduced over 2,300 houses and nineteen industrial premises to rubble. Later, when the city authorities were able to assess the results of these three raids, they documented more than eleven thousand buildings destroyed, five and a half thousand people killed, and 350,000 others bombed out of their homes. The mini campaign had cost the Command sixty-two aircraft and crews, at an average of almost twenty-two per operation, which, in the light of recent experiences, was relatively modest.

Another disappointing operation was played out at Gelsenkirchen on the 9/10th, and although two more operations to the region would take place in the final week of the month, this effectively brought the Ruhr offensive to an end. Harris could look back upon the past five months with a genuine sense of achievement, and take particular satisfaction from the

performance of Oboe. Much of Germany's industrial heartland now lay in ruins, and it must have been clear to the civilian population that this was only the start. There was so much slack in the German industrial capacity, however, that production could still increase dramatically over the next twelve months. That apart, the disruption had been massive, and would be further exacerbated by the dispersal of industry to safer regions of the Reich. Losses to the Command of aircraft and crews had been grievously high, but the factories and flying training schools were more than keeping pace with the rate of attrition, and even allowed for an expansion in many squadrons by the addition of a third flight. Buoyed up by his success, Harris sought an opportunity to deliver a knockout blow against one of Germany's premier cities to send shock waves to rock the foundations of Nazi morale. Having been spared by the weather from hosting the first thousand bomber raid at Cologne's expense, Hamburg now presented itself as the ideal objective for the aptly named Operation Gomorrah.

In the meantime, an all-Lancaster force raided Turin on the 12/13th, and then Halifaxes, Wellingtons and Stirlings formed the main force for an attack on Aachen on the following night. Both were highly successful operations, the latter particularly so, resulting as it did in the destruction of almost three thousand buildings. On the 15/16th an all-Halifax force was sent to Montbeliard in south-eastern France to attack the Peugeot motor works. Sadly, the target indicators were not accurately placed, and most of the bombs fell into the town of Sochaux, of which Montbeliard was a suburb. This was an ever-present danger, despite a relatively low bombing altitude, and in the pre-invasion campaign from March to June 1944, such "friendly fire" incidents would be frequently re-enacted.

There now followed a lull in main force operations as preparations continued for the forthcoming assault on Hamburg. Many factors had to be considered when mounting a series of operations, not least of which was the reason behind it. The morale of Germany's civilian population had been a documented War Cabinet priority since July 1941. To achieve maximum effect throughout the Reich, rather than simply locally, the objective required political status beyond the norm. Berlin, as the Capital, clearly satisfied that requirement, but Harris was not quite ready to take on such a massive undertaking at this juncture. As Germany's Second City, Hamburg was next in line, particularly as Cologne, its third great city, had only recently been devastated. There were, however, other considerations of a more operational nature, which pointed to Hamburg as the ideal choice. Firstly, it was a major industrial city, and was particularly important to Germany for its ship and U-Boat construction. Secondly, it could be approached from the sea without the need for the bomber stream to traverse great tracts of hostile territory. It was also close enough to the bomber stations to allow a large force to get in and out in the few hours of darkness afforded by mid summer. Thirdly, situated as it was beyond the range of Oboe, which had proved so decisive at the Ruhr, it boasted the wide River Elbe through its centre to provide a strong H2s signature for the navigators high above. The final week of July had become the traditional time to attack Hamburg, and so it was now, and as the crews prepared for the operation on the afternoon of the 24th, a new device was being loaded into their aircraft. Window had actually been devised a year earlier, but its use had been vetoed in case the enemy copied it for use against Britain. Ironically, the German scientists had already developed their own version known as Düppel, which had also been withheld for the same reason. It consisted of aluminium-backed strips of

paper packed in bundles, which, when released into the air stream, floated slowly to earth in giant clouds. This swamped the enemy radar system with false returns, making it impossible for night fighter, searchlight and flak crews to identify and lock on to a genuine target. Windowing would begin at a predetermined point over the North Sea on the way in, and continue throughout the raid until a second point was reached on the way out.

A force of 791 aircraft stood ready for take-off in the late evening of the 24th, and the outward flight was relatively uneventful, as the bombers made little or no contact with enemy night fighters. A number of aircraft were shot down during this stage of the operation, however, but each was off course, and outside of the protection of the bomber stream. The efficacy of Window was immediately apparent to the crews on their arrival in the Hamburg defence zone, where the usually efficient co-ordination between the searchlights and flak batteries was absent. The defence was accordingly random and sporadic, thus giving the Pathfinder crews a rare, almost unhindered run at the aiming point. The markers were a little scattered, but most fell close enough to the city centre to provide a strong reference point for the main force crews, and over the next fifty minutes almost 2,300 tons of bombs were delivered. The bombing began near the aiming point, but a pronounced creep-back developed, which cut a swathe of destruction from the city centre along the line of approach across the north-western districts and out into open country, where a proportion of the effort was wasted. Never the less, it was a highly destructive attack, in which fifteen hundred people lost their lives, and this was the highest death toll at a target beyond the range of Oboe. An added bonus for the Command was the loss of a very modest twelve aircraft, for which much of the credit belonged to Window. At a stroke the device had rendered the entire enemy defensive system impotent for the time being. An advantage was rarely held for long, though, before a counter-measure was found, and this would eventually see the balance swing back in the enemy's favour. Harris decided to switch his attention to Essen on the following night to take advantage of the body blow dealt to the enemy's defences by Window. The result was another highly accurate and concentrated assault on this city, where the Krupp complex sustained its heaviest damage of the war, and over 2,800 houses and apartment blocks were destroyed.

After a night's rest 787 aircraft took off to return to Hamburg for round two of Operation Gomorrah. What followed their arrival over the city was both unprecedented and unforeseeable, and was the result of a lethal combination of circumstances. A period of unusually hot and dry weather had left tinderbox conditions in parts of the city, and the initial spark to ignite the situation came with the Pathfinder markers. These fell two miles to the east of the planned city centre aiming point, but with unaccustomed concentration into the densely populated working class residential districts of Hamm, Hammerbrook and Borgfeld. The main force crews followed up with uncharacteristic accuracy and scarcely any creep-back, and delivered most of their 2,300 tons of bombs into this relatively compact area. The individual fires joined together to form one giant conflagration, which sucked in oxygen from surrounding areas at hurricane velocity to feed its voracious appetite. Such was the ferocity of this meteorological phenomenon, that trees were uprooted and flung bodily into the flames, along with debris and people, and the temperatures at its seat exceeded one thousand degrees Celcius. The inferno only began to subside once all the combustible material had been consumed, and by this time there was no one left within the firestorm area to rescue. It would

actually be weeks before many of the burned-out buildings had cooled sufficiently to allow access to basements, where some of the more gruesome finds would be made and an accurate assessment of casualties could begin. At least forty thousand people died on this one night alone, and on the following morning the first of an eventual 1.2 million inhabitants began to file out of the tortured city.

Another night's rest preceded the third Hamburg raid, for which a force of 777 aircraft took off. Early returns had reduced the numbers to 707 by the time the target was reached, but these carried another 2,300 tons of bombs to deliver onto the city centre. The Pathfinders were again two miles east of the aiming point with their markers, which fell a little to the south of the firestorm area. The main force approached the markers on a north-south heading, and a creep-back developed as some crews bombed the first markers or fires they encountered. This took the bombing across the firestorm devastation of two nights earlier, before it fell onto other residential districts beyond, where a new area of fire was created, although of lesser proportions. The city's fire service was already exhausted, while access to the freshly afflicted districts was denied by rubble-strewn and cratered streets, and there was little to be done other than to allow the fires to burn themselves out. The defences were beginning to recover from the shock of Window, however, and as they did so, the bomber losses began to rise. Twenty-eight aircraft failed to return on this night, on top of the seventeen resulting from the firestorm raid. On the following night, the 30/31st, a relatively modest force of under three hundred Halifaxes, Stirlings and Lancasters, in roughly equal numbers, devastated the previously unbombed Ruhr town of Remscheid, destroying over three thousand houses, laying waste to 83% of its built-up area and killing eleven hundred inhabitants.

Operation Gomorrah was concluded on the night of the 2/3rd of August, when 740 aircraft departed their stations and headed into violent electrical storms on the route to northern Germany. This persuaded many crews to abandon their sorties, and either jettison their bombs over the sea or drop them on alternative targets. Some crews pressed on to Hamburg, but the bombing was scattered in the absence of target indicators, and little further damage was inflicted upon the city. There were no further operations during the first week of August, but something of future significance for Canadian squadrons took place in their homeland on the 6th. This was the day selected for the naming ceremony of the very first Canadian built Lancaster, KB700. The occasion was turned into a massive media event with live coverage on the radio, and a commentary provided by the actor Lorne Greene. The minister for munitions and supply declared the Lancaster the "greatest weapon of destruction that Canada had produced during the war." The name, Ruhr Express, was bestowed upon the aircraft by Mrs C G Power, wife of the minister for National Defence for Air, and the impression was given by the general hype that it would immediately take-off for England and war against tyranny. Ruhr Express did, indeed, take off, with S/L Reg Lane at the controls, he having returned to Canada at the completion of his second tour of operations and term as flight commander with 35 Squadron. Far from flying to England, however, KB700 was barely able to fly anywhere. She was short of vital instruments and equipment, but in a country seeking to demonstrate its industrial prowess, and in view of the publicity, a postponement of the show was unthinkable. Lane flew the Lancaster to Dorval, Quebec, where the outfitting was completed, and he would indeed, in time, fly KB700 to England.

The second week of August began with the first of a series of raids on the major cities of Italy, which was now teetering on the brink of capitulation. Bomber Command's involvement was designed to help nudge it over, and elements of 1, 5 and 8 Groups began the process on the night of the 7/8th with attacks on Genoa, Milan and Turin. On the 9/10th over 450 crews took off for a raid on Mannheim on the east bank of the Rhine in southern Germany. A solid marking effort contributed to a highly effective attack, which destroyed thirteen hundred buildings, and caused loss of production at forty-two factories for the modest loss of nine aircraft. Twenty-four hours later it was the turn of Nuremberg to suffer its most effective raid to date at the hands of around six hundred aircraft. Considerable damage resulted in central and southern districts, where preserved medieval houses were destroyed, and a large area of fire developed. The Italian campaign continued at Milan and Turin on the 12/13th, when the main force element was provided entirely by 3 Group, and returning crews claimed a heavy and concentrated attack. Milan was hit again on the 14/15th and 15/16th, and the campaign concluded at Turin on the 16/17th. This was another 3 and 8 Group show, but despite the enthusiastic claims at debriefing it was an inconclusive raid. The weather on return forced many 3 Group crews to divert to other airfields, and a goodly number would not regain their stations until quite late on the 17th, too late to take part in one of the most important operations of the war that night.

Since the start of hostilities, intelligence had been filtering through concerning German research into rocket weapons. Through the interception and decoding of signals traffic the centre for such activity was found to be at Peenemünde, an isolated location on the island of Usedom on Germany's Baltic coast. Regular reconnaissance flights helped to build up a picture of the activity there, and through listening in on signals, the brilliant scientist, Dr R V Jones, was able to monitor the V-1 trials being conducted over the Baltic, and gather much useful information on the weapon's range and accuracy. Churchill's chief scientific adviser, Professor Lindemann, or Lord Cherwell as he became, steadfastly refused to give credence to rockets as weapons, and even when confronted with a photograph of a V-2 on a trailer at Peenemünde, taken by a PRU Mosquito as recently as June, he stubbornly remained unmoved. It required the urgings of Dr Jones and Duncan Sandys to persuade Churchill of the need to act, and it was finally agreed that an operation should be mounted at the first available opportunity. This arose on the night of the 17/18th of August, for which a detailed plan was meticulously prepared.

The Peenemünde research and development establishment consisted of three main areas, the housing complex where the scientists and workers lived, the assembly buildings, and the experimental site. The operation was, therefore, to take place in three waves, each wave assigned to a specific aiming point, beginning with the housing estate, and the Pathfinders were charged with the heavy responsibility of shifting the point of aim accordingly. 3 and 4 Groups were to go in first, followed by 1 Group, while 5 and 6 Groups would bring up the rear at the experimental site. The entire operation was to be controlled by VHF by a Master of Ceremonies, or Master Bomber, in the manner pioneered by Gibson at the Dams, and the officer selected was G/C Searby of 83 Squadron, who had been Gibson's successor as commanding officer of 106 Squadron. Two deputy Master Bombers were appointed to assist

Searby, and to take over if he was lost or forced to return early. W/C Fauquier was the first deputy, and he would be flying 405 Squadron's first Lancaster sortie. W/C John White, a highly experienced Pathfinder and flight commander with 156 Squadron, was the second deputy, sadly, a man with only three months to live. All three Master Bombers and their crews would be required to remain in the target area throughout the raid within range of the defences, directing the marking and bombing, and exhorting the crews to press home their attacks. A spoof raid on Berlin by eight Mosquitos of 139 Squadron an hour before zero hour at Peenemünde was intended to draw off the enemy night fighters, and provide the crews with a clear run at the target, where the bombing would be conducted from medium to low level.

597 aircraft answered the call for a maximum effort, the numbers somewhat depleted by the unavailability, as already mentioned, of a proportion of the Stirling brigade. Most aircraft got away between 21.00 and 22.00 hours, and set course in clear conditions for southern Denmark. The initial marking of the housing estate went awry, and the first markers fell onto the forced workers camp at Trassenheide, more than a mile beyond the intended aiming point. This inevitably attracted a proportion of the 3 and 4 Group element, and about a third of them delivered their bombs here, inflicting heavy casualties upon the friendly foreign nationals trapped inside their wooden barracks. W/C White, the second deputy Master Bomber, used his reserve markers at this stage to help pull the bombing back on track. Once rectified, this phase of the operation proceeded according to plan, and a number of important members of the establishment's technical staff were killed. The 1 Group attack on the assembly sheds was hampered by a strong crosswind, and such was the layout of the establishment, that bombs either found the mark or fell harmlessly among dunes or into the sea. Ultimately, this area too sustained severe damage, leaving just the experimental site for 5 and 6 Groups. It was at this point that the night fighters arrived belatedly from Berlin, and proceeded to take a heavy toll of aircraft, both in the skies over Peenemünde, and on the route home towards Denmark. The 5 Group crews were authorized to adopt their "time and distance" method of bombing if the target became obscured by smoke, and some did so, although this was perhaps the least effective part of the operation. W/C White had used his target indicators at a critical time during the operation, but W/C Fauquier retained his, and delivered his bombs in the final minute of the raid. During his time in the target area he made seventeen passes, and exhorted the crews to press home their attacks. Forty aircraft failed to return home, and twenty-nine of these were 5 and 6 Group aircraft from the final wave. The operation was sufficiently successful to set back the development programme of the V-2 by a number of weeks, and the testing was ultimately moved eastwards into Poland. The vulnerability of Peenemünde to air attack caused a major rethink, and it was decided to move the production of secret weapons underground. Almost immediately, construction of an underground factory began at Nordhausen, and once completed it would be staffed by forced workers.

Harris had long believed, that Berlin, as the seat and symbol of Nazi power, held the ultimate key to victory. He maintained the belief that bombing alone could win the war, and if this could be achieved, it would remove the need for the kind of protracted and bloody land campaigns he had personally witnessed during the Great War. At the time it was a perfectly reasonable theory, and Harris was the first commander in history in a position to put it to the test. It is only in the light of recent conflicts that we know with absolute certainty of the

necessity to physically occupy the enemy's territory in order to gain complete submission. On the night of the 23/24th Harris embarked on the first stages of what would be the longest and most bitterly fought campaign of the war, and nothing before or after came closer to breaking the Command's spirit. 727 aircraft took off for the Capital in mid evening, and on arrival the Pathfinders were confronted by the usual difficulties of trying to identify the city centre from the jumble of images on their H2s screens. In the event they marked the southern outskirts of the city, and some of the main force crews approached from the south-west instead of a more southerly direction, thereby depositing many bomb loads onto outlying communities and open country. This would be a feature of the entire campaign, but at least, on this night, considerable damage was inflicted on the southern districts, where 2,600 buildings were destroyed or seriously damaged, and this represented the best result yet at the "Big City". On the debit side, the loss of fifty-six aircraft was a new record. In a desperate measure to counter the effects of Window the Luftwaffe had begun to employ single engine day fighters over the target, using the light from burning cities to pick out the bombers. This "Wild Boar" system would eventually be combined with a running commentary for the standard night fighters, known as "Tame Boar", to produce a highly effective and lethal defence for the German homeland and its occupied territories.

A four-night break from operations allowed a little respite before the next major outing for the heavy squadrons, which was to Nuremberg on the 27/28th. This was not a successful operation, despite accurate early marking by the Pathfinders. A creep-back developed, which could not be corrected because of communications difficulties and problems with H2s sets among the 8 Group contingent. As a result most of the bombing hit open country, although there was a scattering across the south-eastern and eastern suburbs. Thirty-three aircraft failed to return. The twin towns of Mönchengladbach and Rheydt provided a much less distant objective for over six hundred aircraft on the 30/31st. It was the first heavy assault on the frontier towns, and it required the Pathfinders to shift the aiming point from one to the other during the course of the attack. This was done without a hitch, and more than 2,300 buildings were destroyed. It was back to the Capital for a force of over six hundred aircraft twenty-four hours later, with take-off around 20.00 hours. The presence of some cloud in the target area combined with H2s equipment failures to prevent accurate marking, and the target indicators fell well to the south of the intended city centre aiming point. An extensive creep-back extending some thirty miles back along the line of approach further reduced the effectiveness of the bombing, and the result was a disappointing attack, which destroyed less than a hundred buildings, while a ferocious defence claimed forty-seven aircraft. The current phase of the Berlin offensive was concluded by an all-Lancaster force on the 3/4th of September, when four Pathfinder Mosquitos dropped spoof flares some distance from the route to attract night fighters as the force approached the city from the north-east. The Pathfinders again mostly undershot the aiming point, and the main force crews inevitably did likewise, but some of the bombing did hit residential districts and the industrial suburb of Siemensstadt, where a number of war industry factories suffered a serious loss of production. In the absence of Stirlings and Halifaxes, which generally suffered higher percentage casualties, twenty-two Lancasters were shot down, and this represented almost 7% of those dispatched. Harris called a halt to the campaign at this point, possibly in response to the loss of 125 aircraft in just three operations.

There were plenty of other industrial cities in Germany to keep his crews busy of course, and on the 5/6th it was the turn of Mannheim and Ludwigshafen, facing each other from the east and west banks of the Rhine respectively. Their location provided a perfect opportunity to use the creep-back to good advantage, by approaching from the west, and marking the eastern half of Mannheim. A highly successful attack ensued, which proceeded exactly according to plan, and resulted in massive damage in both of the target cities. A thousand houses were destroyed in Ludwigshafen alone, and the important I.G Farben chemicals factory, which was engaged in synthetic oil production, was severely damaged. Bomber losses were again high, however, and reached thirty-four on this night. It was sometime during early September that S/L Lane ferried KB700 to England, with the assistance of a ferry pilot. Lane had volunteered for a third tour of operations, despite having already completed fifty one sorties up to returning to Canada in July, and he would be joining 405 Squadron in October. A raid of moderate size against Munich on the 6/7th was rendered inconclusive by cloud, most crews having to bomb on estimated positions after a timed run from a lake south-west of the city.

There were no further operations for the main force crews until the night of the 15/16th, when 369 crews from 3, 4, 6 and 8 Groups were briefed for an attack on the Dunlop Rubber factory at Montlucon in central France. W/C "Dixie" Dean of 35 Squadron controlled the operation as Master Bomber, and he presided over an accurate attack, which left every building in the factory complex damaged. On the following night a similar force tried to repeat the success at the important railway yards at Modane, on the main route into Italy. The location of the target in a steep valley thwarted the crews' best endeavours, however, and the operation failed.

A series of four operations against Hanover began on the night of the 22/23rd. They would be spread over a four-week period, and it would prove to be a tough campaign. Over seven hundred aircraft took part in this first raid, but despite clear skies over the target, the operation failed through a stronger-than-forecast wind, which drove the markers and bombing towards the south-eastern corner of the city. A diversionary raid by a small force of Pathfinder Lancasters and Mosquitos on Oldenburg near Bremen involved the dropping of much Window and many flares, and this possibly reduced the losses from the main raid. Even so, twenty-six aircraft were lost. On the following night Mannheim hosted its second heavy assault of the month, this one aimed at its northern districts, which had escaped relatively lightly two and a half weeks earlier. Another heavy blow was delivered, which left over nine hundred houses, twenty industrial premises and a number of public buildings in ruins. Sadly, a small 8 Group diversionary raid on Darmstadt could not prevent the loss of thirty-two aircraft. The second operation against Hanover was undertaken by 678 aircraft on the 27/28th. The bombing was well concentrated, but inaccurately forecast winds caused it to be concentrated five miles north of the city centre, where it was wasted on outlying communities and open country. The disappointment was compounded by the loss of thirty-eight aircraft, plus another from a diversionary raid on Brunswick.

There was a hectic start to October for the Lancaster squadrons, which were involved in six major operations during the first eight nights. The month's account opened at Hagen in the Ruhr on the 1/2nd, an outstandingly accurate attack based on Oboe skymarking, and forty-six

industrial concerns were completely destroyed. On the following night over three hundred buildings were destroyed in Munich in a partially effective raid, before Halifaxes and Stirlings joined in at Kassel on the 3/4th. The blind markers overshot the aiming point, and pushed the main weight of the attack into the city's western suburbs and beyond. Two aircraft factories were hit, however, and one suburb became a sea of flame. Frankfurt suffered its first really destructive raid on the 4/5th at the hands of almost four hundred aircraft. The eastern half of the city and the inland docks sustained extensive damage, and an area of fire raged out of control claiming many public and commercial buildings near the city centre. A two-night break preceded an all-Lancaster attack on Stuttgart on the 7/8th, for which 1 Group's 101 Squadron operated its night fighter communications jamming ABC Lancasters for the first time in numbers. The operation was moderately effective, and the loss of a very modest four aircraft suggested a successful debut for the radio counter-measures element. From this point on a number of 101 Squadron Lancasters would be included in every major operation, even after the formation of 100 Group, which would be dedicated to the role from November. The third raid on Hanover took place on the following night, and for once at this target everything proceeded according to plan. A devastating attack ensued, in which most of the bombs fell within two miles of the city centre aiming point, destroying almost four thousand buildings, while thirty thousand others were damaged to some extent, and twelve hundred people lost their lives.

The final Hanover raid took place on the 18/19th after a nine-night break for the heavy squadrons, and was an all-Lancaster affair. It became another failure, when cloud prevented the Pathfinders from accurately pinpointing their position, and most of the bombs found open country at a cost of eighteen Lancasters. Two nights later another all-Lancaster force of 350 aircraft took off for the first major raid on Leipzig in eastern Germany. The weather conditions were appalling, and the results were inconclusive. For the second time during the month a force of over five hundred aircraft set out for Kassel in central Germany. The raid began with a degree of overshooting by the H2s blind markers, but the visual markers were able to correct the error, and deliver their target indicators onto the city centre aiming point. The main force bombing was highly accurate and concentrated, and the hapless city and its inhabitants became engulfed in a firestorm. Its intensity was less than that experienced at Hamburg in July, but was never the less devastating in its effects, and more than 4,300 apartment blocks were reduced to rubble or shells. Almost six and a half thousand others sustained damage to some extent, and thus 63% of the city's entire living accommodation was rendered uninhabitable in just one night. The death toll almost certainly exceeded six thousand people, and bodies were still being recovered from the ruins many months later. The defenders fought back to claim forty-three bombers. This concluded the month's operations, but November was to bring a new intensity as Harris turned his gaze once more upon Berlin.

The first half of November would be less frenetic than the start of October, and only one major operation was mounted against a target in Germany. Düsseldorf provided the main fare on the 3/4th, for which almost six hundred aircraft took off, and central and southern districts suffered extensive damage. Earlier in the day Harris had sent a memo to Churchill, in which he asserted that, "we can wreck Berlin from end to end if the USAAF will come in on it. It will cost between us 400-500 aircraft. It will cost Germany the war." The Americans, of

course, were committed to victory by land invasion, and there was never the slightest chance of enlisting their support for an all-out air assault on Germany's Capital. Undaunted as always Harris would go it alone, and put preparations in hand for the campaign's resumption later in the month. On the 6th 420 Squadron took up residence at Dalton on its return from Tunisia. During the lull in operations over Germany over three hundred Lancasters of 5 and 8 Groups attempted to rectify September's failure at the Modane railway yards in southern France. The operation took place on the night of the 10/11th, and enough of the bombing was sufficiently accurate to cause serious damage. On the following night an attempt to further disrupt the railway link with Italy failed, when a predominantly Halifax force missed the marshalling yards at Cannes.

Harris rejoined the long and rocky road to Berlin on the night of the 18/19th, for which over four hundred Pathfinder and main force Lancasters were detailed. A further four hundred Halifax, Stirling and Lancaster crews drawn from 3, 4, 6 and 8 Groups were briefed to carry out a diversionary raid on the twin cities of Mannheim and Ludwigshafen in an attempt to split the defences, or at least to confuse the enemy night fighter controller. The crews found Berlin to be completely cloud-covered, and it was impossible to assess the results of the raid. It had, in fact, been only modestly effective, lacking any concentration, and only four of the 173 buildings completely destroyed were industrial. Nine Lancasters failed to return, possibly because of the diversion, from which a further twenty-three aircraft were missing. Round two came on the 22/23rd, when 764 aircraft took off for the Capital, among them KB700, the Ruhr Express, on its maiden operation. Not only was it carrying the crew of F/S Floren, who hailed from Weyburn, Saskatchewan, but also a reporter and a photographer to record the first bombing operation by a Canadian-built Lancaster. Sadly, engine problems began to develop during the outward flight, and although some bombs were jettisoned, height could not be maintained, and the sortie was abandoned some sixty miles short of Berlin. The remaining crews were again denied a sight of the massive urban sprawl below, as 10/10ths cloud continued to lie across the northern half of Germany. They were only able to speculate about the accuracy of the attack at debriefing, although the consensus was that the marking and bombing had found the mark. What they did not know, was that they had inflicted upon Berlin its most devastating assault of the war, which left three thousand houses in ruins along with twenty three industrial premises, in an area stretching from the city centre westwards. A number of firestorm areas were reported, and a pall of smoke rose over the city to a height of more than eighteen thousand feet. Around two thousand Berliners lost their lives, while a further 170,000 were rendered homeless in return for bomber casualties amounting to twenty-six aircraft.

On the following night, Harris dispatched an all-Lancaster main force, and guided by the glow of fires still burning beneath the clouds, the crews were able to deliver another devastating blow, which destroyed over two thousand more houses, and a handful of industrial premises. The death toll on the ground was around fifteen hundred people, while twenty Lancasters failed to return. The posting missing of crews was a sad but routine affair, and a necessary adjunct of warfare. Within hours of a crew's loss all personal belongings would have been removed from billets, and telegrams sent to relatives, these to be followed by a letter from the commanding officer. He would describe the missing son or husband as a popular member of

the squadron who would be missed, and offer the crumb of comfort that he may be safe in enemy hands. There was nothing more to be done. After a three-night break for the Lancaster crews, during which the Halifax brigade carried out a scattered raid on Frankfurt, an all Lancaster heavy force was prepared for the fourth trip to Berlin since the campaign's resumption. Over four hundred aircraft were detailed, and they set a course over northern France accompanied by a Halifax diversionary force, which peeled off for Stuttgart when Frankfurt was reached. The skies over Berlin were clear as the Lancasters approached from the south, but the Pathfinders overshot the city centre, and marked an area well to the north-west. Fortunately for the outcome of the raid, below lay industrial districts, and thirty-eight war industry factories were completely destroyed. The bomber stream became scattered as it withdrew from the target area, and night fighters were able to pick up individual Lancasters during the return flight. Twenty-eight failed to return home, while a further fourteen were written off in crashes in England.

December began as November had ended, with an all Lancaster main force rejoining the long and hazardous road to Berlin on the night of the 2/3rd. The 440 strong heavy contingent was supported by eighteen Pathfinder Mosquitos to lay route markers. Wrongly forecast winds led to a scattering of the bomber stream during the outward flight, and made it difficult for the Pathfinders to pinpoint the planned aiming point. As a result the marking spread over the southern half of the city, and much of the bombing hit the suburbs or fell into open country, although some useful damage was inflicted on industrial areas in western and eastern districts. It was a bad night for the Command, the worst against Berlin since the opening two raids of the offensive back in August with forty aircraft missing. On the following night over five hundred Lancasters and Halifaxes took off for Leipzig, a city last attacked ineffectively in foul weather conditions back in October. The force headed directly for Berlin to mislead the night fighter controller, and then, as it turned towards Leipzig, a Mosquito feint continued on to Berlin to maintain the deception. The ploy had the desired effect, and the main operation was relatively unmolested by night fighters. Accurate marking and bombing led to the most destructive attack of the war on this eastern city, in which housing and industry suffered alike. Had the bomber stream not strayed into the Frankfurt defence zone on the way home the losses would have been light, but in the event, twenty-four aircraft failed to return. There were no major operations thereafter until mid month, and it was left to the Mosquitos of 8 Group's Light Night Striking Force to maintain the pressure on Germany by nightly raiding one or more targets in the Ruhr. On the 11th 420 Squadron moved home for the last time during the war, and took up residence at Tholthorpe, which it would share with 425 Squadron. Here both units would take on Halifax III aircraft and spend the next two months working up to operational status.

Operations for the rest of the Command resumed on the night of the 16/17th, when Berlin was selected as the objective for an all-Lancaster heavy force numbering over 480 aircraft. The enemy night fighter controller was becoming accustomed to the direct route across Holland adopted by the bombers, and was able to start infiltrating his aircraft into the stream at the Dutch coast. Combats took place all the way to the target area, and the majority of the twenty-five losses occurred during the outward flight. Complete cloud cover over Berlin necessitated the use of skymarking, but much of the bombing still fell within the city, although without

achieving any significant degree of concentration. The bombers returned via a northerly route over Denmark, and thereby avoided a further confrontation with the enemy, but many crews, particularly those from 1, 6 and 8 Groups, still faced their sternest test of the night. By the time they arrived in home airspace their stations were shrouded in a blanket of impenetrable low cloud, and few, if any, had sufficient reserves of fuel to divert to other areas. The minutes between midnight and 02.00 witnessed the frantic search by exhausted crews for somewhere to land, and many aircraft came to grief as they stumbled around in the murk. Some flew into the ground, while others collided with obstacles or other aircraft. A few crews opted to take to their parachutes as their fuel ran out, and they were generally the fortunate ones. Twenty-nine Lancasters were lost in these cruellest of circumstances, and around 150 airmen lost their lives when so close to home and safety. The Command remained on the ground for the following three nights.

In the late afternoon of the 20th almost 650 Lancasters and Halifaxes took off for Frankfurt, accompanied by a small force of 1 and 8 Group Lancasters and Mosquitos bound for Mannheim as a diversion. The enemy night fighter controller was again able to plot the bomber stream's progress, and many combats took place before the target was reached. Unexpected cloud hampered the Pathfinders' attempts to mark, and decoy fires and markers on the ground lured some of the bombing away from the city. The creep-back from this fell within Frankfurt, however, and over four hundred houses were destroyed, while almost two thousand other buildings in the city and neighbouring towns sustained serious damage. It was a bad night for the bombers, though, and forty-one failed to return home, twenty-seven of them Halifaxes, which represented a 10.5% loss rate for the type. Three nights later over 360 Lancasters provided the majority of the effort for yet another assault on Berlin, when a Mosquito feint at Leipzig was partially successful in delaying the arrival of the night fighters. Technical problems with their H2s equipment prevented the Pathfinders from taking advantage, and the marking was scattered. Most of the bombing fell into the south-eastern corner of the city, where almost three hundred buildings were destroyed, and sixteen Lancasters failed to return home.

The last but one wartime Christmas came and went in relative peace, but business as usual resumed on the 29/30th, when a force of seven hundred aircraft was made ready for the final operation of the year to Berlin. It was also to be the first of three trips to the Capital in the space of five nights spanning the turn of the year, a concentration of effort that would bear down most heavily on the Lancaster crews. Taking off either side of 17.00 hours the bombers took a different route on this night, passing south of the Ruhr and approaching Leipzig before swinging towards Berlin. Mosquito diversions over the Ruhr, Magdeburg and Leipzig helped to keep the night fighter controller guessing, and few night fighters made it to the target area. Again the main weight of bombs fell into the southern and south-eastern districts, while some was wasted beyond the eastern city limits. Almost four hundred buildings were destroyed in return for the loss of twenty Lancasters. It had been a tough year all round, but generally speaking, a successful one, during which Bomber Command had developed into a weapon of awesome power. When this might was directed accurately, it could reduce cities to ruins. Standing in its way, however, were two powerful enemies, the weather and the Luftwaffe

night fighter force, and during the first quarter of 1944, they would combine to test the bomber crews to the absolute limit.

1944

As the New Year dawned the toll of repeated operations to Berlin, eight since the resumption of the campaign, began to tell on the crews, particularly those of the Lancaster squadrons. They had been involved in every one, while the Halifaxes had been used sparingly, and the Stirlings, after a period of sustained heavy losses, had been withdrawn from operations over Germany altogether following the highly successful raid on the Capital on the 22/23rd of November. The effect of the campaign was also being felt by the inhabitants of Berlin, who had witnessed the destruction of 25% of their city's living accommodation, and seen evidence of the mounting death toll. There is little doubt, that they and the crews of Bomber Command shared a common wish for the New Year, that Berlin would cease to be the main focus of attention. In any event, Harris's belief that he could break the spirit of a people who were Berliners first and Germans second was ill founded. They were a hardy breed, and just like their counterparts in London during the blitz of 1940, they bore their trials with fortitude and humour, and got on with the business of daily life as best they could. The bombing served only to strengthen their resolve to withstand whatever Bomber Command could throw at them, and they joined together in a common bond of unity. During this, their "winter of discontent", they paraded banners through the shattered streets proclaiming, "you may break our walls but not our hearts". They took solace in the words of the most popular song of the day, *Nach jedem Dezember kommt immer ein Mai*, After every December comes always a May, a sentiment which hinted at a change of fortunes with the onset of spring. As events were to prove, this was precisely how long both beleaguered camps would have to wait before their wishes were fulfilled.

Before New Year's Day was done, the first Lancasters were taking off, and by the time that the 2nd of January was an hour old, over four hundred of them were heading for the Capital via an almost direct route over Holland. Not all reached their objective, twenty-nine turning back for a variety of reasons, while around sixteen others fell victim to night fighters and flak. The remainder found the city covered by cloud, and the skymarking soon deteriorated in the face of a strong wind. The bombing was spread over seventeen miles from wooded country in the south-west to districts in the east, but nowhere was significant damage inflicted. The failure was compounded by the loss of twenty-eight aircraft, many of them carrying highly experienced Pathfinder crews. Many of the crews who collapsed wearily into bed at breakfast time on the 2nd found themselves back in the briefing room later in the day, incredulous and angry at the prospect of a back-to-back trip to the "Big City", and the third in five nights. No diversionary measures were planned for this operation, and the route was again straight in over Holland, with a dog leg south-east of Bremen to bring the bomber stream to a position north-west of Berlin for the final approach. 362 Lancasters took off, along with nine Halifaxes and a dozen Mosquitos, but the strain and weakening morale manifested itself as crew after crew turned back with problems of some kind. The force was depleted by sixty aircraft in this way, and while "boomerangs" were a fact of life for very genuine reasons, some of those aborting their sorties on this night would almost certainly have pressed on under different

circumstances. The enemy night fighters failed to make contact with the bomber stream until Berlin was reached, but there they took a heavy toll. Bombs were again scattered over all parts of the city, and damage was only marginally greater than twenty-four hours earlier, amounting to around eighty houses destroyed. The cost of this failure was twenty-seven Lancasters, ten of them Pathfinders, 156 Squadron alone losing five to add to the four it had posted missing on the previous night, and in less than two weeks time it would lose five more raiding Brunswick. Such losses were beginning to bleed the Pathfinders dry of quality crews, and sideways postings between the squadrons became common to maintain a leavening of experience. The surviving crews had two nights off before the next briefing was called on the afternoon of the 5th. The target was Stettin, at the eastern end of Germany's Baltic coast, for which 350 Pathfinder and main force Lancasters were accompanied by ten Pathfinder Halifaxes from 35 Squadron. It was another very late take-off, and as the bomber stream headed for the Baltic, a Mosquito diversion at Berlin played its part in keeping the main operation largely free of night fighters. Over five hundred houses were completely destroyed, along with twenty industrial premises, while almost twelve hundred other buildings were seriously damaged and eight ships were sunk in the port. On the debit side sixteen aircraft failed to return home.

There now followed a welcome eight-night break from operations, which allowed the hard-pressed squadrons an opportunity to recover from the four long-range trips in the space of eight nights. When the crews gathered for briefings on the 14th there must have been a sense of relief as the curtains were drawn back from the wall maps, revealing that Brunswick and not Berlin was the target for the night. Situated about fifty miles beyond Hanover, the city that had proved to be a difficult and costly nut to crack in a four raid series during the autumn, Brunswick had not hosted a major operation before. 498 aircraft, all but two of them Lancasters, took off either side of 17.00 hours, and headed for a landfall at the German coast near Bremen. There the bomber stream was met by a strong force of enemy night fighters, which were able to remain in contact all the way to the target and back as far as the Dutch coast. They scored steadily throughout, and by the time the survivors reached home airspace after a dismally disappointing raid, which had mostly afflicted outlying communities, thirty-eight of their number had been brought down. The Pathfinders had again sustained heavy casualties, this time amounting to eleven aircraft.

Another five-night lull prepared the crews for the next operation, a maximum effort to Berlin on the 20/21st, for which 769 aircraft took off. The bomber stream crossed the German coast at the narrow neck of land south of the Danish border and opposite Kiel, where a small Mosquito feint failed to impress the night fighter controller. Almost immediately, night fighters made contact and began their deadly work, as the bomber stream pressed on for a north-westerly approach to the target. Berlin was completely cloud covered, and it was impossible to make an assessment of the raid from the air. In fact, most of the bombs had fallen in an eight-mile swathe from north to south across the city's hitherto less severely damaged eastern districts, and there was much damage to housing, industry and railway installations. It was another night of heavy losses, however, and twenty-two of the missing thirty-five aircraft were Halifaxes. Like the recently raided Brunswick, Magdeburg had never been attacked in numbers before, and on this night it would face the remains of a force of 648

aircraft that had departed their stations either side of 20.00 hours. The enemy night fighter controller plotted the progress of the bomber stream across the North Sea, and had to distinguish between the main raid and a small 5 and 8 Group diversion to Berlin. The first contact was made before the German coast was reached, and a running battle ensued from there to the target, which was reached ahead of time by some aircraft through stronger than forecast winds. Anxious to get away from the target area as quickly as possible, some crews bombed before the Pathfinder markers went down, and the resulting fires combined with decoy markers to draw off a proportion of the main force attack. The Pathfinders were not able to recover the situation, and the bombing lacked accuracy and concentration, falling predominantly outside of the city. A massive fifty-seven aircraft failed to return, the majority of them victims of night fighters, and this represented a new record casualty figure. The Halifax squadrons once more sustained the heavier losses, amounting to thirty-five aircraft.

The squadrons were given a five-night rest to lick their wounds before the next round of operations began, and this was to be a three-raid assault on the Capital in the unprecedented space of just four nights. An all-Lancaster heavy force of 515 aircraft took off either side of 18.00 hours on the 27th, and flew a south-easterly course across northern Holland and into Germany, before turning north-east to a point west of Berlin. Elaborate diversionary operations pinned down a proportion of the night fighter force, and activity around the bomber stream was less intense than of late. The city was cloud covered, and a strong tail wind drove the markers across the city along the line of approach. Bombs fell in many parts of Berlin, although more in the southern half, but dozens of outlying communities were also afflicted. The operation was moderately successful, if expensive, with thirty-three Lancasters falling victim to the defences, most of them to night fighters arriving on the scene as the raid was in progress. Many of the surviving crews were back at briefing later in the day to learn that Berlin was again to be their destination that night. The inclusion of Halifaxes allowed a force of 677 aircraft to take off around midnight on the 28/29th, and they were routed over Denmark to approach the target from the north-west. Mosquitos bombed Berlin earlier in the evening, in the hope that this would persuade the night fighter controller that the main force was heading elsewhere. Other extensive diversionary operations were mounted, and although the outward flight was relatively free of night fighter encounters, a hot reception awaited the bombers over the target. Single and twin engine fighters accounted for twenty-seven aircraft here, but despite this, the marking and bombing was accurate and concentrated, and much damage was caused within the southern half of the city. Around 180,000 people were rendered homeless on this night, and many public and administrative buildings were damaged in south-central districts. The bomber casualties had reached forty-six by the time the survivors had landed.

After a night's rest, 534 aircraft set out again for the Capital, arriving over the city shortly after 20.00 hours. It was a predominantly Lancaster force, but eighty-two of the new and much improved Hercules powered MkIII Halifaxes also took part. The night fighters failed to meet the bomber stream over the North Sea, and only made contact deep inside German airspace. From then until well into the return flight south of Brunswick and Hanover, they took a heavy toll of bombers, eventually achieving a score of thirty-three, all but one of them Lancasters. On the credit side Berlin suffered a bruising raid, in which large areas of the centre and south-western quarter were engulfed in flames, and at least a thousand people lost their lives. There

were to be no operations for the first two weeks of February, as the moon period and inhospitable weather kept most squadrons on the ground. The series of raids on Berlin at the end of January had undoubtedly hurt the city grievously, while not achieving the level of destruction of the November raids, but nowhere were there signs of imminent collapse. Berlin was no Hamburg with densely populated, confined housing areas, and narrow streets in its old centre. It was a modern city of concrete and steel with wide thoroughfares and open spaces to act as natural firebreaks. Each new swathe of destruction created more firebreaks and applied the law of diminishing returns. Ultimately, Berlin was just too big, too incombustible and too far, and this at a time when the Luftwaffe was a much more efficient and lethal adversary than in pre-Window times. As events were to prove, this was the last concerted effort of the campaign, and although two further large-scale operations would take place, they would be in isolation and six weeks apart.

As it happened, the first of these was the very next operation to confront the crews after their two-week stand-down. There was an early briefing on every main force and Pathfinder station on the 15th, as preparations were put in hand for what would be the penultimate raid of the war by RAF heavy bombers on Berlin. It was to be a mighty effort, involving the largest non-1,000 force to date of 891 aircraft, and it would be the first time that over five hundred Lancasters and three hundred Halifaxes had operated to a single target. Among them would be a contingent from 420 Squadron on its maiden operation since rejoining the Command back in November. Together with the extensive diversionary operations, which included Mosquito attacks on enemy night fighter airfields in Holland, mining in Kiel Bay and a small 8 Group Lancaster raid on Frankfurt-an-Oder to the east of Berlin, more than a thousand aircraft were to be in action. The main operation began with a few departures before 17.00, but the vast bulk of the giant armada got away between 17.00 and 18.00, swinging north over Denmark, before setting an almost southerly course to the target. The night fighter controller observed the progress of the bomber stream, but held his response back until it crossed Denmark's Baltic coast a little north of Flensburg. The now familiar running battle ensued all the way to the target, and around twenty aircraft in the rear half of the stream were brought down. Berlin was, therefore, spared these bomb loads, and those of the seventy-five early returns, only one of which was a 420 Squadron aircraft. Even so, almost eight hundred aircraft remained, and they carried in their bomb bays a record 2,640 tons of bombs. Much of this was deposited squarely into the central and south-western districts of the city, causing almost twelve hundred medium and large fires, and destroying a thousand houses and hundreds of temporary wooden barracks. Many important war industry factories were also hit, but as happened on all of the Berlin operations, scores of outlying communities found themselves in the firing line, and many bombs were wasted in this way. The bombers withdrew to the south and headed for northern Holland, making their way to the North Sea via the IJsselmeer. Forty-three aircraft failed to make it home, none of them from 420 Squadron, but LW396 crashed on approach to Tholthorpe killing two of the occupants, and injuring F/O Damgaard and the remainder of his crew.

The survivors were allowed three nights off before the next operation, which was to Leipzig on the 19/20th. It was to be a late take-off, either side of midnight, and extensive diversionary operations were again laid on. The enemy night fighter controller was not deceived, and

reserved most of his strength to meet the main raid as it crossed the Dutch coast. The two forces remained in contact all the way into eastern Germany, where some aircraft arrived early through stronger than forecast winds. They were forced to orbit in the target area until the Pathfinder markers went down, and around twenty of them fell victim to the local flak batteries, while four others were lost through collisions. The attack was inconclusive in the face of complete cloud cover and skymarking, but what was not in question was the scale of the mauling inflicted on the Command. When all of the returning aircraft had been accounted for, there was a massive shortfall of seventy-eight, by far the heaviest casualty rate to date. The Halifax loss rate was over 13% of those dispatched, and Harris immediately withdrew the Mk II and V variants from future operations over Germany. 420 Squadron somehow avoided the carnage, as indeed it would on two further disastrous nights for the Command in late March. Despite the horrendous losses, and the withdrawal of the older Halifaxes, almost six hundred aircraft were made ready on the following night for the first of three heavy raids over a three-week period on Stuttgart. Departure was shortly before midnight, and for once, the night fighter controller was deceived by the diversionary measures, thus leaving the bomber stream largely unmolested during its time over enemy territory. Despite cloud cover and scattered bombing, much damage was caused in the city's central districts, and also to areas in the north-west and north-east. A modest nine aircraft failed to return, and 420 Squadron came through unscathed.

A new tactic was introduced for the next two operations in an attempt to reduce the prohibitive losses of recent weeks. It was decided to split the bomber force into two distinct waves, separating them by two hours, in the hope that the enemy night fighters would be caught on the ground refuelling and re-arming as the second wave passed through. The system was tried first during an operation to the ball bearing town of Schweinfurt on the night of the 24/25th, the first wave of 392 aircraft taking off between 18.00 and 19.00 hours with the 420 Squadron contingent among them. The second wave of 342 aircraft departed their stations between 20.00 and 21.00 hours. Both phases of the attack suffered from undershooting, and the operation was a failure in that respect. However, the second wave lost 50% fewer aircraft than the first in an overall casualty figure of thirty-three, and this suggested some merit to the system. 420 Squadron posted missing one crew, that of F/O Long, who were all killed when LW427 was shot down by a night fighter over Germany. On the following night the experiment continued at Augsburg, the beautiful and historic city in southern Germany, which had been the scene of the epic daylight raid by 44 and 97 Squadron Lancasters in April 1942, and for which the since killed-in-action W/C Nettleton was awarded the Victoria Cross. It was Augsburg's misfortune to be the victim of one of those relatively rare occasions, when all facets of the operational plan came together in perfect harmony. The unusually concentrated marking and bombing, with scarcely any creep-back, devastated the old centre of the city, obliterating forever centuries of cultural history. Over 2,900 houses were destroyed, five thousand others were damaged to some extent, and up to ninety thousand people were rendered homeless. During the second phase of the attack, however, some of the bombing did eventually spread into the industrial areas in the north and east, and damage was caused to at least one war industry factory. Twenty-one aircraft failed to return, and 420 Squadron was again represented. Flying in the second wave, LW420 was brought down over Germany, and only one member of F/O Blakeney's eight-man crew survived to be captured.

The dawning of March brought the final month of the long and increasingly bitter winter campaign. Thereafter would come a new offensive to prepare the way for the invasion of Fortress Europe. Matters, though, were already well in hand in this regard, and the first salvoes of Bomber Command's contribution, the Transportation Plan, would be fired before the new month was a week old. In the meantime, the second raid of the series on Stuttgart was mounted on the 1/2nd by a force of 557 aircraft, made up predominantly of Lancasters, with 129 Mk III Halifaxes in support. Dense cloud on the route to the target prevented night fighters from making contact with the bomber stream, but also hampered the Pathfinders in their marking. No assessment of the raid by the crews was possible, but it had been a successful attack, which left further extensive damage in central, western and northern districts where housing was the main victim, although a number of important war industry factories were also hit. The operation was concluded for the remarkably low loss of just four aircraft, and 420 Squadron welcomed all of its crews home. Training accidents were a fact of life, and LW366 stalled and crashed in West Wales during an exercise on the 29th, killing F/S Hardy and his crew. Most of the main force Lancaster squadrons remained on the ground for the next two weeks, and it was during this period that Halifaxes of 4 and 6 Groups, particularly the restricted Mk II and Vs, took the main role in opening the Transportation Plan. This called for the systematic dismantling by bombing of the French and Belgian railway networks ahead of the invasion, to prevent their use by the Germans to bring forces to the front. Halifaxes opened the proceedings at Trappes marshalling yards on the 6/7th, after the marking had been carried out by Oboe Mosquitos. A successful operation left track, rolling stock and installations severely damaged, and similar success was gained at Le Mans railway yards on the following night, both operations concluding without loss. A second attack by 4 and 6 Groups on the Le Mans yards took place on the 13/14th, and this time fifteen locomotives and eight hundred wagons were destroyed, while collateral damage resulted to two nearby factories. 420 Squadron took part in each of these operations, and sustained no casualties.

The Command returned to the fray in numbers on the 15/16th, when 863 aircraft, the second largest non-1,000 force to date, took off to return to Stuttgart. The route, which took the bomber stream along the length of France almost to the Swiss border, delayed the inevitable contact with night fighters, but they caught up shortly before the target was reached and began to take a heavy toll. Strong winds played a part in a disappointing marking performance, and although some bombs hit central districts, the majority fell short and into open country. Thirty-seven aircraft were missing from the operation, among them 420 Squadron's LW426, which fell to a night fighter near the target, and the eight-man crew of F/O Calder perished. There was almost a second crew to post missing, after LW418 was hit by flak while outbound, severely damaging the fuselage and killing the navigator, Sgt Briggs. The pilot, Sgt McAdam, sustained leg wounds, but said nothing to his crew as they pressed on to the target to deliver their bombs. The Halifax was hit by flak again on the way home and may have lost an engine, but the crew brought it back to home airspace, and a landing was made at Friston, where a burst tyre caused it to ground loop, fortunately without further injury to the crew. Another massive force, this time of 846 aircraft, set out during the early evening of the 18th for the first of two raids in four nights on Frankfurt. Part of the enemy night fighter response was drawn to

the north to face a mining diversion, but the remainder made contact with the bomber stream as it bore down on the target. Accurate Pathfinder marking preceded a concentrated attack, which fell mainly into central, western and eastern districts destroying or seriously damaging over six thousand buildings. Although housing accounted for most of this total, industrial, commercial and public buildings also figured prominently. The loss of twenty-two aircraft was a relatively modest price to pay for the scale of the success, and there were no empty dispersals at 420 Squadron once all ten of its crews had been accounted for. Four nights later over eight hundred aircraft again took off for Frankfurt, and delivered an attack that was even more devastating than the first, and although all parts of the city were afflicted, the western districts received the greatest concentration of bombs. Half of the city was left without water, gas and electricity for an extended period, and the old Frankfurt, which had developed from the Middle Ages, was obliterated. Despite the failure of the bulk of the night fighter force to make contact, thirty-three aircraft failed to return, and one must assume that the flak batteries enjoyed a successful night.

The time had now arrived for Harris to launch the final assault of the campaign on Berlin. It would be the nineteenth since he began back in August, and the sixteenth since the resumption in November. For some 5 and 8 Group squadrons, which had participated in the diversion to Berlin on the night of the Magdeburg raid, it would be the seventeenth since then. It would also be the final raid of the war by RAF heavy bombers on the Capital, which would then be left to the Mosquitos of 8 Group's Light Night Striking Force to harass right up to the moment that Russian troops arrived in the suburbs. 811 crews took part on this momentous occasion, the aircraft departing their respective stations either side of 19.00 hours and taking a wide swing over Denmark before crossing Germany's Baltic coast. The main feature of the outward flight was a wind of unprecedented strength from the north, which scattered the bomber stream and drove aircraft continually south of their intended track. The windfinder system, whereby selected crews assessed the wind strength and direction to transmit to Group HQs for re-broadcast, was unable to cope with the situation. The loss of cohesion denied the attack any meaningful chance of concentration, and many bomb loads were again wasted on over a hundred outlying communities. Sufficient housing was destroyed to leave twenty thousand people homeless, but industry escaped reasonably lightly. There had been little night fighter activity before the target was reached, but fourteen bombers were shot down by night fighters in the Berlin defence zone. The bomber stream became even more dispersed on the return flight, and instead of passing south of Hanover and north of the Ruhr, many aircraft were driven by the wind into the Leipzig area and over the Ruhr itself. This provided the predicted flak batteries with their biggest bag of the war, and an estimated two-thirds of the seventy-two missing bombers were credited to them. LW373 was the single 420 Squadron casualty on this unhappy night for the Command, but F/O Rice and his crew escaped with their lives to fall into enemy hands. It had been an exhausting campaign against Berlin for all concerned, but some squadrons had suffered disproportionately heavy casualties.

The railway campaign continued at Aulnoye on the 25/26th, but the Pathfinders were unable to mark accurately and most of the bombing fell wide of the mark. 420 squadron took part, and like all the other participating units came through unscathed. The Berlin offensive may now be over, but the winter campaign still had a week to run, and two further major operations for the

crews to negotiate. The first of these was directed at Essen on the 26/27th, and probably caught the defenders by surprise. Within range of Oboe, the decisive factor in the Ruhr offensive a year earlier, Essen wilted under another highly effective attack, which destroyed over seventeen hundred houses, and seriously damaged almost fifty industrial buildings. A modest nine aircraft failed to return, and none of them was from the 420 Squadron contingent. The final operation of the winter offensive was to be against Nuremberg, a city, which thus far, had escaped the worst ravages of a Bomber Command assault. At briefings on the 30th crews were given a forecast of protective cloud at cruising altitude, but later, a 1409 Met Flight Mosquito crew reported that this was unlikely to materialize. Despite the warning the operation was given the green light, allowing 795 aircraft, fourteen of them from 420 Squadron, to take off in the late evening, and head towards the greatest disaster to afflict the Command during the entire war. A conference earlier in the day involving the Group commanders had decided upon a 5 Group inspired route, which would take the bomber stream in a long, straight leg from a point over Belgium to about fifty miles north of the target, from where the final run-in would commence. AVM Bennett, the brilliant Pathfinder AOC, was utterly and violently opposed to the plan and predicted a disaster, but he was overruled.

It was not long before the crews began to note some unusual and alarming features in the conditions, which included uncharacteristically bright moonlight, combined with crystal clear visibility. This enabled them to observe the other aircraft in the stream, something to which they were rarely accustomed. The forecast cloud did, indeed, fail to appear, but formed instead beneath the bomber stream as a white backdrop, silhouetting the aircraft like flies on a tablecloth. If this were not enough, condensation trails began to form in the cold, clear air, further advertising the bombers' presence. The final insult was the reappearance of the jetstream winds, which had so adversely affected the Berlin raid a week earlier. On this night they blew from the south, breaking the cohesion of the bomber stream, and driving aircraft well to the north of their intended track. Again, the windfinders were unable to cope with the speed of the wind, and modified their findings before transmitting them back to HQ. Here, the figures were disbelieved, and were again modified before being sent back to the aircraft. The result was, that many crews, through either failing to detect the effects of the wind, or refusing to believe the evidence, wandered up to fifty miles north of track, and consequently, turned towards Nuremberg from a false position. Perhaps of greater significance, was the fact that the disputed route passed close to two night fighter-holding beacons, and this, together with the conditions, handed the bomber force on a plate to the waiting enemy. The carnage began over Charlerois in Belgium, and continued all the way to the target, the burning wreckage on the ground of RAF bombers sign-posting the way. Eighty-two aircraft fell during the outward flight and around the target area, and together with the fifty-two early returns, this dramatically reduced the numbers available to attack the city. Other absentees from the target were around 120 crews, most of whom had probably been unaware of their true position when turning towards Nuremberg. At the appointed time, they found themselves over a built-up area, and on seeing a number of target indicators, they took this to be the target. It was, in fact, Schweinfurt, some fifty miles to the north-west, and it was only on their return, that the majority discovered their error. In the event, Schweinfurt escaped lightly, as did Nuremberg, but the surviving aircraft did at least face a considerably reduced level of opposition on the way home. The damage had been done, however, and ninety-five aircraft were lost, while

others were written off in crashes at home, or with battle damage too severe to repair. 420 Squadron's LW683 was almost among the former through crash-landing in a field, but F/S Ward and his crew were unhurt, and the Halifax was eventually returned to service.

That which now faced the crews was in marked contrast to what had been endured over the winter. The frequent deep penetration forays into Germany on dark, often dirty nights were to be replaced by mostly shorter-range hops to France and Belgium in improving weather conditions. An added bonus was that these targets, unlike Berlin, Frankfurt, Nuremberg, Schweinfurt, Augsburg, Leipzig and Stuttgart, would fall within the range of Oboe. The main fly in the ointment as far as the crews were concerned was a dictate from on high, which decreed that most such operations were worthy of counting as just one third of a sortie towards the completion of a tour. Until this flawed and ridiculous policy was rescinded, mutterings of discontent pervaded the bomber stations. The view from the top, that operations against French and Belgian targets would be a "piece of cake" would not be borne out, and they would require of the crews a greater commitment to accuracy to avoid as far as possible friendly civilian casualties. Now that the entire Command was available to concentrate on the Transportation Plan it would proceed apace, and despite the prohibitive losses of the winter, the bomber force was in remarkably fine fettle to face its new challenge. Harris was now in the enviable position of being able to achieve that which had eluded his predecessor, namely to attack multiple targets simultaneously with forces large enough to make an impact. He could assign targets to individual Groups, to Groups in tandem or to the Command as a whole, as dictated by operational requirements, and whilst pre-invasion considerations dominated, Harris was never going to entirely shelve his favoured policy of city-busting. 420 Squadron bade farewell to W/C Dan McIntosh on the 7th, after his year at the helm, and W/C McKenna was appointed as the new commanding officer.

April began with minor operations, and the new offensive did not get under way in earnest until the night of the 9/10th, when two operations were mounted against railway targets in France. 239 aircraft from 3, 4, 6 and 8 Groups attacked the Lille-Delivrance goods station to excellent effect, destroying in the process over two thousand items of rolling stock, and extensively damaging track and buildings. The success of the operation was marred only by the heavy casualties among French civilians in adjacent residential districts. Around five thousand houses were destroyed or damaged, and 456 people were killed, and it was a fact of life that bombing, until the advent of laser guidance, was indiscriminate, and required saturation to cope with precision targets like railway yards in built-up areas. The night's other operation at the Villeneuve-St-Georges railway yards in Paris, conducted by elements from all the Groups including a contingent from 420 Squadron, also resulted in civilian deaths, although on a much smaller scale. On the following night four railway yards were targeted in France and one in Belgium, 420 Squadron sending its aircraft to Ghent. Severe damage was inflicted upon the Merelbeke-Melle railway yards, but almost six hundred buildings were destroyed in adjacent districts and 428 Belgians were killed. On the 11/12th Harris sent over 350 Lancasters and Mosquitos from 1, 3, 5 and 8 Groups across the German frontier to attack Aachen. It was the town's worst night of the war, which left massive damage to buildings and communications, and killed over fifteen hundred people. 420 Squadron stayed at home on this night, and along with many other units would enjoy a week away from operations.

There were, in fact, no main force operations during the following week, and it was during this period, on the 14th, that Bomber Command officially became subject to the dictates of SHAEF for the pre and post-invasion campaigns. It would remain thus shackled until the Allied armies were sweeping towards the German frontier at the end of the summer. After the welcome rest operations resumed on the night of the 18/19th, when four railway yards were attacked. 6 Group concentrated on those at Noisy-le-Sec, where damage to the yards, locomotive sheds and workshops was extensive, and it would be long after the war before repairs were completed. Delayed action bombs made the area unsafe for a further week, but a through line was established within days. It was another tragedy for the local population, however, and over 460 French civilians lost their lives as 750 houses were destroyed. The 420 Squadron Halifax containing the crew of P/O Walker was struck by a bomb, which damaged the starboard wing, but a landing was made at Ford without further incident. On the following day elements of 420, 425 and 426 Squadrons carried out an unsuccessful sea search for missing crews. On the night of the 20/21st, while an all-Lancaster force was raiding Cologne to devastating effect, 420 Squadron took part in an attack on the railway yards at Lens. Bombing was accurate, and the engine sheds and carriage repair shops in particular sustained heavy damage. From 175 aircraft only one failed to return, LW692 of 420 Squadron. It was shot down by flak over France, and P/O Leonard and four of his crew were killed, while two others survived as PoWs. On the 22/23rd almost six hundred aircraft took part in an area raid on Düsseldorf, which left extensive damage mostly in northern districts. Night fighters infiltrated the bomber stream, and twenty-nine bombers were shot down, although none from 420 Squadron.

Karlsruhe was the main force target for an old-fashioned area attack on the 24/25th, while 5 Group, now referred to in 8 Group circles as the "Independent Air Force", went to Munich. Over six hundred aircraft were involved at the former, including a contingent from 420 Squadron, on a night when cloud over the target and strong winds helped to push the marking and bombing away from the city centre and over open country, and only the northern districts sustained serious damage. Among the nineteen missing aircraft was 420 Squadron's MZ503, which crashed in Holland. F/O Watterson died with four of his crew, and the two survivors were taken into captivity. The night of the 26/27th was one of heavy activity involving three major operations at widely dispersed targets. Almost five hundred aircraft attacked Essen to good effect, while Halifaxes and Mosquitos of 4, 6 and 8 Groups continued the railway campaign with a successful assault on the yards at Villeneuve-St-Georges. 5 Group was again operating independently, and on this occasion failing to make an impression on Schweinfurt. 420 Squadron was present at the first mentioned, and all of its crews returned safely home. Three operations took place on the 27/28th involving 6 Group. One was a 1, 3 and 6 Group Lancaster raid on the highly industrialized town of Friedrichshafen, another was at Montzen in Belgium, where elements of 4 and 6 Groups attempted but failed to effectively dismantle the railway yards, and the third was against the railway yards at Aulnoye, and it was to this one that Tholthorpe dispatched its squadrons without loss. The month ended for 6 Group with a raid on the railway yards at Somain on the night of the 30th. Much of the early bombing fell into open country after some inaccurate marking, but later arrivals caused some damage. Just

four Halifaxes were lost, including 420 Squadron's LW476, which crashed into the sea, taking with it F/L Northern and his crew.

May began with six small-scale to medium raids on the 1/2nd against railway installations and factories in France and Belgium. A 6 Group main force delivered a highly accurate attack on the marshalling yards at St Ghislain, from which the 420 Squadron element returned intact. Thereafter, the Snowy Owls remained off operations for the next six nights as mostly minor operations were carried out by the Command. One exception was the operation by 1 and 5 Groups against a panzer training camp and motor transport depot at Mailly-le-Camp on the 3/4th. The raid was ultimately successful, but communications difficulties in the target area between the marker leader, Master Bomber and the main force element led to a delay in the opening of the attack, and night fighters took advantage of the situation to score heavily. Forty-two Lancasters failed to return, and controversy abounds to this day concerning who was to blame. Also on this night 420 Squadron's MZ596 took off for a night exercise, and disappeared without trace with the eight-man crew of P/O La Pointe. It was at this time that coastal batteries were added to the growing list of targets to be attacked in preparation for the invasion. It was important to maintain the enemy belief that the main landings would take place in the Calais area, and consequently, almost every attack on a heavy gun position up to the eve of the landings took place over the Pas-de-Calais. It was not even necessary to hit them, although this was always the intention, as long as the impression was given that they were important pre-invasion targets. A coastal battery at St Valery-en-Caux was the target for a 6 Group attack involving 420 Squadron on the 7/8th, and there were no losses. On the 8/9th, a 6 Group element was assigned to the railway yards at Haine-St-Pierre, where half of the yards and the locomotive sheds sustained serious damage. There were no losses among the 420 Squadron contingent, and it was a similar story on the following night when seven coastal batteries were attacked in the Pas-de-Calais. It was back to railway targets at five locations on the 10/11th, when the 420 Squadron crews were among those briefed to attack the railway yards at Ghent, where the bombing killed almost fifty Belgian civilians. Twenty-four hours later railway yards at Boulogne-sur-Mer were bombed by a 6 Group main force, and here too the attack was not entirely accurate, and almost 130 French civilians died. 420 Squadron stayed at home on this night, but was back in action on the 12/13th for a raid on the railway yards at Louvain, which was being hit for the second night running. Unlike the previous night's 3 and 8 Group assault, this one was highly effective, although heavy casualties were caused in adjacent residential districts. Three 420 Squadron crews returned without bombing after failing to identify the target indicators.

When heavy operations resumed on the 19/20th after a week of relative inactivity, most of the effort was directed at railway yards, although two coastal batteries and a radar station were also attacked. 420 Squadron took part in a small-scale operation to bomb a coastal battery at Merville, and there were no losses. A year and one week after the last major assault on Duisburg, Bomber Command returned to the Ruhr city on the 21/22nd. Over five hundred Lancasters from 1, 3, 5 and 8 Groups were accompanied by twenty-two Mosquitos, and despite cloud cover, Oboe allowed an accurate attack to be delivered. 350 buildings were completely destroyed, and many hundreds of others sustained serious damage. The Ruhr, however, remained fiercely protected, and in an echo of the past twenty-nine Lancasters failed

to return. On the 22/23rd Dortmund hosted its first heavy raid since the Ruhr campaign, and sustained heavy damage at the hands of 1, 3, 6 and 8 Groups. On the same night 420 Squadron joined others from the Group to attack the railway yards at Le Mans. The bombing was accurate, and this time casualties among civilians were avoided. It was an eventful operation for the Snowy Owls, who had two crews report combats with enemy night fighters, although both were inconclusive. More serious was the collision between two Halifaxes, which left W/O Ward's with damage to the port-outer engine, mid-upper turret and starboard fin and rudder. The bomb load was jettisoned, and the aircraft landed safely at Ford on the south coast. Coincidentally, a 425 Squadron crew also reported a collision with another Halifax over the target, which cost them their tail wheel, and it could be that they were responsible for each other's damage. On the 24/25th over four hundred aircraft from all but 5 Group were sent to Aachen to attack the railway yards at Aachen-west and Rothe Erde in the east. Both targets were hit, but as the operation was over Germany, the attack soon developed into an area assault, and much damage was inflicted upon the town and villages adjacent to the railway installations. 420 Squadron was not involved, and its crews would remain off the order of battle until the 27/28th.

Over eleven hundred sorties were launched by the Command on this night, the largest force attending to the military camp at Bourg-Leopold, which had escaped serious damage during an abandoned 5 Group assault two weeks earlier. 420 Squadron provided crews for this operation, which was carried out effectively for the loss of nine Halifaxes and a Lancaster. One of the Halifaxes was 420 Squadron's MZ502, captained by Flight commander S/L Beall. It was shot down by a night fighter over Belgium, and there were no survivors from among the eight men on board. Three other crews reported encounters with enemy aircraft, that of P/O Kalle citing a FW190 as their attacker. The Halifax caught fire, so the pilot ordered the bombs to be jettisoned before putting the nose down to blow out the flames in a dive. Sometime during these frantic minutes the mid-upper gunner decided to bale out, but his colleague in the rear turret maintained a steady rate of fire at the assailant, and after they landed safely, he was able to claim it as destroyed. The excitement was not yet over, as two aircraft overshot their landings and came to a halt beyond the runway, one at base and the other at Chipping Warden. On the last night of the month over two hundred aircraft from all but 5 Group carried out a two wave attack on the railway yards at Trappes. The operation was successful, as was a small-scale effort involving 420 Squadron against a coastal transmitting station at Au Fevre.

The first week of June was dominated by preparations for the impending invasion, and was characterized by unsettled weather. 420 Squadron joined the action on the night of the 2/3rd in an operation against a gun battery at Neufchatel. Over a thousand aircraft were aloft on D-Day Eve, the 5/6th, attacking ten coastal batteries ahead of the invasion force. Over five thousand tons of bombs were delivered onto the aiming points, a new record for a single night, and most of them were aimed at Oboe sky markers in the face of complete cloud cover. 420 Squadron was part of a 6 Group force assigned to one of these targets, and bombing took place from between 9–12,000 feet. There was no direct reference to the invasion at briefings, but crews were ordered to observe strict flight levels, and were prohibited from jettisoning bombs over the sea. Aircraft were taking off throughout the night, and some of those returning

in dawn's early light were rewarded with a sight of the giant invasion armada as it ploughed its way sedately across the Channel below.

D-Day Night brought another thousand aircraft into action, including a 420 Squadron element, this time against road and railway communications targets in or near towns on the approaches to the beachhead. The following night brought attacks on four railway targets by over three hundred Halifaxes and Lancasters, while elements of 1, 5 and 8 Groups went for a six-way road junction in the Foret de Cerisy between Bayeux and St-Lo. Among the former was Acheres, the target for 420 Squadron aircraft, one of which failed to return. F/O Jones's NA505 fell to a night fighter over France, and all eight occupants were killed. The assault on enemy railway communications continued on the 8/9th at five locations, one of which was the 420 Squadron objective at Mayenne. The following night was devoted to attacks on four airfields situated south of the beachhead, which might be used by the enemy to bring up reinforcements. All were successfully dealt with by elements of 1, 4, 6 and 8 Groups, and 420 Squadron's crews returned from the one at Le Mans without loss. Four railway objectives occupied over four hundred aircraft on the 10/11th, 6 Group going for the locomotive sheds at Versailles. 420 Squadron's LW674 crashed in France, and P/O Holoway died with five of his crew, while two others ultimately evaded capture.

A new campaign began on the night of the 12/13th, which would be prosecuted right through to the end of the war. With Germany now firmly on the back foot a concerted effort was to be made by both Bomber Command and the American 8th Air force against its synthetic oil industry. Three hundred Lancasters and Mosquitos of 1, 3 and 8 Groups carried out a stunningly accurate attack on the Nordstern refinery at Gelsenkirchen, hitting it with fifteen hundred bombs, and halting all production for a number of weeks. This deprived the German war effort of a thousand tons of vital aviation fuel for each day of the stoppage. While this was in progress over six hundred aircraft drawn from 4, 5, 6 and 8 Groups bombed six communications targets leading to the Normandy front. It was during the 6 Group attack at Cambrai that Canadian P/O Andrew Mynarski earned the posthumous award of the Victoria Cross for his heroics in a 419 Squadron Lancaster. On their return to Tholthorpe three 420 Squadron crews reported combats with enemy fighters, and one claimed a FW190 as destroyed. The first daylight operations by Bomber Command since the departure of 2 Group a year earlier were conducted against Le Havre on the evening of the 14th. The port was home to E-Boats and other fast, light naval craft, which posed a threat to Allied shipping serving the beachhead. The two-phase operation was opened by a 617 Squadron attack on the concrete pens with Tallboys, closely followed by a predominantly 1 Group force. 3 Group completed the assault at dusk, and few if any marine craft escaped the carnage unscathed. As this was in progress, elements of 4, 5 and 8 Groups were concentrating their efforts against enemy troop and transport positions at Aunay-sur-Odon and Evrecy. Other elements of 4, 6 and 8 Groups, including 420 Squadron, attended to railway installations at Cambrai and St Pol. The evening of the 15th was devoted to the bombing of Boulogne in a repeat of the previous night's operation against Le Havre, and this operation by elements of 1, 4, 5, 6 and 8 Groups was equally effective, although the town itself suffered its worst experience of the war. 420 Squadron played its part, and all of its crews returned safely, although not all to Tholthorpe. LL550 put down at Linton-on-Ouse, and at 11.30 that morning began its take off run for the

ferry flight home. For some reason the Halifax failed to gain flying speed, and the pilot, P/O Britt, decided to retract the undercarriage to bring it to a halt before it ran out of tarmac. When the dust had settled the crew emerged from the wreck with only a couple of minor injuries between them.

A second new campaign opened on the night of the 16/17th, this one against flying bomb launching and storage sites. 1, 4, 5, 6 and 8 Groups committed four hundred aircraft between them to attacks on four targets in the Pas-de-Calais. 420 Squadron went to a site at Sautrecourt, and it is believed that each of the targets was effectively dealt with without loss. Meanwhile, a second force from 1, 4, 6 and 8 Groups continued the oil offensive at Sterkrade/Holten, but failed to inflict more than slight damage in the face of complete cloud cover. Railways were the principal objectives on the 17/18th, but over a hundred aircraft from 6 and 8 Groups, including an element from 420 Squadron, bombed a constructional site at Oisement/Neuville-au-Bois in the Abbeville area. The Snowy Owls went to another site at St Martin L'Hortier by daylight on the 21st, and bombed it through a complete cloud cover. Later that night, 5 Group embarked on its first involvement in the current oil campaign, when sending two forces to the oil refineries at Wesseling, on the west bank of the Rhine south of Cologne and Scholven/Buer near Gelsenkirchen. Those bound for the former were picked up by night fighters as they made their way across the frontier region of Holland and Belgium, and a bitter battle ensued. By the time the badly mauled survivors reached home thirty-seven Lancasters had fallen victim to the defences, mostly to the night fighters. Four 5 Group squadrons, 44, 49, 57 and 619, had each lost six aircraft, although one of the 57 Squadron crews was plucked from the sea off Yarmouth without injury.

From this point on daylight operations were to become increasingly common as the summer progressed, while night operations continued unabated. The target for 420 Squadron crews on the 23/24th was a V1 site at Bientques, one of four flying bomb sites assigned to forces from 3, 4, 6 and 8 Groups. On the following day three more sites were hit, 420 Squadron joining in at Bameries, and then concluded its month's account against a similar target on the 27/28th, when over seven hundred aircraft were involved at six separate aiming points. It had been a busy month for the whole Command, and 420 Squadron took part in sixteen operations, the last nine without loss. Operations continued for many other squadrons, however, and the railway yards at Metz provided the target for 6 Group on the 28/29th, while Blainville was the objective for 4 Group. Both targets were hit, but a combined total of eighteen Halifaxes were shot down along with one Lancaster from each operation. The month ended with a raid on a road junction at Villers-Bocage on the evening of the 30th. It provided access for a German counter attack at a weak point in the Anglo-American lines, but after accurate bombing by the 3 and 4 Group main force crews, who were brought down by the Master Bomber to four thousand feet, the planned German attack was scrubbed.

July and August were to be Bomber Command's most hectic months of the year, as the side-by-side campaigns against communications, oil and flying bomb sites all demanded attention. To this was about to be added tactical support for the ground forces as they broke out of the beachhead into Normandy, but the main emphasis during the first two weeks of July was unquestionably on flying bomb sites. 420 Squadron opened its July account on the afternoon

of the 1st at Biennais, one of three sites to be targeted. Bombing had to be conducted on Oboe skymarkers in the face of almost complete cloud cover, and results could not be assessed. LK421 lost both port engines on the way home, and was put down wheels-up in a field near Linton-on-Ouse, where a number of cows were killed. The Halifax was written off, but P/O Caine and his crew survived, although the pilot and flight engineer sustained injuries. Following a two-night rest the squadron returned to Biennais by daylight on the 4th, and went there yet again on the night of the 5/6th. Returning after the latter seventeen crews landed at the 3 Group station at Mildenhall in Suffolk because of the weather conditions at base. On the 6th over five hundred aircraft were sent against five sites, four of which were clear of cloud. 420 Squadron was represented at Coquereaux, and its crews all returned home safely. The first major operation in support of the ground forces was mounted on the evening of the 7th by 467 aircraft drawn from 1, 4, 6 and 8 Groups. The target was the northern rim of Caen behind a series of fortified villages, from where enemy units were facing British and Canadian forces. W/C Daniels of 35 Squadron acted as Master Bomber, and the attack was accurate, if ultimately counter-productive, as few enemy troops were killed and eventual passage through the town was rendered difficult by rubble-blocked streets. 420 Squadron contributed to the 6 Group effort, and all of its crews returned without major incident. Briefings took place at 3, 4, 6 and 8 Group stations on the 9th for six flying bomb sites, but 420 Squadron sat these operations out, and remained off the order of battle until the 12th. Over two hundred aircraft from 4, 6 and 8 Groups were involved on this day, most of them to attack a storage dump at Thiverny, but the month's persistent cloud cover led to a lack of concentration. The next operation for the squadron came on the 15/16th, and was again in support of the flying bomb campaign.

Following another short break the squadron returned to the fray in the early hours of the 18th, to help provide tactical support for the British Second Army. The ground forces were about to launch Operation Goodwood, an armoured attack on enemy positions around Caen, and over nine hundred aircraft were to deliver a major assault on five fortified villages. American bombers also participated, but 5,000 of the 6,800 tons of bombs delivered onto the aiming points were carried by RAF aircraft. The operations were a stunning success, and in the absence of enemy fighters, only six aircraft were lost to flak. 420 Squadron's Sgt Heron reported colliding with a Lancaster over England, and although his Halifax sustained no major damage, the other aircraft apparently lost its port wing outboard of the engines. Its identity and fate are not known. That night brought much further activity, including an attack by elements of 1, 6 and 8 Groups on the oil refinery at Wesseling near Cologne. 420 Squadron sent a contingent, and all returned safely from what was a highly effective operation for the loss of a single Halifax. During a day off from operations on the 19th LK803 crashed soon after take-off for a fighter affiliation exercise, and F/O Joplin died with the other four crewmen on board. A V1 site in the Pas-de-Calais provided the target for a 6 Group contingent on the 20th, including some from 420 Squadron, and there were no losses from Tholthorpe.

There had been no major operations against a German city target since Dortmund in May, while the Normandy landings and consolidation of the Allied foothold had been the overriding considerations. Now, on the night of the 23/24th, Harris launched an attack on Kiel by over six hundred aircraft, all but 110 of them Lancasters. The force appeared suddenly and with

complete surprise from behind a Mandrel RCM screen laid on by 100 Group, and inflicted heavy damage on the town and the port area where all of the U-Boat yards were hit. This was followed on the 24/25th by the first of three major raids on Stuttgart over a five-night period involving a force of over six hundred aircraft. Stuttgart had always proved a difficult target to hit because of its location in a series of valleys, although extensive damage had been inflicted upon it during the three raid series in February and March. The central districts became heavily damaged on this night for the loss of twenty-one aircraft. While this operation was in progress 420 Squadron crews joined others from the Group to attack a flying bomb site at Ferfay, although only three of them bombed because of complete cloud cover. MZ713 failed to arrive back at Tholthorpe, and it was later learned that the Halifax had crashed into the sea off the Pas-de-Calais coast taking with it the eight-man crew of F/L Trickett. 550 aircraft set out to return to Stuttgart on the following night, and delivered what would prove to be the most devastating of the three attacks. The operation involved a 420 Squadron contingent, most of which landed at southerly airfields after their long round trip. At debriefing F/O Aldred's crew claimed a JU88 as destroyed.

An all-Lancaster force from 1, 3, 5 and 8 Groups returned to Stuttgart on the 28/29th, while elements of 1, 6 and 8 Groups targeted Hamburg. The night soon degenerated into a disaster for the Command, as night fighters intercepted the Stuttgart bound bomber stream over France in bright moonlight, and others caught the Hamburg force on the way home. Thirty-nine and twenty-two aircraft respectively were the numbers brought down, and 420 Squadron had to post missing one of its crews from the Hamburg raid. MZ645 was shot down by a night fighter over Germany killing F/L Zavitz and four of his crew, while three others survived as PoWs. Two more crews landed with tales to tell of encounters with night fighters, which they fortunately came through without damage. In the early morning of the 30th almost seven hundred aircraft took off to attack six German positions facing predominantly American ground forces in the Villers Bocage - Caumont area. The 420 Squadron crews were briefed to attack an aiming point at Amaye-sur-Suelles, which they did from between 1,500 and 4,000 feet. All arrived back in home airspace, but F/L Kalle overshot his landing at White Waltham, and NA528 ended up on a railway line, where a hung-up bomb exploded killing the wireless operator, F/S Cusack, and seriously injuring the remainder of the crew. The month ended for the squadron with a raid on a V1 launching site on the night of the 31st, from which all returned safely. It had been a hectic but generally rewarding month for the Command, but it had also been expensive, and many squadrons had sustained heavy casualties.

The first week of August was dominated by the campaign against flying bomb sites, and over seven hundred and fifty aircraft were involved in daylight operations on the 1st. In the event, weather conditions over the numerous aiming points appear to have been unsuitable for accurate bombing, and less than eighty crews bombed before the Master Bombers called a halt. Tholthorpe was stood down on this day, but all of the other 6 Group squadrons were involved in the above. Conditions were clear on the following day, and four sites were attacked by almost four hundred aircraft, although 420 Squadron again stayed at home. Over eleven hundred aircraft were involved in attacks on the same targets and others in the Foret de Nieppe and at L'Isle Adam in the early afternoon of the 3rd. 420 Squadron undertook its first operation of the month at the former, and its crews returned without major incident. 6 and 8

Groups went back to the Bois-de-Cassan and Trossy-St-Maximin sites on the 4th, delivering effective attacks in clear conditions, and a modest four aircraft failed to return from the 291 dispatched. 420 Squadron took part, and its crews reported heavy flak over the target. On the 5th more than seven hundred aircraft pounded the storage sites in the Foret de Nieppe and at St-Leu-d'Esserent. The 420 Squadron contingent was employed at the latter, and all returned home.

From mid evening on the 7th aircraft began taking off to attack five aiming points ahead of Allied ground forces in the Normandy battle area. 420 Squadron put up a maximum effort as part of a force of over a thousand heavy bombers, but because of the close proximity of Allied troops, the attacks were carefully controlled by the Master Bombers and only two thirds of the aircraft actually bombed. The 420 Squadron crews had been briefed for an aiming point at la Hoque, but they were among the element to be sent home with their bombs, and eighteen crews landed at Tilstock. W/O McAdam overshot the runway when putting down at Tangmere, severely damaging NA580, but he and his crew were unhurt. The squadron was up again later on the 8th for a raid on oil storage facilities in the Foret de Chantilly, and the target was left burning. The night of the 9/10th saw 420 Squadron contribute aircraft to a raid on the V1 site in the Foret de Nieppe, and then to an oil storage depot at the French port of la Pallice on the 10/11th. W/C McKenna led the squadron against a fuel dump in the Foret de Montrichard on the 12th, and his aircraft was hit by flak on the run up to the target, killing his navigator, P/O Axford. The night of the 12/13th was to be particularly busy, with over eleven hundred sorties being launched on various major and minor operations. In one of them 380 crews of the main force were briefed for a raid on Brunswick, in which no Pathfinder aircraft would take part. The intention was to gauge the ability of crews to locate and bomb an urban target purely on the strength of H2s. Meanwhile, almost three hundred aircraft would split the defences by attacking the Opel motor works at Rüsselsheim in southern Germany, 144 others, including a 420 Squadron contingent, were to bomb German troops and a road junction at Falaise, and a small raid would take place against flying bomb targets. In addition, numerous other sweeps, mining and support activity would keep the enemy night fighter controller on his toes, and make it more difficult to decide upon a response. Generally, apart from the Falaise operation, the night's huge effort was not rewarded with great success. At Brunswick the bombing was scattered across the town and up to twenty miles distant, thus demonstrating that Pathfinders remained a necessity. Even so, their presence at the attack on the Opel works did not prevent much of the bombing from being wasted on open country, and the damage inflicted on the factory was insufficient to cause a loss of production. Twenty-seven and twenty aircraft respectively were lost, however, and this was a high price to pay for the poor return.

The time was now fast approaching, when Harris could claim that he had discharged his obligation to SHAEF, and could turn his attention once more upon industrial Germany almost to the exclusion of all else. However, tactical support for the ground forces was still required, and the afternoon of the 14th was devoted to large-scale operations in the Falaise area under Operation Tractable. Eight hundred aircraft were involved in the bombing of seven aiming points ahead of the Third Canadian Division, each controlled by a Master Bomber and deputy. 420 Squadron was involved, and most of the bombing was accurate, although some fell

amongst Canadian troops in a quarry, killing thirteen men and injuring over fifty. Recriminations abounded thereafter over who was to blame, and some commanding officers were carpeted, but it seems to have been a genuine accident brought about as much by events on the ground as in the air, and in truth, this was one of very few “friendly fire” incidents to involve Bomber Command during tactical support operations. In preparation for his new night offensive against Germany Harris launched a thousand aircraft on the morning of the 15th to attack nine fighter airfields in Holland and Belgium. 6 Group attended to those at Brussels and Soesterberg, and 420 Squadron’s F/O Jones lost an engine while outbound, but pressed on to bomb from low level before returning safely.

Now was the time for a gentle start to a new offensive against Germany, which, once in full swing, would continue without let-up or mercy until there was nothing significant left to bomb. On the night of the 16/17th over eight hundred aircraft set out for northern Germany, 348 of them containing crews briefed to attack the port of Kiel, among them a contingent from 420 Squadron. The remainder, all Lancasters, carried on eastwards to the distant Baltic port of Stettin, where a highly accurate raid ensued, in which over fifteen hundred houses and twenty-nine industrial premises were destroyed, and five ships were sunk in the harbour for the modest loss of five Lancasters. The attack on Kiel was moderately successful, and caused severe damage to the docks area and shipyards, but many bomb loads also fell outside of the town. This operation too cost five aircraft, one of them from 420 Squadron. MZ687 went down in the North Sea, taking with it F/O Pritchard and six of his crew. The navigator spent two days in his dinghy before being picked up by the enemy. The crew of F/O Kidd had a close shave when their Halifax was hit by another aircraft on the way home. There was damage to the canopy, port propellers and starboard fin, but they made it back to a landing at the emergency strip at Carnaby. Between 21.00 and 22.00 hours on the 18th almost three hundred aircraft set out for Bremen, the objective for countless raids over the preceding years, including the last of the thousand bomber raids in June 1942. The force on this night was not particularly large, and the bomb tonnage delivered was only half that used in any one of the Gomorrah raids on Hamburg, but the damage it inflicted was extreme. Over eight and a half thousand houses and apartment blocks were gutted by fire in central and north-western districts, the port area was devastated, and eighteen ships were sunk. It was impossible to list the number of industrial and commercial buildings reduced to ruins, or precisely how many people had been killed, but the latter figure certainly exceeded a thousand, and this notable success was gained for the loss of just one aircraft. A simultaneous operation was mounted against the synthetic oil refinery at Sterkrade by a predominantly 4 Group force of over two hundred aircraft. 420 Squadron was not in action on this night, but joined in an attack on the railway yards at Connantre on the 18/19th. LW392 was attacked by a ME210 and sustained some damage to the nose and mid-upper turret, but landed safely at Waddington, and most of the squadron’s other aircraft also put down at Lincolnshire airfields.

The renewed assault on Germany continued on the night of the 25/26th, when a record 1,311 sorties were flown on major and support operations. The main effort was by over four hundred Lancasters of 1, 3, 6 and 8 Groups, whose crews were briefed to attack the Opel motor works at Rüsselsheim, which had escaped a telling blow two weeks earlier. Although the factory was quite severely damaged on this night, production of lorries was barely compromised, and

fifteen Lancasters were lost. Meanwhile, 5 Group was failing to deliver an effective attack on Darmstadt, and 420 Squadron was contributing to a 4, 6 and 8 Group raid on coastal batteries at Brest. Most of its aircraft landed at Boscombe Down on return. On the following night Kiel received its second heavy raid in less than two weeks, this time at the hands of around 350 Lancasters of 1, 3 and 8 Groups. Smoke screens created difficulties for the marker force, but heavy and widespread damage was inflicted upon the town's central and surrounding districts, and strong winds fanned the fires. On the 27th, the Command launched its first major daylight raid over Germany since August 1941. The target was the Rhein-Preussen synthetic oil refinery at Meerbeck near Homberg, and the force of 220 Halifaxes and thirteen Lancasters from 4 and 8 Groups was escorted on the outward flight by nine squadrons of Spitfires. The attack was delivered through partial cloud cover on Mosquito-borne Oboe markers backed up by Pathfinder heavies. Some accurate bombing was claimed, but the operation was generally inconclusive. Seven squadrons of Spitfires covered the withdrawal, and no aircraft were lost. 420 Squadron was also active during the day as part of a force sent against the V-Weapon site at Mimoyecques. The final operations against the flying bomb menace took place on the 28th, when twelve sites were attacked by small numbers of aircraft employing the Oboe leader system. 420 Squadron was assigned to Anderbelck, where the crews encountered flak over the target. MZ594 was hit, and the damage prevented the bomb doors from opening, forcing F/S Reid to land back at Woodbridge with his bombs still on board. Within a few days of these operations the Pas-de-Calais was in Allied hands. Stettin hosted its second heavy raid of the month on the 29/30th, when four hundred aircraft again inflicted heavy damage on the port city, with particular emphasis on areas not previously hit. Over fifteen hundred houses were destroyed along with thirty-two industrial premises, a two thousand ton ship was sunk, and more than a thousand people lost their lives. 420 Squadron closed its August account with participation in an attack on a coastal battery at Ile de Cezembre near St Malo on the 31st.

As the Allied ground forces advanced, the need for port facilities became pressing to maintain a steady supply line. Much of September would be devoted to the liberation of the major French ports still in enemy hands, principally Le Havre, Boulogne and Calais, and in preparation for this, six enemy airfields in southern Holland were bombed by daylight on the 3rd. 420 Squadron was involved at Volkel, and most of the crews landed at East Anglian airfields on return. The assault on Le Havre began on the 5th, when over three hundred aircraft from 1, 3 and 8 Groups attacked enemy strong points around the port. While a similar operation was conducted on the following day, elements of 6 and 8 Groups, including the Snowy Owls, carried out the final raid of the war on Emden, a target that had been left in peace for more than two years. 1, 3 and 8 Groups returned to Le Havre in bad weather on the 8th, and only a third of the three hundred-strong force released their bombs, doing so more in hope than expectation. 420 Squadron crews took off for le Havre on the 9th, but the continuing poor weather caused the Master Bomber to send the force home without bombing. Almost a thousand aircraft returned on the following day to pound eight enemy strong points, and this time the 420 Squadron crews were able to deliver their bomb loads. Two hundred aircraft concluded the series on the 11th, and the German garrison surrendered to British forces a few hours later. Also by daylight on the 11th other elements of the Command raided synthetic oil plants at Castrop-Rauxel, Kamen and Gelsenkirchen, each force operating under the umbrella of a strong fighter escort. 420 Squadron participated at the first-mentioned and came through

without loss. Similar targets were attacked at Dortmund, Scholven-Buer and Wanne-Eickel on the 12th, the two latter in the face of an effective smoke screen. A 420 Squadron Halifax was hit by flak on the run-up to Wanne-Eickel, and returned to base without bombing and with a wounded rear gunner.

Later that night, a two-pronged attack was mounted against southern Germany. 378 Lancasters of 1, 3 and 8 Groups returned to Frankfurt for the first time since the devastating raids in March, while a predominantly 5 Group force of two hundred Lancasters targeted Stuttgart. The former resulted in severe damage to the city's western districts, at a time when a large part of its fire brigade was absent, helping to quell the fires at nearby Darmstadt, which had suffered the ordeal of a firestorm at the hands of 5 Group on the previous night. For Frankfurt, this would prove to be the last raid of the war by RAF heavy bombers. It was a similar story of destruction at Stuttgart, where the north and west-central districts were ravaged by a firestorm, and over eleven hundred people were killed, all for the modest loss of four Lancasters. A 6 Group Halifax main force carried out a daylight raid on Osnabrück on the 13th, when another 420 squadron aircraft was hit by flak, which wounded the rear gunner. The 15/16th brought a typical raid on Kiel, much damage within the town, but a large wastage of bombs outside. 420 Squadron's NA629 suffered a complete hydraulics failure on the way home, which caused the wheels, flaps and bomb doors to flop down. The drag proved too much, and the Halifax gradually sank towards the North Sea, where a ditching ultimately took place some seventy miles out from the English coast. F/L Motherwell and his seven crew mates gained the relative safety of their dinghy, and settled down to see what fate had in store. On the following afternoon two 420 squadron aircraft and another from 425 Squadron departed Tholthorpe to carry out a search. They crossed the coast at Flamborough Head, and shortly before 17.30, two and a quarter hours after take-off, they spotted the dinghy, and a Lindholme boat was dropped. Some time later a Walrus arrived to pick the crew up after fourteen hours afloat. The ill-fated Operation Market Garden began on the morning of the 17th in the wake of attacks on enemy airfields and gun positions by elements of 1, 3 and 8 Groups during the night. By breakfast time, the first of over seven hundred aircraft had taken off to begin the liberation of Boulogne. A total of three thousand tons of bombs was delivered onto enemy positions around the port, and shortly afterwards Allied ground forces began their advance. 420 Squadron played its part in the operation, and all of its crews returned safely. Within a week Boulogne was returned to Allied hands. Bremerhaven wilted under its first heavy raid of the war on the 18/19th at the hands of a 5 Group force of two hundred Lancasters. Accurate low level marking by the Mosquito element led to the destruction of over 2,600 buildings, as the central and port areas in particular were razed by fire.

Following the Boulogne operation 420 Squadron remained at home for a week. The first operations in the campaign to liberate Calais took place on the 20th and involved over six hundred aircraft. They bombed German positions accurately in clear visibility, but further attacks would be required before the port was surrendered. Access to the much needed Belgian port of Antwerp was blocked by heavy gun emplacements on the island of Walcheren at the mouth of the Scheldt, and the first of a number of operations was mounted against them by 6 and 8 Groups on the 18th. Bad weather forced the attempt to be abandoned before any bombing took place, and a second attempt on the 19th was recalled. It was not until the 23rd

that conditions were right for another go, and 1 and 6 Groups provided the main force for the attack on the Domburg battery. The main fare that night was an attack on Neuss in the Ruhr by over five hundred aircraft drawn from 1, 3, 4 and 8 Groups, while 5 Group operated elsewhere. Over eight hundred aircraft departed their stations either side of 19.00 hours for their respective targets, and the bombing of Neuss, close by Düsseldorf, was concluded successfully for the loss of seven aircraft.

Later on the 24th operations continued against enemy positions around Calais, but were hampered by low cloud, and a third of the force was unable to bomb. Most of those doing so came below the two thousand feet cloud base, and exposed themselves to the lethal light flak, which claimed eight of them. It was a similar story on the 25th, when 420 Squadron returned to the fray, and only a third of more than eight hundred aircraft were able to bomb through breaks in the cloud. Conditions improved on the 26th, when 420 Squadron was again present, and over seven hundred aircraft concentrated their bombing on three aiming points near Calais and four gun emplacements at Cap Gris Nez. The 27th brought yet another tilt at German positions around Calais by 1, 3, 4 and 8 Groups, along with attacks on oil refineries at Bottrop and Sterkrade by 6 and 8 Groups. 420 Squadron had two early returns, and two of its Halifaxes sustained flak damage. The last assault on Calais took place on the 28th, and six gun batteries at Cap Gris Nez were again bombed, although six 420 Squadron crews were sent home by the Master Bomber with their bombs still aboard. Shortly afterwards Canadian ground forces moved in and took the surrender of the enemy garrison. The 30th brought further operations against the oil installations at Sterkrade and Bottrop, and 420 Squadron operated against the former without loss.

October was to be characterized by an unprecedented concentration of bombing on German cities, and a second Ruhr campaign would begin at the end of the first week. Ports were still a pressing priority, however, as the need for supplies increased to keep the Allied advance mobile, and Bomber Command was to play its part in weakening enemy resistance. The efforts to neutralize the batteries on Walcheren had proved ineffective, and it was decided instead to breach the sea walls, and thereby to inundate the gun positions, and also create difficult terrain for the defenders when the land offensive began. During daylight on the 3rd, eight waves of thirty Lancasters each attacked the sea defences at Westkapelle, and the fifth wave created a breach, which was widened by those following. 617 Squadron aircraft were on hand with Tallboys, but in the event, they were not needed. 420 Squadron opened its October account on the 4th with a daylight raid on the port of Bergen in Norway. The closure to the enemy of the Biscay ports had resulted in a concentration of U-Boats at that location, and the majority of the attacking force of 140 aircraft was assigned to the concrete pens, which were in the process of being enlarged, while a small element was to bomb individual vessels. The operation was successful, but collateral damage in the town caused the deaths of sixty children in a school basement. The night of the 5/6th was devoted to the first raid on Saarbrücken for two years, which involved over five hundred aircraft from 1, 3 and 8 Groups. The raid was of the saturation variety, and almost six thousand houses were destroyed for the loss of just three Lancasters. This high return-low loss outcome would be repeated throughout the month and on to the end of the war, with only isolated occasions on which the defences gained the upper hand. During the afternoon of the 6th over three hundred aircraft took off to raid the oil

refineries at Sterkrade and Scholven-Buer. The operations were carried out in clear conditions, and the predominantly 4 Group crews produced good bombing on accurate Pathfinder marking. The new Ruhr offensive opened at Dortmund on the 6/7th, when over five hundred aircraft from 3, 6 and 8 Groups pounded the city, causing extensive damage to housing, industry and communications for the loss of five of their number. 420 Squadron put up a maximum effort, and all of its crews returned, although sixteen landed at Market Harborough because of poor weather at base, and a further three lobbed down at Woodbridge.

Following the failure of Operation Market Garden, the Allied right flank had become exposed to a possible danger from enemy forces approaching through the frontier towns of Cleves and Emmerich. On the afternoon of the 7th both towns were left extensively damaged by forces of over three hundred aircraft. 1, 4, 6 and 8 Groups delivered a scattered and ineffective raid on Bochum on the 9/10th, and two 420 Squadron crews reported encounters with enemy fighters. F/O Cox's Halifax was hit by flak while outbound, and he was forced to return early with his instruments smashed. On the 12th 6 Group's Halifax brigade raided the oil refinery at Wanne-Eickel. The marking and bombing were not accurate on this occasion, however, and the refinery escaped damage, although a nearby chemicals works was destroyed. The 420 Squadron Halifax of F/O McKenzie lost its port-inner engine on the way out, and it was decided to bomb Cleves instead. During the course of this flak damaged a fuel tank, causing a leak, and the mid-upper gunner sustained a broken leg. The pilot landed at the recently liberated airfield at Volkel to off-load the gunner for medical attention, refuelled, and made it safely back to base. There were no major operations on the night of the 12th or on the following night, as Harris marshalled his forces for a spectacular twenty-four hours on the 14th. This was the day selected to launch Operation Hurricane, a demonstration to the enemy of the overwhelming superiority of the Allied air forces ranged against it. Before first light on the 14th, over one thousand aircraft took off for Duisburg, arriving overhead shortly after breakfast time to deliver around 4,400 tons of high explosives and incendiaries under the protection of a large fighter escort. To be over the Ruhr in daylight was still a dangerous practice, and the flak defences claimed fourteen aircraft before being overwhelmed. Three 420 Squadron crews reported being hit by flak, but all landed safely. That night similar numbers returned to Duisburg to press home the point about superiority, and thus 2,018 aircraft had been dispatched against the city in less than twenty-four hours, and around nine thousand tons of bombs had been dropped for the loss of twenty-one aircraft. F/O Haslop's was one of three 420 Squadron early returns, following a collision, which tore off the starboard fin and rudder. It is remarkable, that this enormous effort was achieved without the inclusion of any 5 Group aircraft. They were, therefore, available for other duties, and took advantage of the night-time activity over the Ruhr to finally devastate Brunswick, which had escaped relatively lightly during four previous attacks in 1944.

On the night of the 15/16th over five hundred aircraft took part in the last heavy raid of the war on Wilhelmshaven, and 420 Squadron provided a contingent without loss. Bad weather at base again forced most crews to land away, nine of them selecting the 100 Group station at Foulsham in Norfolk. Four nights later, after a rest for the heavy squadrons, elements of 1, 3, 6 and 8 Groups carried out a two-phase assault on Stuttgart, with four and a half hours between waves. The bombing was not concentrated, but severe damage was never the less

inflicted upon central and eastern districts, and an important Bosch factory was hit. The largest Bomber Command force of the war, amounting to 1,055 aircraft, took off between 16.00 and 17.00 on the 23rd to deliver Operation Hurricane's message to Essen. In view of the destruction already inflicted upon the city, and the likelihood that there was little left to burn, the bulk of the 4,500 tons of bombs was high explosive. Six hundred buildings were destroyed, while a further eight hundred sustained serious damage in a city, which had already surrendered its status as a major centre of war production. 420 Squadron experienced three early returns, and three aircraft were hit by flak, before NA509 swung on landing at Wellesbourne Mountford causing the undercarriage to collapse. The Halifax was a write-off, but the crew of F/O Young emerged from the wreckage unscathed. This was the day on which W/C McKenna relinquished command of the squadron to be replaced by W/C Edwards. Only minor operations took place on the following night, and then, on the afternoon of the 25th, the Hurricane force returned to Essen with over seven hundred aircraft, and destroyed a further eleven hundred buildings. The Krupp complex was among the industrial concerns badly damaged, and parts of it would remain out of action for the remainder of the war. Most of the city's surviving industry had been dispersed to other parts of Germany by this point, but its location within easy reach of Germany's western frontier would ensure further attention from Bomber Command, particularly as the ground action approached close to the end. While this operation was in progress, 420 Squadron was supporting a 6 Group Halifax raid on the Meerbeck oil plant at Homberg. A 1,000lb bomb passed through the port wing of F/O Glover's Halifax in between the engines and took out two fuel tanks, while a 500 pounder damaged a tailfin, but the crew got home safely. The target could not be seen through the complete cloud cover, and this prevented any assessment of the outcome.

Cologne's turn to face the Hurricane force came first in the late afternoon of the 28th at the hands of over seven hundred aircraft. More than 2,200 apartment blocks were destroyed in districts north-east and south-west of the city centre, and much damage was inflicted upon power, railway and dockland installations. The 420 Squadron Halifax containing the crew of F/O Bonner was hit by flak, seriously injuring the mid-upper gunner. A landing was made at Woodbridge to enable him to receive the earliest medical attention. The assault on Walcheren had been ongoing throughout the month, and 5 Group carried out the final attacks on the 30th. The ground forces arrived on the following day to clear enemy resistance, and after a week of heavy fighting the island was taken. Even so, it would be a further three weeks before the approaches to Antwerp had been sufficiently cleared of mines to allow access to shipping. Later on the 30th nine hundred aircraft returned to Cologne and dropped four thousand tons of mostly high explosive bombs onto what remained of the city, causing massive damage. 420 Squadron's participants all returned, but LW388 suffered an undercarriage collapse on landing at Manston, and shortly after P/O MacDonald and his crew had vacated the wreck, it was struck by a Lancaster.

November began with 420 Squadron operating against Oberhausen as part of a force of almost three hundred aircraft from 6 and 8 Groups. It was a scattered attack delivered through cloud, and other Ruhr towns probably felt the effects. LL605 was set upon by a BF109, which was seen to dive to the ground with its engine on fire, and F/L Sefton's gunners claimed it as destroyed. The Hurricane force went to Düsseldorf on the evening of the 2nd with almost a

thousand aircraft, and they pounded the northern half of the city, leaving over five thousand houses destroyed or seriously damaged. As events were to prove, this was the final heavy raid of the war on this much-bombed city. The crew of 420 Squadron's F/L McCarthy claimed a JU88 as damaged, while F/O Shotton was involved in a collision over the target, but returned safely to Woodbridge on three engines. Bochum was the target for over seven hundred aircraft from 1, 4, 6 and 8 Groups on the 4/5th, and here too damage was immense, amounting to more than four thousand buildings destroyed or severely afflicted, with almost a thousand people killed. German night fighters made contact with the bomber stream, and twenty-eight aircraft, most of them Halifaxes, were shot down, but the 420 Squadron contingent made it back safely. Gelsenkirchen became the next Ruhr town to face a heavy Bomber Command assault, its ordeal coming by daylight on the 6th. The Nordstern synthetic oil refinery was the aiming point, and over five hundred aircraft bombed in its general area, while almost two hundred others attacked the town. 420 Squadron took part, and again all returned safely to enjoy nine days away from operations. An attempt to bomb the oil refinery at Wanne-Eickel on the 9th was thwarted by heavy cloud, which extended up to 21,000 feet. The Master Bomber ordered the more than two hundred crews to bomb any built-up area, but the town of Wanne-Eickel reported very little damage.

The lull in operations for all but the now largely independent 3 Group took the Command through to the 16th, when a massive assault on the three small Rhineland towns of Heinsberg, Jülich and Düren was launched. They lay in an arc from north to east respectively of Aachen, and the attacks were to help an American advance towards enemy lines between Aachen and the Rhine by cutting communications to the front. 1,188 Bomber Command aircraft were committed to the destruction of the towns, 1 and 5 Groups forming the largest force of almost five hundred aircraft with Pathfinder support to attack Düren. The assault took place in mid afternoon in good bombing conditions, and over three thousand people were killed as the built-up area was levelled. Jülich was assigned to over four hundred Halifaxes and Lancasters of 4, 6 and 8 Groups, for which 420 Squadron contributed aircraft, while 3 Group dealt with Heinsberg, and both towns were also left severely damaged. On the 18th over 450 aircraft from 4, 6 and 8 Groups delivered a scattered attack on Münster, after which, fourteen 420 Squadron aircraft landed at Thornaby because of poor weather at base. Later that evening a 1 Group raid was mounted against the oil refinery at Wanne-Eickel. Some additional damage was caused, and a nearby colliery was put out of action. 1, 6 and 8 Groups raided the oil refinery at Castrop-Rauxel on the 21/22nd, and the refinery is believed to have been put out of action for the remainder of the war. Approaching to land at Leeming on return HX346 hit a tree and had to be crash-landed by F/L Sefton. He and three other sustained injuries, while one crew member was killed. The general decrease in operational activity during November allowed most of the heavy squadrons to enjoy a rest period over the ensuing few days. By the time 420 Squadron was next called into action another commanding officer had been installed, W/C Phalen replacing W/C Edwards on the 24th after the latter had completed just a month at the helm. The target on the 27/28th was Neuss, where the eastern districts received most of the bombs causing moderate damage, and sixteen 420 Squadron aircraft landed away because of the weather at base. On the last night of the month 420 Squadron joined a large force from 1, 4, 6 and 8 Groups to attack Duisburg. Bombing took place through complete cloud cover, but

over five hundred houses were destroyed, and there were no casualties among the Snowy Owls.

December would be a loss-free month for 420 Squadron, despite participating in nine operations over Germany. It began with a heavy raid on Hagen in the Ruhr on the 2/3rd when almost five hundred aircraft from 1, 4, 6 and 8 Groups pounded central, eastern and southern districts, leaving over sixteen hundred houses and ninety industrial buildings destroyed or seriously damaged. Two nights later 1, 6 and 8 Groups delivered a heavy raid on Karlsruhe, which turned into another crushing blow on a German city target, carried out simultaneously with the 5 Group destruction of the unimportant and hitherto unmolested town of Heilbronn, where seven thousand people died under the bombs. Almost five hundred aircraft from 1, 4, 6 and 8 Groups targeted Soest on the 5/6th, a town just north of the by now famous Möhne Dam. The northern districts were hardest hit, where the railway installations were situated, and a thousand houses were destroyed. A busy night on the 6/7th saw three major operations and many of a minor nature, which in total involved over thirteen hundred sorties. 1, 3 and 8 Groups raided the oil refinery at Leuna near Merseburg in eastern Germany, while a predominantly 4, 6 and 8 Group assault took place at Osnabrück and 5 Group attacked Giessen. While 420 Squadron now enjoyed thirteen days off the order of battle, the last heavy night raid on Essen was delivered by over five hundred aircraft on the 12/13th. The Krupp complex was in the centre of the bombing pattern, and nearly seven hundred houses were also destroyed. A three hundred strong Lancaster heavy force drawn from 1, 6 and 8 Groups targeted two I.G. Farben chemicals factories at Ludwigshafen and nearby Oppau on the 15/16th, and caused serious damage at both sites. The ancient city of Ulm was earmarked for its first and only raid of the war on the evening of the 17th. Unlike Freiburg and Heilbronn, however, it did contain targets of industrial significance, principally two large lorry factories. 317 Lancasters from 1 and 8 Groups provided the battering ram, and in twenty-five horrific minutes over fourteen hundred tons of bombs rained down, laying waste to 80% of the city's built-up area. Fortunately, an evacuation of women and children had taken place earlier in the day, but even so, seven hundred people lost their lives. A simultaneous operation by over five hundred aircraft from 4, 6 and 8 Groups on Duisburg signalled 420 Squadron's return to action, and this too was a highly destructive raid. The final third of the month involved the squadron in four more operations, three of them against railway installations. On the 24th, though, it was the Lohausen airfield near Düsseldorf, where flak hit a number of 420 Squadron Halifaxes.

The final wartime Christmas Day was celebrated peacefully on the stations, but the Boxing Day festivities were curtailed for some crews from each Group, when the Command called for attacks on troop positions around St Vith, following the German break-out in the Ardennes on the 16th. 6 Group carried out an inconclusive raid on the railway yards at Opladen on the 27/28th, and then there was a mid afternoon take-off for crews on the 29th, as they joined up with elements of 1 and 8 Groups to form a force of more than three hundred aircraft bound for the Ruhr. The target was the oil refinery at Scholven-Buer, where around three hundred high explosive bombs found the mark. Over three thousand others landed in the town and its environs causing damage to property and two collieries. Meanwhile a smaller 6 and 8 Group force unsuccessfully attacked the railway yards at Troisdorf. The Snowy Owls undertook their

final operation of the year on the evening of the 30th, when contributing to a raid by over 450 aircraft on the Kalk-Nord railway yards. The size of the 4 and 6 Group main force suggested that this was an area raid on that part of the city wherein lay the yards. Cloud made precision difficult, but the yards were severely damaged, along with two adjacent passenger stations. Two ammunition trains are reported to have blown up, and road communications were also disrupted.

All things considered, it had been a good year for 420 Squadron, its losses markedly lower than some other 6 Group units. As the German Ardennes offensive faltered, it was clear that the coming year would bring victory, although much remained to be done before the tenacious and courageous enemy forces finally laid down their arms. Some squadrons would sail through the final four months of the bombing war with barely a scratch, while others would sustain heavy casualties.

1945

Over on the continent, the New Year started with a bang, as the Luftwaffe launched its ill-conceived and ultimately ill-fated Operation Bodenplatte at first light on New Year's Morning. The intention to destroy Allied aircraft on the ground at the recently liberated airfields in France, Holland and Belgium was only modestly achieved, but at an unacceptably high price. The entire day fighter strength was committed to low level bombing and strafing attacks into the teeth of the airfield flak defences, and those that survived then had to run the gauntlet of Allied fighters to make their escape. Around 250 aircraft failed to get home, with approximately 150 of their pilots being killed, wounded or taken prisoner, and this was a setback from which the Luftwaffe would never recover. The operation also produced some very jittery American anti-aircraft gunners, who, for the remainder of the day and night, fired at anything that flew, and a number of Bomber Command aircraft fell victim to "friendly fire" incidents. The major priorities for the Command in these final months of the bombing war were the continued dislocation of Germany's railway network, and the assault on her oil production. Both had been ongoing for a long time, but the offensives would now gain momentum. Any city with a functioning railway or an oil-related production site was to be area bombed, and the familiar names of the past would continue to feature.

Two major operations were mounted on the night of the 2/3rd, the larger an all-Lancaster assault on Nuremberg involving over five hundred aircraft from 1, 3, 6 and 8 Groups. For almost the first time at this target, an accurate and concentrated attack was delivered, in which over 4,600 houses, most of them apartment blocks, were destroyed, along with two thousand medieval houses and four hundred industrial buildings. More than eighteen hundred people lost their lives on the ground, and in return the defenders claimed five Bomber Command aircraft. Ludwigshafen was also heavily bombed on this night by a force of almost four hundred aircraft, most of them 4 and 6 Group Halifaxes, and two of the synthetic oil producing I G Farben chemicals works were severely damaged, as were a number of railway installations. 420 Squadron took part, and all of its crews returned. The last large-scale area raid of the war on Hanover, and the first against the city since October 1943, was undertaken by six hundred aircraft from 1, 4, 6 and 8 Groups on the night of the 5/6th. 420 Squadron

contributed aircraft to a successful attack, which left almost five hundred apartment blocks in ruins, but MZ471 was shot down by a night fighter over Germany, and F/L Brand was killed along with two of his crew. Three other members of the crew were taken into captivity, as was the rear gunner, F/S Noble, after initially evading despite being seriously injured. He eventually succumbed to those injuries on the 20th of January while in captivity. The same Groups pounded Hanau and its railway yards on the 6/7th, as elements of 1 and 3 Groups did likewise at Neuss. On the 7/8th elements from all but 4 Group carried out the final heavy raid of the war on Munich, and returning crews claimed a successful attack. Absent from debriefing was the crew of F/O Sparling, who had all been killed, when PB229 crashed near the target after colliding in the air with a 635 Squadron Lancaster, whose crew also perished.

There was little activity for the heavy squadrons thereafter until the 13th, when two operations were mounted against the railway yards at Saarbrücken, firstly by 3 Group, and later by 4, 6 and 8 Groups. 420 Squadron supported the latter, and on the following night participated in an attack on railway yards at Grevenbroich, while the synthetic oil plant at Leuna was being severely damaged in a two-phase assault by 1, 5, 6 and 8 Group Lancasters. On the 16/17th, elements of 1, 6 and 8 Groups joined forces to attack the Braunkohle-Benzin synthetic oil plant at Zeitz near Leipzig, part of which sustained heavy damage for the loss of ten Lancasters. The Halifax force, meanwhile, was pounding the city of Magdeburg in an operation claimed by the Command to be highly destructive. It proved to be a bad night for 420 Squadron, however, which posted missing four of its crews. NA183 fell to a night fighter over Germany killing F/L McCutcheon and two of his crew, while four others survived as PoWs. A similar fate befell the crew of F/O Ireland in NA188, and only the two gunners managed to save themselves to join their squadron colleagues in captivity. NA192 and NR205 also came down in Germany with the crews of F/L Watson and F/S Harvey respectively, the two gunners escaping with their lives from the former, the pilot and flight engineer perishing in the latter, and thus thirteen 420 Squadron crewmen had fallen into enemy hands in one night. It could have been worse. The Halifax containing the crew of F/O Field was in collision with another aircraft on the way home, tearing off the H2s blister and damaging the starboard-outer engine and propeller, but they ultimately landed safely at Carnaby. Minor operations held sway from then until 280 1, 3 and 8 Group Lancasters attacked a benzol plant at Duisburg on the 22/23rd. The target was identified in the moonlight and severely damaged, as was a nearby steelworks belonging to the Thyssen concern. The only other significant raid before the end of the month came on the 28/29th against railway yards and an aero-engine factory on the northern edge and surrounds of Stuttgart. Six hundred aircraft took part, including a contingent from 420 Squadron, but cloud cover led to a scattered and inconclusive outcome. 420 Squadron had a new commanding officer to preside over this operation, W/C McCarthy having been promoted from Flight commander on the 28th to replace W/C Phalen.

The weather was not helpful during the first week of February either, as large areas of Germany were concealed by cloud. This certainly affected the accuracy of the operations mounted on the night of the 1/2nd, which included raids on Ludwigshafen and Mainz. 420 Squadron took part in the latter, which was a predominantly Halifax affair, and no aircraft were lost. Three heavy raids were mounted on the following night, 420 Squadron joining in at Wanne-Eickel, where three hundred aircraft failed to find the oil refinery with their bombs

through cloud. 420 Squadron was not in action on the 3/4th, but took part in an ineffective raid on a coking plant at Osterfeld on the 4/5th. In preparation for an advance into Germany by the British XXX Corps in the Reichswald region, the Command was ordered to bomb the frontier towns of Goch and Cleves, which formed part of the enemy defences. On the night of the 7/8th 4, 6 and 8 Groups attacked the former, and 1 and 8 Groups the latter, leaving both heavily damaged. On the following night 475 Lancasters from 1, 5 and 8 Groups took off for Pölitz near Stettin, at the eastern end of Germany's Baltic coast, to attack the oil refinery, and all further wartime production was ended. In contrast, a simultaneous raid on the refinery at Wanne-Eickel by 4 and 6 Group Halifaxes failed to find the mark, and little damage resulted. Thereafter, 420 Squadron and the rest of the Group had four nights off, returning to the fray on a night, which unjustly defined for many post war commentators the character of Bomber Command's war. During the lull, on the 10th, 420 Squadron's MZ375 was destroyed by fire on the ground at Tholthorpe.

The night of the 13/14th brought the first of the Churchill inspired heavy raids on Germany's eastern cities under Operation Thunderclap. The target was the beautiful and historic city of Dresden, which had not been attacked by the Command before, although it had hosted a visit from the American 8th. It was now to face a two-phase assault opened by 5 Group, employing its low level marking method. A layer of cloud stretched across the target area, and this interfered to an extent with the precision of this part of the raid, in which 244 Lancasters delivered more than eight hundred tons of bombs. Fires gained a hold, however, and they acted as a beacon to the 529 Lancasters of 1, 3, 6 and 8 Groups following three hours behind. By the time of their arrival the skies had cleared, and a further eighteen hundred tons of bombs rained down onto the hapless city. The result was a firestorm of gigantic proportions, certainly equalling that at Hamburg eighteen months earlier, and there was no escape for the population, massively swelled by an influx of refugees from the eastern front. A figure of 35,000 fatalities has been settled upon, although some commentators would have us believe the figure to be substantially higher. A second operation on this night took the Halifax brigade to Bohlen to attack the Braunkohle-Benzin oil plant. Conditions were very poor, and the bombing was consequently scattered and inconclusive, but at least losses amounted to just one Halifax. The following night was devoted largely to Chemnitz, but heavy cloud helped to spare the city from a fate similar to that of Dresden, and much of the bombing found open country. 420 Squadron's casualty occurred very early on in the proceedings, NA179 suffering the failure of its starboard-outer engine shortly after take-off, and F/O Anderson had no choice but to abort the sortie. While making the final approach to land the Halifax stalled and span in from six hundred feet a mile from the runway, killing all but the mid-upper gunner, who sustained injuries. A series of raids on the town of Wesel, which stood in the way of the Allied advance, began on the 16th, and by its conclusion in March there would be little of it left. 420 Squadron took part in an attack there on the 17th, but only one of its crews bombed before the Master Bomber called a halt. Many crews landed away on return, and in the course of a ferry flight back to base on the following day, NR126 flew into a hill in Northumberland, killing F/O Stock and all but one of his crew.

Among the operations during the remainder of the month were the last raids of the war on some familiar names. Dortmund experienced its final night raid on the 20/21st at the hands of

five hundred aircraft, but it still had one major daylight ordeal to undergo in March. 420 Squadron was engaged in an operation against an oil refinery at Monheim on this night, and an area attack on Worms twenty-four hours later, which left almost 40% of the town in ruins. P/O Bagnell's crew claimed a single engine enemy fighter as destroyed. Also on the 21/22nd Duisburg wilted under its last pounding, and more of its buildings were reduced to rubble. A daylight raid on the 23rd by Halifaxes of 4 and 6 Groups delivered three hundred high explosive bombs onto the Krupp works at Essen, while that night 1, 6 and 8 Group Lancasters carried out the only area bombing raid of the war on Pforzheim. In twenty-two horrific minutes an absolute catastrophe was visited upon the town and its inhabitants, as a large part of the built-up area was engulfed in flames, and seventeen thousand people lost their lives, the third highest death toll at a German urban target. 420 Squadron ended the month at Kamen on the 24th, where an oil refinery was the objective, and at Mainz on the 27th. The latter was bombed through complete cloud cover on skymarkers, but it was a devastatingly accurate assault, which destroyed over 5,600 buildings and killed more than eleven hundred people.

Mannheim's long and unhappy association with Bomber Command came to an end on the afternoon of the 1st of March, although its final ordeal was unobserved by the 1, 6 and 8 Group crews above the cloud cover. 420 Squadron came through without loss on this first operation of what would prove to be a surprisingly busy month. On the following morning two forces set out to bomb Cologne for the last time, the first, numbering seven hundred aircraft, including a contingent from Tholthorpe. They inflicted massive damage upon the already shattered city, but the second attack by 3 Group had to be abandoned after only fifteen aircraft had bombed, because of a fault with the G-H station in England. It hardly mattered, and the city fell to American forces four days later. Having escaped serious damage on the night after Dresden, Chemnitz eventually succumbed to Operation Thunderclap in a raid by over seven hundred aircraft on the evening of the 5th. Parts of its central and southern districts became engulfed in flames, and a number of important war industry factories were put out of action. Some elements of the attacking force also faced problems, and they began early on for 6 Group, whose aircraft encountered icing conditions within minutes of taking off. Twenty minutes after leaving Tholthorpe 420 Squadron's NA184 crashed in Yorkshire near Dishforth airfield, killing F/O Clark and three of his crew and injuring the others. Thirty minutes later NA190 went into the ground south-west of Tadcaster, and only the mid-upper gunner from P/O Sollie's crew had time to take to his parachute and save himself. NP959 then crashed in Germany, and the eight-man crew captained by F/L Glover survived to fall into enemy hands, although one of the gunners succumbed to his injuries within hours of being admitted to a German hospital. The conditions caused higher than expected fuel consumption, and a number of crews were watching their fuel gauges on the way home and had to put down before reaching Tholthorpe. P/O Menary decided to land at Juvincourt in France, but as he let down through cloud NR144 clipped a pole on high ground and crash-landed, slightly injuring two crew members.

The town of Dessau had to wait until the penultimate month of the bombing war to receive its one and only heavy raid, and this took place at the hands of over five hundred aircraft from 1, 3, 6 and 8 Groups on the 7/8th. The attack was almost certainly aimed at its railway installations, but it turned into another devastating area raid. The Halifaxes of 4 and 6 Groups

went to Hemmingstedt on this night, but missed the Deutsche Erdölwerke by at least two miles. The following night was devoted to Hamburg and Kassel, the former attacked by a predominantly Halifax main force, including some from 420 Squadron, which had the shipyards as its specific objective. These were assembling the new Type XXI U-Boats, which could remain submerged for extended periods, and would have been a serious threat had they been available to the Kriegsmarine earlier. In the event Hamburg lay beneath a layer of cloud, and the bombing was not concentrated. NR123 was written off in a training accident on the 10th, when F/O Tederan landed the Halifax at Carnaby with low brake pressure, and it swung off the runway without causing injury to the crew.

A new record was set in the late morning of the 11th, when 1,079 aircraft took off for the final raid of the war on Essen. It was the largest force ever sent to a single target, and they contributed to another punishing assault on this ravaged city at the end of an almost personal battle spanning a little under five years. Even so, it had only been during the last two years, since the introduction of Oboe, that the bomber had prevailed. Many gallant crews had fallen during the various campaigns, but Essen now lay totally ruined, having lost seven thousand of its inhabitants to air raids. The record set on the 11th was short-lived, and was surpassed a little over twenty-four hours later, when 1,108 aircraft departed their stations in the early afternoon of the 12th, to deliver the final raid of the war on Dortmund. This operation effectively finished Dortmund as a functioning city. There was still to be no let-up in the bombing of Germany, however, and 420 Squadron was in action against Wuppertal-Barmen on the evening of the 13th. Zweibrücken was another new name on a target list, and this town was attacked by over two hundred aircraft from 6 and 8 Groups on the evening of the 14th. The intention to block the through-passage of all enemy troops and equipment was achieved, and, in fact, every public building and 80% of the houses were flattened. Benzol plants at Bottrop and Castrop-Rauxel occupied Halifaxes of 4 and 6 Groups on the 15th, 420 Squadron operating against the latter without loss. Hagen suffered massive damage at the hands of 4 and 6 Group Halifaxes on the 15/16th, and a 420 Squadron aircraft was shot down over Allied territory on the way home. NR172 contained a 425 Squadron crew, and the pilot and one other were killed.

On the 16/17th almost three hundred Lancasters and Mosquitos of 1 and 8 Groups carried out the final raid of the war on Nuremberg, the city that had been the target on the Command's blackest night a year earlier. A punishing blow was delivered, but the night fighter response was fierce, and twenty-four 1 Group Lancasters were shot down. As this operation was in progress, two hundred 5 Group Lancasters attacked the historic and minimally industrial city of Würzburg in central-southern Germany. In seventeen minutes of carnage over eleven hundred tons of bombs were dropped with great accuracy, destroying 89% of the built-up area, and killing between four and five thousand people. In the light of this and other similar catastrophes visited upon the German homeland at a time of imminent defeat, it is possible to comprehend, if not to condone the murderous attitudes of a small minority, who vented their anger on captured Allied airmen. Two nights later Witten was area-bombed by three hundred aircraft from 4, 6 and 8 Groups, and around 60% of its built-up area was reduced to rubble. After two nights off 420 Squadron was back on the order of battle for this operation, and one of them failed to return. MZ910 was abandoned by F/O Keeper and his crew over Germany,

and all but one arrived safely on the ground to become PoWs. The exception was the bomb-aimer, who was killed instantly on landing. The 21st took 420 Squadron to railway yards at Rheine, where an accurate attack was delivered by around 150 Halifaxes of 4 and 6 Groups. On the afternoon of the 22nd, two hundred 1, 6 and 8 Group Lancasters reduced 70% of Hildesheim to ruins, destroying over 3,300 apartment blocks and killing more than sixteen hundred people. At the same time a hundred 6 Group Halifaxes attacked Dorsten, a rail and canal centre on the approaches to the Ruhr, and followed this up two days later with a devastating raid on nearby Gladbeck. Münster was the objective for 4 and 6 Group Halifaxes on the 25th, when smoke prevented an assessment of the results. Eight 420 Squadron aircraft were hit by flak, and most landed at Dishforth and Carnaby on return. On the 27th Paderborn was virtually erased from the map in a fifteen-minute rain of terror by an all-Lancaster heavy force, and on the 31st an attempt to hit the Blohm & Voss U-Boat yards at Hamburg resulted in more destruction within the city. This was 420 Squadron's final outing of the month, and although day fighters responded vigorously, and eleven aircraft were shot down by these and flak, none were Snowy Owls. This was the last time that the Command's losses would reach double figures.

April, the final month of the bombing war, began for 420 Squadron with an operation against the Rhenania oil refinery at Harburg on the 4/5th. Hamburg hosted its last major raid of the war on the 8/9th, when over four hundred aircraft from 4, 6 and 8 Groups went for the shipyards. The Americans had attacked the same area earlier in the day, and it was impossible to distinguish the damage between the two operations. Three 420 Squadron crews reported flak hits, and F/O Hill's crew claimed a JU88 as a probable after it was seen to dive vertically through the clouds. The following night was devoted to an all-Lancaster assault on Kiel, where almost six hundred aircraft damaged all three shipyards, capsized the Admiral Scheer pocket battleship, and hit the Admiral Hipper and the Emden. Railway yards at Leipzig occupied a mixed force of 6 Group Lancasters and Halifaxes on the 10th, before 420 Squadron had a few days off. 3 and 6 Groups got together on the 13/14th to provide the main force for an attack on Kiel's U-Boat yards, and many 420 Squadron crews landed away on return because of poor weather at base. The last area-bombing raid of the war was directed at Potsdam on the 14/15th, and this was the first incursion by RAF heavy bombers into the Berlin defence zone since March 1944. The attack, which did not involve 420 Squadron, was accurate, although some of the bombing spilled over into Berlin itself. Two nights later elements of 6 and 8 Groups attacked the railway yards at Schwandorf in south-eastern Germany causing extensive damage, while 420 Squadron again stayed at home.

On the 18th almost a thousand aircraft presented themselves over the island of Heligoland, and left behind them a cratered moonscape. 420 Squadron's NP946 was seen to crash into the sea on the way to the target, and there were no survivors from the crew of F/S Dunnigan. This was the squadron's final loss, and was tragic in occurring on its penultimate operation. The bombing war ended for the Snowy Owls at Bremen on the 22nd, on what proved to be the Command's penultimate day of operations. The south-eastern suburbs of the city were targeted ahead of the British XXX Corps assault, which was to follow two days later. Although over seven hundred aircraft were present, the Master Bomber called a halt after less than two hundred had bombed, when the target disappeared beneath smoke, dust and cloud.

W/C Gray was appointed to command the squadron on the 24th, and he would remain in post until September. While the 420 Squadron crews were still in bed the long-awaited final day of heavy bomber operations dawned on the 25th to the sound of over 350 Lancasters taking off for Hitler's Eaglesnest retreat at Berchtesgaden in the Bavarian mountains. They were 1, 5 and 8 Group aircraft, which were to attack the SS Barracks in this almost symbolic operation, and the subsequent bombing appeared to be accurate. Later that afternoon elements of 4, 6 and 8 Groups attacked heavy gun positions on the island of Wangerooge in the German Frisians. They were barring the approaches to the German ports, but little damage was done to them in their concrete housings. This proved to be a tragic final main force operation, with six aircraft being lost in the target area through collisions. Four of the aircraft, two Lancasters and two Halifaxes, belonged to 6 Group squadrons, and twenty-eight Canadians lost their lives. That night, 5 Group carried out a raid on an oil refinery at Tonsberg in Norway, and then, for all but 100 Group and the 8 Group Mosquito contingent, it was all over.

During the course of April the squadron received MkX Lancasters, but conversion to the type had not been completed before the bombing war ended, and no operations were carried out on the type. On the 11th of June 420 Squadron departed for Canada, where it disbanded in September.

STATIONS

WADDINGTON	19.12.41. to 06.08.42.
SKIPTON-ON-SWALE	06.08.42. to 14.10.42.
Operations mounted from LEEMING	05.10.42. to 14.10.42.
MIDDLETON-ST-GEORGE	14.10.42. to 15.05.43.
Detached to Middle East	15.05.43. to 06.11.43.
DALTON	06.11.43. to 11.12.43.
THOLTHORPE	12.12.43. to 11.06.45.

COMMANDING OFFICERS

WING COMMANDER D A R BRADSHAW	19.12.41. to 11.04.43.
WING COMMANDER D McINTOSH	12.04.43. to 07.04.44.
WING COMMANDER G McKENNA	08.04.44. to 23.10.44.
WING COMMANDER G EDWARDS	24.10.44. to 23.11.44.
WING COMMANDER W PHALEN	24.11.44. to 27.01.45.
WING COMMANDER F McCARTHY	28.01.45. to 23.04.45.
WING COMMANDER R GRAY	24.04.45. to 05.09.45.

AIRCRAFT

HAMPDEN	12.41. to 08.42.
WELLINGTON III/X	08.42. to 11.43.
HALIFAX III	11.43. to 05.45.

SECTION 2



OPERATIONAL RECORD

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OPERATIONAL RECORD

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
314	3479	60	1.7

CATEGORY OF OPERATIONS

BOMBING	MINING	OTHER
247	57	10

HAMPDEN

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
90	535	19	3.6

CATEGORY OF OPERATIONS

BOMBING	MINING	OTHER
44	37	9

WELLINGTON

4 GROUP

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
24	142	7	4.9

CATEGORY OF OPERATIONS

BOMBING	MINING	OTHER
13	10	1

6 GROUP

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
40	325	14	4.3

CATEGORY OF OPERATIONS

BOMBING	MINING	OTHER
30	10	0

HALIFAX

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
160	2477	25	1.0

CATEGORY OF OPERATIONS
ALL BOMBING

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TABLE OF STATISTICS

Out of 10 Hampden squadrons in 5 Group and Bomber Command

Lowest number of overall Hampden operations in Bomber Command and 5 Group.
9th highest number of Hampden sorties in Bomber Command and 5 Group.
9th highest number of Hampden operational losses in Bomber Command and 5 Group.

Out of 42 Wellington squadrons

29th highest number of Wellington overall operations in Bomber Command.
32nd highest number of Wellington sorties in Bomber Command.
30th highest number of Wellington operational losses in Bomber Command.

Out of 32 Halifax squadrons

17th highest number of Halifax overall operations in Bomber Command.
13th highest number of Halifax sorties in Bomber Command.
24th highest number of Halifax operational losses in Bomber Command.

Out of 22 squadrons in 5 Group

20th highest number of overall operations in 5 Group.
21st highest number of sorties in 5 Group.
18th highest number of aircraft operational losses in 5 Group.

Out of 24 squadrons in 4 Group

20th equal (with 425Sqn) highest number of overall operations in 4 Group.
22nd highest number of sorties in 4 Group.
23rd highest number of operational losses in 4 Group.

Out of 12 Wellington squadrons in 4 Group

6th equal (with 425Sqn) highest number of Wellington overall operations in 4 Group.
8th highest number of Wellington sorties in 4 Group.
11th highest number of Wellington operational losses in 4 Group.

Out of 15 squadrons in 6 Group

10th highest number of overall operations in 6 Group.
8th highest number of sorties in 6 Group.
11th highest number of aircraft operational losses in 6 Group.

Out of 8 Wellington squadrons in 6 Group

4th highest number of Wellington overall operations in 6 Group.

7th highest number of Wellington sorties in 6 Group.

5th highest number of Wellington operational losses in 6 Group.

Out of 15 Halifax squadrons in 6 Group

7th highest number of Halifax overall operations in 6 Group.

3rd highest number of Halifax sorties in 6 Group.

12th highest number of Halifax operational losses in 6 Group.

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SECTION 3



AIRCRAFT LISTING

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HAMPDEN.**From December 1941 to August 1942.**

L4086 From 49Sqn. To 408Sqn.
P1187 PT-X From 44Sqn. Crash-landed in Essex on return from Stuttgart 4/5.5.42.
P1239 PT-Y From 50Sqn. FTR Essen 12/13.4.42.
P1257 From 455Sqn. Converted for use as torpedo bomber. To 489Sqn.
P1314 From 49Sqn. To 408Sqn.
P2094 PT-Q From 50Sqn. Hit by 44Sqn Lancaster L7581 at Waddington 20.5.42.
P4306 From 14 OTU. Converted for use as torpedo bomber. To 415Sqn.
P4400 PT-J From 44Sqn. FTR from shipping strike (Operation Fuller) 12.2.42.
P5330 PT-J From 106Sqn. FTR Rostock 24/25.4.42.
P5332 PT-T From 44Sqn. FTR Bremen 2/3.7.42.
X3057 From 49Sqn. SOC 21.12.43.
X3061 From 44Sqn. To 14 OTU.
X3122 From 83Sqn. To 519Sqn.
X3149 PT-B From 44Sqn. Converted for use as torpedo bomber. To 32 OTU.
AD786PT-L From 455Sqn. Crashed 20 minutes after take-off from Waddington when bound for mining sortie 23/24.6.42.

AD853 From 50Sqn. To 408Sqn.
AD855 From 44Sqn. Converted for use as torpedo bomber. To 489Sqn.
AD869PT-L From 44Sqn. Crashed soon after take-off from Waddington during night navigation exercise 20.4.42.

AD915PT-F From 44Sqn. FTR from mining sortie 18/19.2.42.
AD960 From 49Sqn. To 408Sqn.
AD968 From 44Sqn. To 49Sqn.
AE115 From 50Sqn. Converted for use as torpedo bomber. To 455Sqn.
AE155 From 455Sqn. To 14 OTU.
AE186 From 44Sqn. To 106Sqn.
AE202PT-X From 44Sqn. FTR Hamburg 26/27.7.42.
AE246PT-V From 106Sqn. FTR Lübeck 28/29.3.42.
AE248PT-A From 144Sqn. FTR Bremen 2/3.7.42.
AE258 From 44Sqn. To 408Sqn.
AE260PT-O From 44Sqn. FTR from mining sortie 2/3.6.42.
AE267PT-V From 408Sqn. FTR Hamburg 26/27.7.42.
AE298PT-D From 44Sqn. FTR from mining sortie 26/27.3.42.
AE314 From 83Sqn. Converted for use as torpedo bomber. To 455Sqn.
AE355PT-A FTR Düsseldorf 31.7/1.8.42.
AE366 From 83Sqn. To 408Sqn.
AE378 From 106Sqn. To 408Sqn.
AE379 From 44Sqn. To 455Sqn.
AE384 From 44Sqn. Converted for use as torpedo bomber. To 455Sqn.
AE385 From 44Sqn. To 408Sqn.
AE386 From 14 OTU. Converted for use as torpedo bomber. To 455Sqn.
AE389PT-D From 83Sqn. FTR from mining sortie 7/8.5.42.
AE390PT-Z From 44Sqn. FTR from mining sortie 12/13.7.42.

AE393 From 44Sqn. To 408Sqn.
AE399PT-P From 44Sqn. Collided with 44 Con Flt Lancaster on landing at Waddington on return from Cologne 30/31.5.42.
AE401 From 50Sqn. Converted for use as torpedo bomber. To 415Sqn.
AE422 From 50Sqn. Converted for use as torpedo bomber. To 415Sqn.
AT128PT-G From 44Sqn. FTR Dortmund 14/15.4.42.
AT130PT-S From 44Sqn. FTR Emden 21/22.1.42.
AT132 From 44Sqn. To 455Sqn.
AT134PT-K From 44Sqn. FTR from shipping strike (Operation Fuller) 12.2.42.
AT135 From 44Sqn. Converted for use as torpedo bomber. To 455Sqn.
AT136PT-N From 44Sqn. FTR Essen 8/9.6.42.
AT144PT-A From 44Sqn. FTR Warnemünde 8/9.5.42.
AT185PT-A From 49Sqn. FTR Emden 20/21.6.42.
AT219PT-C From 106Sqn. Crashed soon after take-off from Waddington when Bound for Dortmund 14/15.4.42.
AT225 To 408Sqn.
AT228 From 49Sqn. To 408Sqn.

WELLINGTON. From July 1942 to January 1944.

X3335 To 18 OTU.
X3392 From 115Sqn. To 22 OTU.
X3553 From 425Sqn. To 427Sqn.
X3800 To 18 OTU.
X3808 PT-B FTR Cologne 15/16.10.42.
X3809 PT-O To 26 OTU.
X3814 PT-P FTR Bochum 29/30.3.43.
X3926 To 26 OTU.
X3963 PT-D Crashed in Norfolk on return from Kiel 13/14.10.42.
Z1679 PT-B FTR Hamburg 9/10.11.42.
Z1724 PT-X/C Crashed in Yorkshire following structural failure while training 1.3.43.
BJ644 To 1485Flt.
BJ717 To 26 OTU.
BJ915 To 18 OTU.
BJ917 To 26 OTU.
BJ966 PT-R FTR from mining sortie 21/22.1.43.
BK235 PT-T To 1485Flt.
BK295 To 23 OTU.
BK296 PT-J FTR from mining sortie 13/14.3.43.
BK297 To 29 OTU.
BK330PT-K FTR Lorient 13/14.2.43.
BK331 To 18 OTU.
BK365 To 18 OTU.
BK457 To 26 OTU.
BK468 PT-R From 427Sqn. FTR Cologne 26/27.2.43.

DF615 PT-S	FTR Lorient 29/30.1.43.
DF626 PT-Y	To 156Sqn and back. Crashed at Exeter on return from Lorient 29/30.1.43.
DF636 PT-S	Crashed while trying to land at Leeming on return from Kiel 13/14.10.42.
DF637 PT-F	To 16 OTU.
HE157	To 426Sqn.
HE160	From 429Sqn. To 27 OTU.
HE259	SOC 1.10.43.
HE280 PT-V	FTR Essen 5/6.3.43.
HE281	To 426Sqn.
HE294	To 427Sqn.
HE329	To 425Sqn.
HE370	To Middle East.
HE375 PT-H	From 426Sqn. To 3 OTU.
HE417	To 426Sqn.
HE421	To Middle East.
HE422 PT-Q	Abandoned over Welsh coast on return from Frankfurt 10/11.4.43.
HE481	To 427Sqn.
HE514	To 425Sqn.
HE520	To Middle East.
HE524	To Middle East.
HE550 PT-C	FTR Stuttgart 14/15.4.43.
HE552	To Middle East.
HE555	To 427Sqn.
HE568	To 425Sqn.
HE569	To 104Sqn.
HE630 PT-P	To 427Sqn.
HE632 PT-R	To 426Sqn.
HE681	To 427Sqn.
HE682 PT-T	FTR Mannheim 16/17.4.43.
HE683	To 427Sqn.
HE690 PT-U	FTR Essen 12/13.3.43.
HE693 PT-P	FTR Duisburg 26/27.4.43.
HE695	To 18 OTU.
HE732	To 427Sqn.
HE771 ZL-F	On loan from 427Sqn. Crashed at Croft on return from Duisburg 27.4.43.
HE802	To 429Sqn.
HE863 PT-G	FTR Stuttgart 14/15.4.43.
HE873	To 427Sqn.
HE961	To 1 OADU.
HE964	To 311 FTU.
HE965	To Middle East.
HE969	To Middle East.

HE975 To Middle East.
HF458 To Middle East.
HZ356 To Middle East.
HZ372 To 305Sqn.
HZ414
HZ468 To 425Sqn.
HZ572 To Middle East.
LN430 To Middle East.
LN431 To Middle East.
LN434 To Middle East.
MS478 To Middle East.
MS479 PT-F FTR Duisburg 8/9.4.43.
MS480 PT-X To 22 OTU.
MS484 PT-V FTR Bochum 29/30.3.43.

HALIFAX. From January 1944.

HX346 PT-U From 620Sqn. Crash-landed in Yorkshire on return from Castrop-Rauxel 21.11.44.
LK803PT-H From 432Sqn. Crashed soon after take-off from Tholthorpe for fighter affiliation exercise 19.7.44.
LK884 To 431Sqn.
LL550 Crashed on take-off for ferry flight from Linton-on-Ouse 16.6.44.
LL574 To 1666CU.
LL575 To 1666CU.
LL580 PT-U To 1659CU.
LL589 To 1666CU.
LL592 To 1659CU.
LL605 PT-K To 1664CU.
LV860 From 429Sqn.
LV953 From 424Sqn. SOC 4.5.45.
LW122 From 415Sqn. To 425Sqn.
LW197 To 426Sqn.
LW198 FTR from Blainville-Sur-L'Eau 28/29.6.44.
LW199 FTR from operations 2.11.44.
LW200 Crashed in Warwickshire after collision with Lancaster KB768 5.12.44.
LW201 To 426Sqn.
LW202 To 426Sqn.
LW203 To 426Sqn.
LW204 To 426Sqn.
LW205 To 426Sqn.
LW206 To 426Sqn.
LW207 To 426Sqn.
LW208 To 426Sqn.
LW209 To 426Sqn.

LW210 To 426Sqn.
LW366 Crashed in Wales during training 29.2.44.
LW373 PT-W FTR Berlin 24/25.3.44.
LW377 To 426Sqn.
LW380 PT-B To 1666CU.
LW383 To 578Sqn.
LW386
LW388 PT-D Crashed on landing at Manston on return from Cologne and hit by a Lancaster 30.10.44.
LW389 PT-N To 434Sqn.
LW392 PT-S To 1666CU.
LW393 To 1666CU.
LW396 PT-T Crashed on approach to Tholthorpe on return from Berlin 16.2.44.
LW414 To 425Sqn.
LW416 From 426Sqn. To 1659CU.
LW418 PT-E Damaged beyond repair during an operation to Stuttgart 15/16.3.44.
LW419
LW420 PT-U FTR Augsburg 25/26.2.44.
LW421 PT-K Crash-landed at Linton-on-Ouse on return from Biennais 1.7.44.
LW423
LW426 PT-Q FTR Stuttgart 15/16.3.44.
LW427 PT-C FTR Schweinfurt 24/25.2.44.
LW476 PT-J FTR Somain 30.4/1.5.44.
LW575 From 427Sqn. To 1666CU.
LW590 To 426Sqn.
LW645 To 1659CU.
LW674 PT-E FTR Versailles 10/11.6.44.
LW676 PT-Y To 1659CU.
LW683 PT-C To 76Sqn.
LW692 PT-V FTR Lens 20/21.4.44.
MZ375 PT-X From 431Sqn. Damaged beyond repair while stationary at Tholthorpe 10.2.45.
MZ378 From 431Sqn. To 425Sqn.
MZ423 From 427Sqn.
MZ435 PT-M From 426Sqn.
MZ471 PT-V FTR Hanover 5/6.1.45.
MZ473 To 425Sqn.
MZ502 PT-U FTR Bourg Leopold 27/28.5.44.
MZ503 PT-L FTR Karlsruhe 24/25.4.44.
MZ505 PT-X To 1659CU.
MZ540 PT-H To 1664CU.
MZ569 To 297Sqn.
MZ587 To 1666CU.
MZ594 PT-W Damaged beyond repair during operation to Anderbelck 28.8.44.
MZ595 PT-M To 1666CU.

MZ596 FTR from night cross-country exercise 3/4.5.44.
MZ625 PT-Q To 1659CU.
MZ626 To 434Sqn.
MZ645 PT-N From 426Sqn. FTR Hamburg 28/29.7.44.
MZ687 PT-L FTR Kiel 16/17.8.44.
MZ713 PT-U From 425Sqn. FTR Ferfay 24/25.7.44.
MZ747 From 426Sqn. To 1666CU.
MZ910 PT-Q From 433Sqn. FTR Witten 18/19.3.45.
MZ951 To 187Sqn.
MZ952 PT-I To 1664CU.
MZ953 To 187Sqn.
NA169
NA178 From 429Sqn.
NA179 PT-B From 429Sqn. Crashed on approach to Tholthorpe following early return from Chemnitz 14.2.45.
NA183 PT-M FTR Magdeburg 16/17.1.45.
NA184 PT-W Crashed near Dishforth when bound for Chemnitz 5.3.45.
NA188 PT-E FTR Magdeburg 16/17.1.45.
NA190 PT-U Crashed in Yorkshire when bound for Chemnitz 5.3.45.
NA192 PT-Q FTR Magdeburg 16/17.1.45.
NA505 PT-J From 425Sqn. FTR Acheres 7/8.6.44.
NA509 PT-V From 102Sqn. Crashed on landing at Wellesbourne on return from Essen 23.10.44.
NA528 PT-G Crashed on landing at White Waltham on return from Amaye-sur-Seulles 30.7.44.
NA579 PT-J To 1664CU.
NA580 PT-K From 425Sqn. Crashed on landing at Tangmere on return from la Hoque 8.8.44.
NA582 To 415Sqn.
NA583 To 415Sqn.
NA610 To 415Sqn.
NA611 To 415Sqn.
NA629 PT-W Ditched in the North Sea on return from Kiel 16.9.44.
NA630 PT-N To 1664CU.
NA631 PT-Z To 187Sqn.
NA632 PT-E To 1664CU.
NP681 To 426Sqn.
NP682 To 426Sqn.
NP683 To 426Sqn.
NP686 FTR Hamburg 28/29.7.44.
NP939 From 434Sqn. To 425Sqn.
NP946 PT-L From 429Sqn. FTR Heligoland 18.4.45.
NP951 PT-Y From 424Sqn.
NP959 PT-N From 434Sqn. FTR Chemnitz 5/6.3.45.
NP961 From 415Sqn.

NR117	From 433Sqn.
NR123 PT-F	From 431Sqn. Crashed on landing at Carnaby on return from training flight 10.3.45.
NR124	From 415Sqn.
NR126 PT-X	From 408Sqn. Crashed in Northumberland during ferry flight 18.2.45.
NR135	From 433Sqn. To 425Sqn.
NR138 PT-T	From 431Sqn.
NR139	From 431Sqn.
NR141	From 431Sqn.
NR144 PT-H	Crash-landed in Yorkshire on return from Chemnitz 6.3.45.
NR171 PT-P	From 427Sqn.
NR172 PT-Y	From 415Sqn. FTR Hagen with 425Sqn crew 15/16.3.45.
NR199	From 408Sqn. Returned to 408Sqn.
NR205 PT-L	From 424Sqn. FTR Magdeburg 16/17.1.45.
NR207	
NR208 PT-D	
NR227 PT-V	From 424Sqn. To 425Sqn.
NR230	From 429Sqn.
NR258	From 424Sqn.
NR290 PT-K	
RG347	To 427Sqn.

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SECTION 4



KEY TO ABBREVIATIONS

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KEY TO ABBREVIATIONS

A&AEE	Aeroplane and Armaments Experimental Establishment.
AA	Anti-Aircraft fire.
AACU	Anti-Aircraft Cooperation Unit.
AAS	Air Armament School.
AASF	Advance Air Striking Force.
AAU	Aircraft Assembly Unit.
ACM	Air Chief Marshal.
ACSEA	Air Command South-East Asia.
AFDU	Air Fighting Development Unit.
AFEE	Airborne Forces Experimental Unit.
AFTDU	Airborne Forces Tactical Development Unit.
AGS	Air Gunners School.
AMDP	Air Members for Development and Production.
AOC	Air Officer Commanding.
AOS	Air Observers School.
ASRTU	Air-Sea Rescue Training Unit.
ATTDU	Air Transport Tactical Development Unit.
AVM	Air Vice-Marshal.
BAT	Beam Approach Training.
BCBS	Bomber Command Bombing School.
BCDU	Bomber Command Development Unit.
BCFU	Bomber Command Film Unit.
BCIS	Bomber Command Instructors School.
BDU	Bombing Development Unit.
BSTU	Bomber Support Training Unit.
CF	Conversion Flight.
CFS	Central Flying School.
CGS	Central Gunnery School.
C-in-C	Commander in Chief.
CNS	Central Navigation School.
CO	Commanding Officer.
CRD	Controller of Research and Development.
CU	Conversion Unit.
DGRD	Director General for Research and Development.
EAAS	Empire Air Armament School.
EANS	Empire Air Navigation School.
ECDU	Electronic Countermeasures Development Unit.
ECFS	Empire Central Flying School.
ETPS	Empire Test Pilots School.
F/L	Flight Lieutenant.
Flt	Flight.

F/O	Flying Officer.
FPP	Ferry Pilots School.
F/S	Flight Sergeant.
FTR	Failed to Return.
FTU	Ferry Training Unit.
G/C	Group Captain.
Gp	Group.
HCU	Heavy Conversion Unit.
HGCU	Heavy Glider Conversion Unit.
LFS	Lancaster Finishing School.
MAC	Mediterranean Air Command.
MTU	Mosquito Training Unit.
MU	Maintenance Unit.
NTU	Navigation Training Unit.
OADU	Overseas Aircraft Delivery Unit.
OAPU	Overseas Aircraft Preparation Unit.
OTU	Operational Training Unit.
P/O	Pilot Officer.
PTS	Parachute Training School.
RAE	Royal Aircraft Establishment.
SGR	School of General Reconnaissance.
Sgt	Sergeant.
SHAEF	Supreme Headquarters Allied Expeditionary Force.
SIU	Signals Intelligence Unit.
S/L	Squadron Leader.
SOC	Struck off Charge.
SOE	Special Operations Executive.
Sqn	Squadron.
TF	Training Flight.
TFU	Telecommunications Flying Unit.
W/C	Wing Commander.
Wg	Wing.
WIDU	Wireless Intelligence Development Unit.
W/O	Warrant Officer.



SECTION 5



SOURCES OF INFORMATION

www.bombardier.com/museumarchives.ca

www.bombercommandmuseumarchives.ca

SOURCES OF INFORMATION

- Air War over France. Robert Jackson. Ian Allan.
 Als Deutschlands Dämme Brachen. Helmut Euler. Motor Buch Verlag.
 At First Sight. Alan B Webb.
 Avenging in the shadows. Ron James. Abington Books.
 Avro Lancaster. The definitive record. Harry Holmes.
 Airlife.
 Avro Manchester. Robert Kirby. Midland Counties Publications.
 Battle-Axe Blenheims. Stuart R Scott. Budding Books.
 Battle Under the Moon. Jack Currie. Air Data.
 Beam Bombers Michael Cumming. Sutton Publishing.
 Beware of the Dog at War. John Ward.
 Black Swan. Sid Finn.
 Newton.
 Bomber Command. Max Hastings.
 Pan.
 Bomber Command War Diaries. Martin Middlebrook/Chris Everett. Viking.
 Bomber Group at War. Chaz Bowyer. Book Club
 Associates.
 Bomber Harris. Dudley Seward. Cassel.
 Bomber Harris. Charles Messenger. Arms and Armour Press.
 Bomber Intelligence. W E Jones. Midland Counties Publications.
 Bomber Squadron at War. Andrew Brookes. Ian Allan.
 Bomber Squadrons at War. Geoff D Copeman. Sutton Publishing.
 Bombers over Berlin. Alan W Cooper. Patrick Stephens Ltd.
 Bombing Colours 1937-1973. Michael J F Bowyer. Patrick Stephens Ltd.
 Confounding the Reich. Martin W Bowman/Tom Cushing. Patrick Stephens Ltd.
 De Havilland Mosquito Crash Log. David J Smith. Midland Counties Publications.
 Despite the Elements. 115 Squadron History. Private.
 Diary of RAF Pocklington. M Usherwood. Compaid Graphics.
 Each Tenacious. A G Edgerley. Square One Publications.
 Feuersturm über Hamburg. Hans Brunswig. Motor Buch Verlag.
 Forever Strong. Norman Franks. Random Century.
 From Hull, Hell and Halifax. Chris Blanchett. Midland Counties Publications.
 Gordon's Tour with Shiney 10. J Gordon Shirt. Compaid Graphics.
 Great Raids. Vols 1 and 2. Air Commodore John Searby DSO DFC. Nutshell Press.
 Halifax at War. Brian J Rapier. Ian Allan.
 Hamish. The story of a Pathfinder. Group Captain T G Mahaddie. Ian Allan.
 Heavenly Days. Group Captain James Pelly-Fry DSO. Crecy Books.
 In Brave Company. W R Chorley. P A Chorley.
 Joe. The autobiography of a Trenchard Brat. Wing Commander J Northrop DSO DFC AFC.
 Lancaster at War. Vols 1,2,3. Square One Publications.
 Lancaster. The Story of a Famous Bomber. Mike Garbett/Brian Goulding. Ian Allan.
 Bruce Robertson. Harleyford Publications Ltd.

Lancaster to Berlin. Walter Thompson DFC*. Goodall Publications.
 Low Attack. John de L Wooldridge. Crecy.
 Massacre over the Marne. Oliver Clutton-Brock. Patrick Stephens Ltd.
 Master Airman. Alan Bramson. Airlife.
 Melbourne Ten. Brian J Rapier. Air Museum Publications (York) Ltd.
 Mission Completed. Sir Basil Embry. Four Square Books.
 Mosquito. C Martin Sharp & Michael J F Bowyer. Crecy.
 Night Fighter. C F Rawnsley/Robert Wright. Collins.
 Night Flyer. Squadron Leader Lewis Brandon DSO DFC. Goodall Publications.
 Night Intruder. Jeremy Howard-Williams. Purnell Book Services.
 No Moon Tonight. Don Charlwood. Goodall Publications.
 On The Wings Of The Morning. RAF Bottesford 1941-45. Vincent Holyoak.
 On Wings of War. A history of 166 Squadron. Jim Wright.
 Only Owls And Bloody Fools Fly At Night. Group Captain Tom Sawyer DFC. Goodall
 Publications.
 Pathfinder. AVM D C T Bennett. Goodall Publications.
 Pathfinder Force. Gordon Musgrove. MacDonald and Janes.
 Reap the Whirlwind. Dunmore and Carter. Crecy.
 Royal Air Force Aircraft Serial Numbers. All Volumes. Air-Britain.
 Royal Air Force Bomber Command Losses. Vols 1,2,3,4,5,6. W R Chorley. Midland Counties
 Publications.
 Silksheen. Geoff D Copeman. Midland Counties Publications.
 Snaith Days. K S Ford. Compaidd Graphics.
 Start im Morgengrauen. Werner Girbig. Motor Buch Verlag.
 Stirling Wings. Jonathon Falconer. Alan Sutton Publications.
 Strike Hard. A bomber airfield at war. John B Hilling. Alan Sutton Publishing.
 Sweeping the Skies. David Gunby. Pentland Press.
 The Avro Lancaster. Francis K Mason. Aston Publications.
 The Berlin Raids. Martin Middlebrook. Viking Press.
 The Dambusters Raid. John Sweetman. Arms and Armour Press.
 The Halifax File. Air-Britain.
 The Hampden File. Harry Moyle. Air-Britain.
 The Handley Page Halifax. K A Merrick. Aston Press.
 The Hornets' Nest. History of 100 Squadron RAF 1917-1994. Arthur White. Square One
 Publications.
 The Lancaster File. J J Halley. Air-Britain.
 The Other Battle. Peter Hinchliffe. Airlife.
 The Pedulum and the Scythe. Ken Marshall. Air Research Publications.
 The Starkey Sacrifice. Michael Cumming. Sutton Publishing Ltd.
 The Stirling Bomber. Michael J F Bowyer. Faber.
 The Stirling File. Bryce Gomersall. Air-Britain.
 The Wellington Bomber. Chaz Bowyer. William Kimber.
 The Whitley File. R N Roberts. Air-Britain.
 The Squadrons of the Royal Air Force. James J Halley. Air-Britain.
 They Led the Way. Michael P Wadsworth. Highgate.

To See The Dawn Breaking.

W R

Chorley.

Valiant Wings.

Norman Franks. Crecy.

Wellington. The Geodetic Giant.

Martin Bowman. Airlife.

White Rose Base.

Brian J Rapier. Aero Litho Company (Lincoln) Ltd.

Wings of Night.

Alexander Hamilton. Crecy.

2 Group RAF. A Complete History.

Michael J F Bowyer. Crecy.

101 Squadron. Special Operations.

Richard Alexander.

207 Squadron RAF Langar 1942-43. Barry Goodwin/Raymond Glynne-Owen. Quacks

Books.

408 Squadron History.

The Hangar Bookshelf. Canada.

Most of the figures used in the statistics section of this work, have been drawn from The Bomber Command War Diaries by Martin Middlebrook and Chris Everitt, and I am indebted to Martin Middlebrook for allowing me to use them.

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SECTION 6

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