ROYAL AIR FORCE BOMBER COMMAND

SQUADRON PROFILES NUMBER 29



97 (STRAITS SETTLEMENTS) SQUADRON

Achieve your aim
RESEARCHED, COMPILED AND WRITTEN
BY
CHRIS WARD

ROYAL AIR FORCE BOMBER COMMAND SQUADRON PROFILES

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97 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 However, where there is a blank space following the serial number of a type which has been withdrawn from service with Bomber Command, it signifies that I don't know its ultimate fate.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. Never-theless, 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

BRIEF HISTORY

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First formed on the 1st of December 1917, 97 Squadron began life as a training unit, until acquiring operational status as a bomber squadron in March 1918. Following a move to France in August, strategic bombing operations were conducted against Germany until the end of hostilities. After returning to the UK in March 1919, 97 Squadron was posted to India in July, and was eventually renumbered. The 97 Squadron number remained on the shelf until its resurrection as a night bomber unit on the 16th of September 1935, and it undertook training duties from June 1938. It was in this form that the squadron faced the outbreak of the Second World War, equipped with Whitleys, but it again lost its identity when being retitled 10 OTU on the 6th of April 1940. A short-lived reformation took place on the 1st of May, but it was a false dawn, and disbandment followed on the 20th, before any aircraft were taken on charge.

On the 25th of February 1941, 97 Squadron was again reformed, this time at Waddington under the banner of 5 Group, where it would become the second unit in the Command to receive the Manchester, the operational career of which had been pioneered by 207 Squadron. W/C Balsdon was installed as the first commanding officer, he having previously served with 214 Squadron, where he rejoiced under the nickname of "God". He and S/L Paul Harris were the flight commanders at 214, before Harris was posted to command the reformed 7 Squadron to introduce the Stirling into operational service. Two days after reformation, B Flight of 207 Squadron was transferred over to form the nucleus of the new squadron, and provide a sprinkling of experience on the Manchester. S/L Stubbs was the most senior officer, having served with 106 Squadron before his time with 207, and posted with him were F/Ls Bird and Sherwood, F/Os Eustace, Lewis and Harwood, and P/Os Ayton, Blakeman and Brown. Eight Manchesters were also transferred on that day, L7282, L7283, L7290, L7291, L7292, L7294, L7298 and L7299. The squadron's path to operational status was a difficult one, and the troublesome Manchester, beset with problems from the start, was constantly undergoing modification. It gave the squadron ample opportunity to train new crews and establish a technical ground section, and until 97 Squadron was ready to join them, the 207 Squadron crews cut a lone operational furrow with the type. On the 10th of March, 97 Squadron moved to Coningsby, where it would remain for the next twelve months.

It was April before the squadron could launch its first tentative sorties in anger, and on the night of the 8/9th, four of the squadron's crews joined eight from 207 Squadron in an overall force of 160 briefed for Kiel. Since an Air Ministry directive issued on the 9th of March, most of the Command's resources over the next four months would be channelled into a campaign against the U-Boat menace, and its partner in crime, the Focke-Wulf Kondor long range reconnaissance bomber. This would require attacks on ports in Germany and the occupied countries, and on shipyards and factories, to destroy the craft at the point of their manufacture. Taking part in this, the squadron's operational debut, were the crews of F/L Bird in L7290, F/L Sherwood in L7291, P/O Blakeman in L7294 and F/S Pendrill in L7308, and all

returned safely from what for them was a relatively gentle introduction to operations. The raid went less satisfactorily for 207 Squadron, however, whose commanding officer, the popular W/C Hyde, failed to return, and he and his crew fell into enemy hands. The crew in question was that recently captained by F/L French, who had been added to the strength of 97 Squadron a few days earlier. The squadron's second operation was to Brest on the 10/11th, a port which since the 30th of March had been playing host to the German cruisers Scharnhorst and Gneisenau, and they would be a constant thorn in the flesh of Bomber Command until the following year. Five crews took part, led by S/L Stubbs in L7323, with F/L Sherwood in L7294, F/L French in L7292, and F/Os Price and Eustace in L7308 and L7298 respectively. A degree of success was achieved when four bombs struck the Gneisenau, and all the squadron's aircraft returned safely, although F/L Sherwood was fired at by an intruder while approaching to land at Coningsby.

Before the squadron had an opportunity to carry out further operations, all Manchesters were grounded from the 13th, while investigations were conducted into the persistent problems with engine bearings. It was the end of the month before the type was once more declared airworthy, but not until the night of the 10/11th of May did 97 Squadron return to operations. Four squadron crews joined nineteen others for a small scale raid on Berlin, following up an attack by five aircraft on the Capital on the previous night. Although on both occasions, largish forces raided a main target simultaneously, the size of the Berlin contingents reflected the growing tendency to send small numbers of aircraft to various targets, the result of which was to dilute the effectiveness of operations, without necessarily curbing losses. This night brought the squadron's inevitable first loss of a crew, when L7323 suffered the failure of its starboard engine on the way home, and was ditched in the North Sea by P/O Ayton and his crew. There were clear indications on take-off that this was unlikely to be their night, and only by the narrowest of margins did the Manchester stagger off the end of the runway and into the air. Even then, it could not be coaxed above the uncomfortable height of ten thousand feet, and following four days adrift, the crew was eventually picked up by a Dutch trawler, and was delivered to Ijmuiden and into the hands of the enemy. On the 15/16th, while Hanover was the main target, eight Manchesters, four each from 97 and 207 Squadrons, and six Stirlings again raided Berlin, and this time an engine failure brought more serious consequences for a 97 Squadron crew. L7324 went down into the sea off the Frisians while outbound, and there were no survivors from the crew of F/L Bird, and these thus became the first names to be written in the squadron's Roll of Honour. On the 17th, the Manchesters were again grounded to allow further investigations into the problems with the Rolls Royce Vulture engines.

On the 20th of June, the type was once more declared fit for operations, and on the following day, a record number of eighteen Manchesters were prepared for a raid on Boulogne that night. This figure included six aircraft from 61 Squadron, which would be operating the Manchester for the first time. Although all the Manchester contingent which left England's shores returned safely to home airspace, the presence of enemy intruders had already cost the life of a 207 Squadron crew, shot down in error by an RAF nightfighter while outbound. 97 Squadron's F/L Sherwood was similarly attacked by a Defiant on return, and L7325 was severely holed, but no crew casualties were sustained. Six 97 Squadron aircraft were among

the eighteen of the type prepared for an operation to Kiel on the 26/27th. The raid was not effective, and 97 Squadron posted missing the crew of the popular New Zealander F/O Eustace, who were all killed when L7374 was brought down off the German Frisians while outbound. Before the squadron had the chance to operate again, a further grounding order was received on the 30th, and in order to maintain some level of operational activity, a number of Hampdens were taken on charge, and others were borrowed from 106 Squadron as required.

A number of attacks took place on the German cruisers at Brest during the first week of July. and during the course of that of the 6/7th, Hampden AD861, borrowed by Sgt Field and his crew from 106 Squadron, collided with a balloon cable, and crashed in Plymouth sound. The pilot and one other sustained injuries, but sadly, the other two crewmen lost their lives. On the following night, the Command mounted operations to Cologne, Osnabrück, Münster and Mönchengladbach, the last named by an all Hampden force of forty aircraft. AD735, another Hampden borrowed from 106 Squadron, was shot down by a nightfighter over Holland, and Sgt Wotherspoon, alone of his crew, survived to be taken into captivity. On the 9th, a new Air Ministry directive signalled an end to the maritime diversion, and highlighted the morale of the enemy civilian population, and the transportation system as its weakest points. From now on, the main emphasis was to be concentrated against the major railway centres ringing the Ruhr, such operations to be undertaken during the moon periods. On moonless nights, the Rhein cities of Cologne, Düsseldorf and Duisburg would be easier to identify, and on dark nights with less favourable weather conditions, C-in-C Sir Richard Peirse was to send his forces further afield to urban targets in northern, eastern and southern Germany. That night, Aachen hosted its first large raid of the war, and seventeen hundred apartments were either destroyed or damaged. In the absence of the Manchester, Hampdens carried the 5 Group banner to among other destinations Hanover on the 14/15th, Hamburg on the 16/17th, Cologne on the 17/18th and 20/21st, and Frankfurt on the 21/22nd, 22/23rd, and 23/24th. Later on the 24th, eighteen Hampdens under a Spitfire escort were used as bait during an inconclusive daylight attack by Wellingtons on the Gneisenau at Brest. Thereafter during the month, Hampdens were present at Kiel on the 24/25th, Hanover on the 25/26th and Cologne on the 30/31st, but 97 Squadron's involvement was minor, and no crews were lost. Earlier, S/L Stubbs was posted from the squadron, and on the 17th, he was appointed to command 49 Squadron at Scampton.

Finally, after five weeks away from operations, the Manchester was again reinstated on the 7th of August, and that night the Command sent forces to Essen, Hamm and Dortmund, the first named including a small Hampden element from 97 Squadron. In keeping with the times, it was an ineffective raid, and AE303 failed to return after crashing into the North Sea, killing P/O Rodwell and his crew. The squadron took Manchesters back to war on the 12/13th, when F/Os Blakeman and Little and Sgt Rowlands headed for Berlin in L7383, L7424 and L7306 respectively. F/O Little and his crew abandoned L7306 while still over Germany on the return flight, and all landed safely in the welcoming arms of their captors. On the 16/17th, four Manchesters of 97 Squadron and two from 207 joined fifty Hampdens to attack railway targets at Düsseldorf. While outbound over Belgium, and frantically trying to evade searchlight beams, F/L Nunn and his crew were set upon by a nightfighter, which severely damaged L7384, and mortally wounded the front gunner. When it became clear that the Manchester was doomed, Nunn ordered his crew to bale out, and four of the five men who

did so, survived the descent. With the wounded gunner unable to jump, Nunn elected to crash-land the aircraft, and did so with great skill. Despite sustaining severe injuries himself, the pilot dragged his colleague out of the turret and eventually clear of the aircraft. where both were found the following morning, to be taken to hospital by their captors. Sadly, F/L Nunn's heroic efforts on behalf of his crew colleague were in vain, and he died shortly afterwards. It was on the 18th, that civil Servant, Mr D M Butt, completed his analysis of recent Bomber Command operations, and its disclosures were to send shock waves resounding around the Cabinet room and the Air Ministry. Having studied around four thousand photographs taken during night operations in June and July, he concluded that only a fraction of bombs were falling within miles of their intended targets. This shattered any delusions that the Command was striking a telling blow at the enemy's war effort, and would forever unjustly blight the period of tenure as C-in-C of Peirse. It also provided ammunition for the detractors, who were calling for the employment of bomber aircraft against the U-Boat menace, and to redress reversals in the Middle East. On the 25/26th, two 97 Squadron crews joined in an attack on the centre of Mannheim, and both F/L Price and Sgt Mycock returned safely. The Manchester used on that night by the latter, L7306, suffered a burst tyre and undercarriage collapse on take-off from Coningsby when bound for a training flight on the 13th, and was wrecked in the ensuing fire, although Sgt Hartley and his crew scrambled clear. That night, L7383 crashed in Norfolk while attempting an emergency landing, having run out of fuel during a night cross-country exercise, and one man in the crew of P/O Fox lost his life.

The Mk Ia Manchesters were now beginning to roll out of the factories, and following discussions on the 1st of September, 97 Squadron stood-down from operations, to allow new crews to be trained for the establishment of a B Flight. It would be late October before operations were again undertaken, and in the meantime, the Association of British Malay, represented by Captain Gammans MP, conferred the Straits Settlements title on the squadron in a ceremony at Coningsby on the 21st. Another non-operational incident saw the demise of L7375 during an air-test on the 28th. Engine problems forced an emergency landing in Lincolnshire, which wrote the Manchester off, but F/O Blakeman and the only other man on board were unhurt. It was not until the night of the 20/21st of October that the squadron returned to operations, when detailing a record eight aircraft for Bremen, in company with almost 150 Hampdens, Wellingtons and Stirlings. Described by the Bremen authorities as a light raid, it cost a moderate five aircraft, among which was P/O Noble's L7462, which crashed into the sea fairly close to home, and there were no survivors. A similar fate almost befell R5783 as the result of running out of fuel, but a forced-landing was made on salt marshes near Wainfleet on the Lincolnshire coast, and Sgt Hartley and his crew emerged unscathed.

Bad weather had been hampering attempts to hit Germany for a number of weeks, and a few operations had been subject to a recall while the crews were outbound over the North Sea. This and the damning Butt Report had no doubt frustrated Peirse, and increased the pressure on him to achieve some decent results. Apart from a totally ineffective operation against Kiel on the $1/2^{nd}$ of November, there had been restricted activity for the first week of the month. Now Peirse planned a major night of operations for the $7/8^{th}$, for which Berlin was to be the main course, involving over two hundred aircraft. A poor weather forecast discouraged 5

Group from taking part, and permission was granted for it to raid Cologne instead, while a third force of fifty three Wellingtons and two Stirlings drawn from 1 and 3 Groups went to Mannheim. Other operations of a more minor nature were also to take place at the Ruhr. Ostend and Boulogne, while thirteen Halifaxes laid mines off Norway. This brought a new record number for a single night of 392 sorties, of which 169 ultimately took off for Berlin. Sadly, this massive effort was not rewarded with success, and in fact, the night degenerated into a disaster for Peirse. Less than half of the Berlin-bound force actually reached the target area, to destroy fourteen houses, and damage under fifty other buildings. In return, twenty one aircraft were lost, and this had to be added to seven Wellingtons missing from Mannheim, where no bombs were reported by the city authorities. 97 Squadron contributed five Manchesters to the Cologne force of seventy five aircraft, and while the Group suffered no casualties, the target city escaped with just two houses destroyed. Three other 97 Squadron crews flew sorties to Boulogne, and these too returned without incident. A further nine aircraft failed to return from the other minor operations, and this brought the night's total of missing to a new record thirty seven, more than twice the previous highest. This was the final straw for the War Cabinet, and Peirse was summoned to a meeting with Churchill to make his explanations. On the 13th, he was ordered to restrict further operations, while the future of the Command was considered at the highest level.

In the meantime, F/L Price and F/O Blakeman took L7466 and L7488 respectively on search and rescue sorties on the afternoon following the Berlin debacle, and the former failed to return, presumably having crashed into the North Sea, and the loss of this experienced officer and his crew summed up the futility of the period. At the same time, three of the squadron's new crews were making a gentle introduction to operations under the guidance of experienced captains, with an attack on the docks at Dunkerque. L7476 was severely damaged by a flak near miss, and the second pilot was mortally wounded. Having jettisoned the bombload, P/O Deverill made a safe landing at Coningsby, where the second pilot died hours later. A tragic accident occurred on the 24th, when R5792 collided with a Hurricane during a fighter affiliation exercise over Norfolk, and both aircraft plunged to the ground. There were no survivors from among the crew of F/O Hill in the Manchester, and the Hurricane pilot was also killed.

There were no operations during the first week of December, and then a flurry of them on the 7/8th, with Aachen as the main target, while other small forces were sent to Brest, Calais, Ostend, Dunkerque and Boulogne. 97 Squadron contributed six aircraft to a force of 130 briefed for Aachen, only half of which claimed to have bombed the primary target. All of the 97 Squadron crews bombed alternatives, with the exception of P/O Deverill, who was forced to abort his sortie when technical problems arose in L7473. A concerted effort was mounted against the German cruisers at Brest during the course of the month, and a daylight operation under the codename Operation Veracity was launched on the 18th. This employed eighteen Halifaxes, an equal number of Stirlings and eleven Manchesters of 97 Squadron, led by W/C Balsdon in L7490, flying with F/S Pendrill's crew. One Manchester took off as a flying reserve, and as all seemed well when The Lizard was reached, F/S Fletcher brought L7463 back home. The Manchester element was the last to pass over the target, by which time the fighter escort had withdrawn, and they were left at the mercy of the enemy flak and fighters.

Having been hit by flak while on the bombing run, R5795 was chased out to sea by BF109s, and was shot down four miles off Brest. Four of the crew got out by parachute, and three of them survived as POWs, but P/O Stokes and one other went down with the aircraft. L7490 was also hit by flak in the target area, and had already crossed the boundary fence at Coningsby on return when it stalled, and nose-dived into the centre of the airfield. The wreckage was consumed by a fire-ball, and all eight men on board, including W/C Balsdon, were killed. It was a sad end to a faltering eight months of operational activity for the squadron, but at least the end was in sight for its association with the ill-fated Manchester, and no further operations would be carried out before the turn of the year. W/C Kynoch was posted in on the 23rd to assume command, and he would preside over the squadron's conversion onto Lancasters, and see it through its first operations with the type. He had been a contemporary of Guy Gibson at 83 Squadron, which he joined late in 1937 when already in his mid twenties, and was considered to be good natured and something of an athlete.

It had been a bad year for the Command, with few genuine advances made on the previous year. It was summed up by the performance of the three new aircraft types introduced into operational service early on, each of which had failed to meet expectations, and had undergone long periods of grounding while essential modifications were put in hand. Peirse had done his best to fulfil the many demands placed upon him, but the War Cabinet's assessment of the Command's capability with the existing equipment was unrealistic, and the best endeavours of the crews were insufficient in the face of an as yet all-conquering enemy. The coming year would bring changes, both in equipment and leadership, and with them would come the first signs of the emergence of a potentially war-winning weapon.

1942

The New Year began with a continuation of the obsession with Brest, or more accurately its guests, and no less than eleven operations of varying sizes were directed at it during January. F/S Hartley and his crew had a narrow escape on the 8th, when a practice bomb exploded seconds after take-off, and L7459 crashed almost immediately afterwards, injuring the occupants. As events turned out, this was the squadron's final Manchester loss, and just five more operations with the type lay ahead. That night, the squadron contributed two aircraft to a raid on Brest, and on the 9/10th managed four, but neither operation produced significant results, and a raid on Wilhelmshaven on the following night, involving a contingent of four more from 97 Squadron, was equally disappointing. The 10th had been a momentous day at Coningsby, with the arrival of the first prototype Lancaster, BT308, for familiarization. The squadron's first production Lancaster touched down on the 14th, followed by three more on the 17th. On the 15/16th, a squadron element took part in a raid on Hamburg, which left some fires burning, and on the 17/18th, it flew Manchesters in anger for the last time on a failed operation against Bremen. Only eight crews out of eighty three reported bombing the primary target, and this in its way, summed up not only the career of the Manchester, but also the performance of the Command at this most critical point in its history.

As the squadron chosen to introduce the Lancaster to operational service, 44 (Rhodesia) Squadron despatched a number of aircrew to Coningsby to help with the conversion

programme, and 97 Squadron's Rhodesian aircrew were transferred to 44 Squadron. The two units would form a close association and share a sense of friendly rivalry over the next few months, and even conduct a number of joint operations. During the squadron's two month stand-down from operations, the situation at Brest resolved itself, when the Scharnhorst, Gneisenau and Prinz Eugen, with destroyer escort, slipped anchor in atrocious weather conditions in the very early hours of the 12th of February, and headed for the English Channel in an audacious bid for freedom. Operation Fuller had been prepared in advance for precisely this eventuality, but an unbelievable break-down in communications resulted in few at grass roots level being fully aware of its requirements. It was late morning before the enemy fleet was spotted, at which time only 5 Group was standing by at four hours readiness, and it was 13.30 hours before the first Bomber Command sorties were launched. Despite the largest daylight commitment to date of 242 aircraft, the squally conditions and very low cloud base prevented easy location of the enemy ships, and those attacks which did take place, failed to score any hits. Fifteen of the Command's crews were lost during the operation, but their heroism could not prevent the enemy from making good its escape through the Straits of Dover and into open sea. Scharnhorst and Gneisenau both struck mines recently laid by 5 Group aircraft, and although their progress was slowed, all arrived safely in German ports by the following morning. It was a huge embarrassment to the government and the nation, but at least this annoving itch had been scratched for the last time, and the Command could now concentrate on other matters. On the 14th, a new Air Ministry directive reaffirmed the assault on the morale of the enemy civilian population, particularly its workers, and swept away all the former pretence. From now on the Command was to conduct a blatant area bombing campaign, without claiming to be attacking industrial and military targets. Waiting in the wings was a new leader, who would pursue this policy with a will, and on the 22nd, ACM Sir Arthur T Harris took up his appointment at the helm of Bomber Command, and set about the daunting task of saving it from the vultures.

Harris had commanded 5 Group at the start of the war, until being appointed second deputy to the Chief of the Air Staff, Sir Charles Portal, on the 22nd of November 1940. He arrived at High Wycombe with firm ideas already in place about how to win the war by bombing alone, and the succeeding weeks would see him put his thinking into practice. He recognized the need to overwhelm a target's defences by pushing the maximum number of aircraft across the aiming point in the shortest possible time, and this would signal the birth of the bomber stream, and an end to the former system, whereby crews determined for themselves the details of their sortie. He was also aware, that urban areas are destroyed most efficiently by fire rather than by blast, and it would not be long before the bomb loads carried by his aircraft reflected this. In the meantime, he continued with the small scale attacks on Germany's ports, and it was during such an operation, that the war threw up one of its great ironies. During an attack on the floating dock at Kiel by Wellingtons, Hampdens and Halifaxes on the 26/27th, a bomb struck the bows of the Gneisenau, now supposedly at safe haven after enduring eleven months of almost constant bombardment at Brest, and her sea-going career was ended for good.

On the 2nd of March, the squadron moved the few miles across Lincolnshire from Coningsby to Woodhall Spa, where progress towards operational status continued. It would be the 20th of

March before 97 Squadron was ready to launch its first operational sorties, and this meant it missing the first major operation to benefit from Harris's ideas. The Renault lorry factory at Billancourt in Paris was selected to host an attack by the largest force yet sent to a single target, 235 aircraft were to take part in three waves, led by experienced crews, and with extensive use of flares to provide illumination. In the face of what was expected to be a scant flak defence, the crews were to bomb from low level to ensure accuracy, and hopefully avoid inflicting casualties on French civilians. 223 crews reported bombing as briefed, and they destroyed 40% of the factory buildings, halting production at the plant for four weeks. It was an outstanding success for the loss of just one Wellington, and the satisfaction gained was marred only by the deaths of 367 civilians in the adjacent residential districts. It was something of a paradox, that Harris, as a champion of area bombing, should achieve his first major success by way of a precision target. Thereafter, three operations were directed at Essen on consecutive nights from the 8/9th, each one led by Gee-equipped aircraft. The almost total failure of the crews to find the mark on each occasion demonstrated the weakness of Gee as a blind bombing aid, and Essen would continue to be elusive for a considerable time yet. Gee gained its first real success on the 13/14th, when Cologne suffered extensive damage to housing and industry at the hands of over a hundred aircraft, and this was certainly amongst the most effective raids of the war to date.

97 Squadron was finally declared operational on the 20th, when six aircraft were prepared for a mining operation around the Frisians. Taking off in gloomy mid afternoon, F/O Rodley's L7570 clipped a house roof with a wing tip, and he was force to carry out a crash-landing on a beach near Boston. Damage to the Lancaster was not severe, and only one of the crew sustained injury, but the incoming tide decided the Lancaster's fate, and it became the first of the type to be written off. Training accidents accounted for two more Lancasters within a matter of days, however. F/S Hartley and his crew escaped injury when R5486 crashed during an attempt to land at Finningley while engaged on a night cross country exercise on the 23rd, and S/L Boylan and his crew likewise emerged unscathed from the wreckage of L7531, following a take-off crash at Coningsby on the 24th. This was caused by a section of the port leading edge lifting and destroying the aircraft's flying characteristics, and it was an incident witnessed by W/C Guy Gibson, who had just arrived at the station to assume command of 106 Squadron, 254 aircraft, the largest number vet sent to a single target, were despatched to Essen on the 25/26th, and included seven Lancasters from 44 and 97 Squadrons. Despite enthusiastic claims by returning crews, it was another failure, and it would be 1943 before this and other Ruhr targets were effectively raided. In a sign of things to come for Germany, however, Harris launched a raid against Lübeck on the 28/29th, which was to be conducted along the same lines as the highly successful attack on the Renault factory at the start of the month, although without the participation of the still small Lancaster force. This Baltic city port was selected for a number of operational reasons, principal among which were its location on an easily identifiable coastline, the paucity of its defences, and the narrow streets and half timbered buildings in its old centre, which would aid the spread of fire. The predominately incendiary bomb loads carried by the 234 participating aircraft reflected Harris's intentions for this historic city, and after a highly successful raid, about 30% of its built-up area was left in ruins. On the 31st, W/C Kynoch was posted away from the squadron, before completing his conversion onto Lancasters, and he was replaced by W/C Collier, another former 83 Squadron contemporary of Gibson. Four of the squadron's freshman crews went mining around Heligoland on the 8/9th of April, while others joined in an attack on Hamburg, as part of a new record force of 270 aircraft. This failure was followed by another at Essen on the 10/11th, which also included a small Lancaster element.

The experienced crews of the two Lancaster squadrons began practicing low level, long range flying, which culminated on the 14th with a simulated attack on Inverness. On the 16th, both Waddington and Woodhall Spa were sealed off from communication with the outside world, and personnel were confined to camp, in preparation for an operation next day. As part of the continuing campaign against U-Boats at their point of manufacture, it had been decided to mount an ambitious and audacious daylight raid on the M.A.N. (Maschinen Fabrik Augsburg Nuremberg) diesel engine factory at Augsburg, deep inside southern Germany. Briefings took place independently at both stations on the morning of the 17th, and the crews were incredulous at the prospect of such a deep penetration operation in daylight, although the timings would allow any survivors to return under cover of darkness. Each squadron provided an element of six aircraft plus a reserve, and take-offs took place around 15.00 hours. 97 Squadron was led away by S/L Sherwood in L7573, with F/L "Darky" Hallows in R5537 and F/O Rodley in R5488 making up the first section of three. Sherwood had been awarded a DFC at the end of his first tour, and a Bar had been added following the daylight raid on the German raiders at Brest in December. Rodley was, in fact, the reserve, and he and his crew stepped into the breach when an engine problem afflicting W/O Harrison's Lancaster dictated that it wouldn't be going anywhere that day. W/O Rowland became the new reserve, and he fell in for take-off behind the second section, which comprised F/L Penman in R5496, F/O Deverill in L7575 and W/O Mycock in R5513. Once airborne, the 97 Squadron Lancasters turned south to rendezvous with 44 Squadron over Grantham, a meeting which never happened, but unperturbed, they pressed on for the south coast and the Channel. At Selsey Bill, the reserves peeled away, and headed back up the A1 to Lincolnshire, while their comrades sank down to sixty feet over the sea, and pointed their noses towards Dives-sur-Mer on the French coast. Extensive diversionary operations, involving 2 Group Bostons with a fighter escort, had been planned to coincide with the Lancasters' arrival in the vicinity of the enemy occupied coast, but they seem to have concluded too early, and this would have disastrous consequences for 44 Squadron.

The two squadrons began their crossing of France independently, and out of sight of each other, although Sherwood later reported seeing specks in the distance to port, which he took to be the 44 Squadron element. Sherwood's navigator assured his captain that he was on track, and that was sufficient for Sherwood to continue unconcerned. Out of range of his field of vision, 44 Squadron was, in fact, being hacked to pieces by BF109s, and within a short space of time, three of its Lancasters had been shot down, and a fourth force-landed, leaving S/L Nettleton and F/O Garwell to go on to Augsburg alone. In contrast, 97 Squadron's passage to the target was without major incident, and the Lancasters arrived at the approaches to Augsburg some minutes behind Nettleton and Garwell, as the time neared 20.00 hours. As they ran in towards the M.A.N factory at roof-top height, they were unaware that Nettleton was returning home alone of the 44 Squadron contingent, Garwell having crash-landed beyond the target after bombing. Inevitably, the 44 Squadron pair had stirred up the local flak

batteries, whose gunners now knew the line of approach, and prepared to provide the Woodhall Spa gang with a welcoming hail of fire. Immediately after releasing the bombs, Sherwood's Lancaster was hit in the port inner fuel tank, and instantly caught fire. At such a low altitude, there was no questioning the inevitable outcome, and the Lancaster went in at flying speed beyond the town, and disintegrated in a ball of flame. Those watching in the other 97 Squadron aircraft which had bombed as these events unfolded, had no doubt that none had survived the impact, but remarkably, Sherwood had been catapulted in his seat through the canopy and into trees, which broke his fall, and he fell into enemy hands. Having allowed time for the delayed action fuses to detonate the first section's bombs, the second section wheeled in to attack in the fading light. While still three miles from the target, R5513 was hit in the nose, and fire engulfed the cockpit area. W/O Mycock was seen at the controls with his gaze locked steadfastly on the objective ahead, but the Lancaster was doomed and the crew beyond help as it fell away to crash. The other aircraft were also hit repeatedly, both on the approach and over the target, but no vital systems failed, although Deverill lost his port outer, and the rear turret was inoperative. After bombing, both sections headed towards home at low level, until darkness allowed them to climb to more familiar altitudes. Hallows and Rodley arrived back at Woodhall Spa as the clock approached 23.30, and Penman and Deverill landed shortly before midnight, after nine hours in the air. "Darky" Hallows would survive the war, eventually taking command of 5 Group's 627 Mosquito Squadron in January 1945, before a spell in hospital forced him to relinquish his post two months later.

There is no doubt that this operation was a magnificent feat of arms, but in military terms, it failed to achieve its aims, and cost seven of the twelve crews despatched, each of them battle hardened, and a great loss to their squadrons and the Command. The M.A.N factory had been hit, but it was the fabric of the buildings which suffered the damage, and the vital machine tools had all but escaped. It was later learned, that a high proportion of the bombs had failed to explode, which to some extent, rendered the heroics of the gallant crews in vain, but whatever the military value of the operation, it was clear that self defending bomber formations were still at the mercy of enemy fighters in daylight, and it would be a further two years before this situation changed. S/L Nettleton, in 44 Squadron's sole surviving Lancaster, landed at Squires Gate Blackpool an hour after the 97 Squadron crews got home, and he was eventually awarded the Victoria Cross. In 1943 he would assume command of the squadron, and lose his life in July of that year. S/L Sherwood was also recommended for the posthumous award of a Victoria Cross, but unaccountably, despite endorsement all the way up through Bomber Command channels, it was reduced to a DSO if it were found that he had survived.

After a period of leave, it was back to a more familiar style of operations, with an attempt to repeat the success of Lübeck at the neighbouring Baltic port of Rostock. A series of four raids was mounted on consecutive nights beginning on the 23/24th, for which 97 Squadron contributed a single Lancaster. It was a disappointing opening round, and a small additional force sent to attack the nearby Heinkel aircraft factory, also came away empty handed. Two 97 Squadron aircraft were despatched for the second of the series, although one aborted, and this time heavy damage was inflicted on the town area, while the Heinkel factory again escaped. The squadron provided four Lancasters for the third raid, when the town again

suffered extensive damage, and W/C Gibson led a successful 106 Squadron attack on the Heinkel factory. Just a single 97 Squadron participant joined in on the final raid, after which over seventeen hundred buildings were in ruins, amounting to approximately 60% of the town. On the 27/28th, 44 and 97 Squadrons embarked on another joint operation in the company of 4 Group Halifaxes. Seven aircraft from each squadron, including a reserve, were detached to Lossiemouth, to carry out an attack on the Tirpitz at Trondheim in Norway. The raid was not successful, despite locating the ship, and the ferocious defences brought down four Halifaxes, including that of the future Pathfinder chief, W/C Bennett, who evaded capture. Also failing to return was the Lancaster L7572 of 97 Squadron's F/L Mackid DFC, who was killed with his entire crew. The operation was repeated on the following night, again without success, and all eleven participating Lancasters returned safely. April ended with a training incident on the 30th, when F/S Altree crash-landed R5541 in Lincolnshire, and he and one other sustained injury.

May began for the Lancaster squadrons, which now numbered three since the addition to their ranks of 207 Squadron, with a three raid series on Stuttgart beginning on the 4/5th. Typically for the period, it was scattered and ineffective, but cost just one aircraft, a 3 Group Stirling. 97 Squadron's F/O Maltby, whose finest hour lay twelve months hence with 617 Squadron, reached the enemy coast in R5553, where a flak hit forced an early return and a crash-landing at base, which was accomplished without casualties. Stuttgart continued to escape damage on the 5/6th and 6/7th, but at least none from the small number of Lancaster participants failed to return. With the losses of Augsburg still fresh in their minds, the Lancaster crews set off for the Baltic port of Warnemünde on the 8/9th, as part of a mixed force of almost two hundred aircraft, whose crews were briefed to attack in two waves, the first from medium level, the second from low level. 44 Squadron suffered the loss of four of its seven aircraft, including its commanding officer, W/C Lynch-Blosse, and all were from the low level element, but the other Lancaster units came through unscathed. Only one more major operation took place before an historic event at the end of the month, and this was to Mannheim on the 19/20th, which again failed to find the mark.

Since the Butt Report of August 1941, the vultures had been gathering on their perches in high places, principally the Admiralty, to call for the dissolution of Bomber Command, so that its aircraft might more profitably be employed against the U-Boat threat in the Atlantic, or to stem reverses in the Middle East. Harris needed a major victory, and perhaps some symbolism, to silence the critics, and ensure the future of an independent bomber force. When he took up his post as C-in-C, he asked for four thousand heavy bombers with which to win the war, and whilst there was never 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. Out of this was born the Thousand Plan, Operation Millennium, the commitment of a thousand aircraft in one night against a single important German city. Harris did not have a thousand front-line aircraft to satisfy the symbolic element of the plan, and he would need the support of other Commands, chiefly Coastal and Flying Training. This was forthcoming in letters of the 22nd and 23rd respectively, 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, AM Sir Robert Saundby, scraped together

every airframe capable of controlled flight, or something resembling it, and pulled in the screened crews from their instructional duties. Come the hour, not only would the magic figure be achieved, it would be comfortably surpassed. During the final days of May, aircraft from the training units began to arrive on bomber stations from Yorkshire to East Anglia. giving rise to much speculation. Unfortunately, the weather refused to lend its support, and as the days ticked by inexorably towards the end of May, there arose a real danger of the massive force drawing attention to itself, and compromising security. The time was fast approaching when the operation would either have to be launched or scrubbed for the time being, and it was in this atmosphere of frustration that "morning prayers" took place at High Wycombe on the 30th. All eyes were on Harris's chief meteorological advisor, Magnus Spence, who at last gave a grudging and qualified nod in the direction of the Rheinland as the region of Germany most likely to be free of cloud, while Harris's first choice of Hamburg would be swathed in buckets of the stuff. On the strength of this, Harris gave the go-ahead for Operation Millennium to take place that night, and thus did the fickle finger of fate point the way to Cologne, and decree that it should bear the dubious honour of hosting the first one thousand bomber raid in history. It was an armada of 1047 aircraft which began to take off in the late evening, some of the older training backs doing so somewhat reluctantly, lifted more by the enthusiasm of their crews than by the power of their tired engines. Unable to climb to a respectable height, some of these would fall easy prey to the defences, or drop from the sky through mechanical failures. The operation followed the now familiar three wave pattern, with the Lancaster contingent bringing up the rear. Over eight hundred and fifty aircraft reached and bombed the target, including fourteen of the fifteen sent by 97 Squadron, all of which returned safely. It was by any standards an outstandingly successful operation, which destroyed over three thousand buildings, and damaged to some extent a further nine thousand. The loss of forty one aircraft was, however, a new record high, but it represented a sustainable 3.9%, and in the conditions, which were helpful to attackers and defenders alike, it was acceptable.

While his Thousand force was still assembled, Harris elected to use it again immediately, and after a night's rest, 956 aircraft responded to the call on the 1/2nd of June. They headed for Essen, the home of the giant Krupps works and a major centre of war production. In contrast to Cologne, this operation was a complete failure, which sprayed bombs all over the Ruhr, and caused only slight superficial damage at the target. The disappointment was compounded by the loss of thirty one more aircraft, a figure which included 97 Squadron's R5571, which crashed in Germany with no survivors from the crew of F/S Davies. A smaller scale follow-up attack on Essen on the 2/3rd fared no better, but a degree of success attended an attack on Bremen on the 3/4th, although damage was by no means extensive. Two more raids were directed at Essen on the 5/6th and 8/9th, and neither gained results commensurate with a combined loss of twenty eight aircraft. The latter claimed 97 Squadron's R5495, which crashed in Germany, killing P/O Hughes and his crew. The final of five raids on Essen in just over two weeks continued the run of failures, and preceded a three raid series on Emden spread over four nights from the 19/20th. Success continued to elude the Command, which girded its loins on the 25th, in preparation for the final use of the Thousand force that night, with Bremen as the target. A total of 960 aircrast were available to take part, including a contribution of sixteen Lancasters by 97 Squadron, and ordered by Churchill to take part,

Coastal Command committed 102 aircraft to what was classed as a separate operation. Neverthe-less, the numbers converging on the the target exceeded those going to Cologne at the end of May. While results fell short of those achieved at Cologne, they far surpassed the debacle at Essen, and over five hundred houses were destroyed, with many thousands more damaged. Bomber Command's losses amounted to a new record of forty eight aircraft, but the 97 Squadron contingent returned safely to Woodhall Spa. Follow-up raids against the city were mounted on the $27/28^{th}$, $29/30^{th}$ and $2/3^{rd}$ of July, each of which produced some fresh damage, and a number of important war industry factories were hit. R5675 failed to return from the first of these, having been shot down by a nightfighter over Holland, and F/O Friend and two others were killed, while the remaining four fell into enemy hands.

Following a disappointing raid on Wilhelmshaven on the 8/9th, 5 Group sent a force of forty four Lancasters to distant Danzig on the 11th. The low level outward flight took place over the North Sea and Denmark in daylight, making use of cloud cover over land, with the intention of conducting the attack on the U-Boat yards at dusk. The plan worked reasonably well, although some aircraft arrived at the target late, and had to identify the aiming point in darkness. Only two aircraft were lost, both falling to flak in the target area, and one of them was 97 Squadron's R5696, in which F/L Miller DFC and his crew were killed. A six raid series of operations against Duisburg over a three week period began on the 13/14th, and it was in keeping with the generally disappointing phase dogging the Command during the year. In return for superficial damage, six aircraft were brought down, and the sole Lancaster casualty was the squadron's R5558, which just failed to make it home, and crashed into the sea three miles out from the Norfolk coast, with only one of P/O Blease's crew surviving to be rescued. A better performance attended the Duisburg raid of the 21/22nd, and further damage occurred on the 23/24th and 25/26th, and the squadron negotiated these operations without loss. Not so at Hamburg on the 26/27th, however, when R5487 crashed into the sea, and took with it F/O McMurchy and his crew. This was one of the Command's better performances, which left over eight hundred fires burning, and caused extensive damage to residential and commercial districts. It would be a month before the squadron had the sad duty of posting missing another crew, and in the meantime it operated to Saarbrücken on the 29/30th, and participated in a Lancaster milestone at Düsseldorf on the last night of July. This was the occasion on which a hundred Lancasters operated for the first time, and they contributed to a highly successful attack. The Duisburg series was completed to moderate effect on the 6/7th of August, and the squadron shared in moderate successes at Osnabrück and Mainz on the 9/10th and 11/12th respectively.

The Pathfinder era began with the arrival of the founder squadrons at their new stations on the 15th. Although opposed in principle to the establishment of an elite target finding and marking force, a view shared by all but one of his Group commanders, Harris, once overruled by higher authority, and in typical fashion, gave it his full backing, and was eager to exploit its potential immediately. His choice of the then G/C Don Bennett as its leader was both controversial and inspired, and it ruffled a few feathers among the other AOCs. The new force was to fall nominally under the control of 3 Group until being granted Group status in its own right, and in the meantime, it lodged somewhat uneasily on AVM Baldwin's stations. The first Pathfinder led operation was to Flensburg on the 18/19th, a target selected for its

location on an easily identifiable part of the north German coast. It was an inauspicious beginning for the new force, and no bombs fell within miles of the intended target, while a number of Danish towns were hit. There was little improvement at Frankfurt on the 24/25th. when most of the effort was wasted in open country, although a few bomb loads found the city and created a number of large fires. This operation brought about 97 Squadron's first loss for a month, when R5537 was caught by a nightfighter over Belgium, and F/O Hooev DFC and his crew were all killed. The third Pathfinder led raid was on Kassel on the 27/28th, and following good illumination by the fledgling outfit, the main force inflicted a reasonable degree of damage in the south-western districts, destroying 140 buildings. It was a bad night for the attackers, however, and thirty one aircrast failed to return, among them 97 Squadron's W4139, which crashed in the Ruhr area, killing F/S McKenna and four of his crew, while two others became POWs. Two nights later, the Pathfinders used makeshift target indicators for the first time, during an operation against Nuremberg, the birthplace of Nazism. It was the PFF's best performance to date, but it was not exploited by the main force, only about a third of which found the mark. Never-the-less, some damage did result, but at a cost of twenty three aircraft, or more than 14% of those despatched.

In comparison with many of its contemporaries, 97 Squadron's losses were remarkably low during this phase of the war, and since its conversion to Lancasters. Augsburg had been the only operation to cost more than one aircraft. Happily, this was a situation which would continue almost until the end of the year. The squadron's September casualties came during the first four nights, and began with an intended raid on Saarbrücken on the 1/2nd, an occasion on which the Pathfinders posted a "black", by marking the small non-industrial town of Saarlouis in error for its more strategically important neighbour. Over fifty people were killed, and not a single bomb fell on the intended target. The sole Lancaster among the four missing aircraft was R5741, which crashed in the North Sea, killing F/S Morgan and his crew. Thereafter, the Command embarked on an unprecedented series of highly effective operations, beginning at Karlsruhe on the 2/3rd, where extensive damage was inflicted on residential and industrial areas. On the 4/5th, the Pathfinders employed for the first time a three phase system of illuminators, visual markers and backers-up, and in an excellent performance, laid Bremen open to one of the most damaging attacks of the year to date. The attack left over 450 houses and industrial units in ruins, and another fourteen hundred seriously damaged. Twelve aircraft failed to return from the force of over two hundred, 97 Squadron's R5496 among them, and there were no survivors from the crew of F/S Cooper. The run of successes continued at Duisburg on the 6/7th, which suffered its most damaging raid to date, despite the ever present industrial haze and lack of concentrated bombing. A return to a more familiar pattern allowed Frankfurt to escape all but slight superficial damage on the 8/9th, when most of the bombs intended for it fell on Rüsselsheim fifteen miles away.

Düsseldorf brought a return to winning ways on the 10/11th, however, on the occasion of the first use by the Pathfinders of "pink pansies" to mark the target. Crews from the training Groups also took part, and these featured prominently in the heavy loss of thirty three aircraft. Some of the bombing spilled over into nearby Neuss, and over nine hundred houses were destroyed at the two locations, along with public buildings, and numerous war industry factories were damaged to such an extent, that all production was halted for a time. Over

eight hundred houses were destroyed in Bremen on the 13/14th, where the Focke-Wulf aircraft factory was one of a number of important industrial victims, and Wilhelmshaven reported its most damaging raid to date on the 14/15th. Even Essen couldn't escape on the 16/17th when the training units again took part, but the massive loss of thirty nine aircraft tempered the sense of satisfaction. Perhaps one could say that it was during the first half of September that Bomber Command turned the corner, and began to emerge as a war-winning force. Many more failures lay ahead, and until the Ruhr campaign of 1943, they would far outweigh the successes, but the signs were there. The coming together of tactics and new equipment at the same time as the Pathfinder crews were getting to grips with the intricacies of their demanding role, augured well for the future. At least from this point, those attacks which found the target, would causing substantial damage and disruption in some way to the enemy war effort, whether by hitting at the factories themselves, or dehousing the workers. In a foretaste of 5 Group's "Independent Air Force" days in 1944, eighty three Lancasters were despatched to Wismar on the Baltic coast on the 23/24th, to attack the town and the nearby Dornier aircraft factory. Some crews bombed from low level, and on return, reported many fires, one of which was thought to be in the Dornier works.

October's account opened at Krefeld on the 2/3rd, although the Lancaster participation was small, and the operation only minimally effective. 250 aircraft set out for Aachen on the 5/6th in poor weather conditions, which were also encountered over the target, and the raid was a failure. It cost just one Lancaster among the ten missing aircraft, 97 Squadron's R5701, which crashed in Holland, and P/O Briant DFC and his crew all died in its wreckage. This was the squadron's first loss for a month, despite participating in the round of operations mentioned above, and following a fairly concentrated assault on Osnabrück on the 6/7th, minor operations provided a rest for most of the crews until mid month. Kiel opened the next phase on the 13/14th, when decoy sites lured away half of the bomb loads, the rest falling into the built-up area and causing a commensurate amount of property damage. Decoy sites were responsible for a complete failure at Cologne on the 15/16th, and almost no bombs fell into the target area. The loss of eighteen aircraft for such a poor return compounded the disappointment, and 97 Squadron had to post missing the crew of F/S Smyth, who were all killed in W4170.

5 Group had gained some experience of daylight operations during the year, principally at Augsburg and Danzig, and in 1942, it still represented the best hope of hitting a precision target. On the 17th, ninety four Lancasters set out for Le Creusot, to attack the Schneider armaments works and the nearby transformer station at Montchanin. The operation, codenamed Robinson, was led by W/C Slee of 49 Squadron, and the element of six for the second target by W/C Gibson of 106 Squadron. Nine 5 Group squadrons took part, and 97 Squadron contributed nine aircraft to the main attack as follows; R5490, R5497, R5538, R5548, R5552, R5569, W4175, W4255 and W4278. Taking off around noon, the squadrons joined forces over Oxfordshire, before setting course for Land's End and the French coast. Once deep inside enemy airspace, they climbed to their bombing height, and spread out to allow each squadron room to attack its specific target within the complex. Bombing of the Schneider plant was carried out from between 2,500 and 7,500 feet, and the transformer station from low level, and both were only partially successful. The return journey was made

under cover of darkness, and after ten hours aloft, all but one 61 Squadron aircraft arrived home safely. A new campaign began on the 22/23rd in support of Operation Torch, the landings in North Africa which would eventually lead to Montgomery's victory over Rommel at El Alamein. From this point until mid December, the Command would direct much of its effort against Italian cities, and it was 5 Group which opened proceedings on this night against Genoa, accompanied by an element from the PFF's former 5 Group 83 Squadron. A successful attack ensued, which caused extensive damage to the city's central districts, and the operation was completed without loss. 97 Squadron's W4278 arrived back over England short of fuel, and was crash-landed at North Luffenham by S/L Coton, who emerged with his crew unscathed. 3, 4 and 8 Groups joined forces to return to Genoa on the following night. but attacked Savona in error, and 5 Group raided Milan by daylight on the 24th, achieving complete surprise, and inflicting widespread damage for the loss of three Lancasters. This was the last operation over which W/C Collier presided, and he relinquished his command of the squadron on the 26th, to be replaced by W/C Jones. The month closed for the squadron with a training accident on the 31st involving W4239, which crashed in the Woodhall Spa circuit while trying to land, although happily, without casualties among the crew of Sgt Macleod.

November was dominated by the Italian campaign, which involved 5 Group on the 6/7th, 7/8th, 13/14th and 15/16th, with Genoa as the target on each occasion, before attention switched to Turin on the 18/19th, 20/21st and 28/29th. 97 Squadron posted missing no crews during the course of these or other operations, but suffered another training accident on the 13/14th during night training. R5569 crashed while attempting a landing at Scampton, and Sgt Mercer and five of his crew died at the scene, while the sole survivor succumbed to his injuries shortly afterwards. December began gently for the Command, and before the attacks on Turin continued on the 8/9th, 97 Squadron suffered its third consecutive training accident. This one occurred on the 6th, and involved W4356 with the crew of Sgt Johnson, who walked away from the crash in Cumberland. Business in Italy was concluded for the time being on the 11/12th, and minor operations saw out the year. One of these was an ill-fated effort by twenty seven 5 Group Lancasters, which were sent against eight small German towns on the night of the 17/18th. Briefed for Neustadt, two 97 Squadron crews failed to return, the first time since Augsburg in April that more than one crew had been posted missing from a single operation. R5497 was lost without trace with the crew of F/S Bunt, and ED333 was shot down by a nightfighter over the Dutch coast, and there were also no survivors from the crew of F/O McBurney. Duisburg was raided by over two hundred aircraft on the 20/21st, the night on which 109 Squadron released the first Oboe-aimed bombs on a coking plant at Lutterade in Holland. The magnificent pioneering work on the Oboe device by this Pathfinder Mosquito unit, would bring major rewards in 1943, and render ineffective the industrial haze which had thus far protected the industrial Ruhr from serious damage. 97 Squadron's R5512 failed to return from the main operation, and was brought down by flak over Amsterdam, with no survivors from the crew of P/O Eales. This was the squadron's final loss of the year from operations, although R5548 was written off on the ground at Woodhall Spa on the 28th, when a photo-flash ignited, and the Lancaster was consumed by fire. It had been a steady year for the squadron, during which losses had been regular but low, and actual failures to return

avaraged less than two per month. The year ahead would provide the real test, however, when major campaigns and a change of role would place new responsibilities on the crews.

1943

The year began with a continuation of the Oboe trials programme, involving the Mosquitos of 109 Squadron and Lancasters of 1 and 5 Groups. Essen was the principal target, and received no less than seven raids between the 3/4th and 13/14th of January, with one solitary operation directed against Duisburg on the 8/9th. The Essen series cost the squadron its first aircraft and crew of the year, when R5738 fell victim to a nightfighter over Holland on the 9/10th, and just one man survived as a POW from the crew of F/S Colbert. On the previous day, the Pathfinder force was at last granted Group status as 8 Group, and its stations were transferred over from 3 Group. In the face of continuing heavy losses of Allied shipping in the Atlantic, a new Air Ministry directive was issued on the 14th, which authorized the area bombing of those French ports which housed U-Boat bases and support facilities. A list was drawn up accordingly, headed by Lorient, with St Nazaire, Brest and La Pallice also included. That night, Lorient received the first of numerous raids over the succeeding four weeks, but despite accurate Pathfinder marking, it was not an encouraging beginning to the campaign. This was redressed somewhat on the following night, when over eight hundred buildings were destroyed, 5 Group, though, sat out both operations.

Mid month brought two operations to Berlin on consecutive nights, the first, on the 16/17th, a predominately 5 Group effort, which, despite the first use of proper target indicators, failed to produce any concentration. The scattered damage did include one noteworthy item, however, the ten thousand seater Deutschlandhalle, the largest covered venue in Europe, and this suffered total destruction. The following night's raid was similarly indecisive, but in contrast to the single missing aircraft twenty four hours earlier, this operation cost twenty two, among which was 97 Squadron's R5575, which crashed into the Waddenzee, killing Sgt Rowson and his crew. Another small scale raid by Lancasters and Mosquitos was directed at Essen on the 21/22nd, and a similar one took place on Düsseldorf on the 23/24th. The first use of Oboe ground marking occurred during a larger effort against Düsseldorf on the 27/28th, and this was exploited by the Pathfinders heavies and the main force to produce extensive damage in southern districts. Six aircraft failed to return, and 97 Squadron posted missing the crew of Sgt Robinson, who died with two others when flak brought down W4135 over Holland, and the remaining four men fell into enemy hands. It would be interesting at this point to chart the progress of a typical new crew embarking now on its first tour with the squadron, and I am grateful to its former flight engineer, Sgt M Hemming, for providing me with the necessary details. The crew in question was that of Sgt Jones, the other members of which were Sgt Silk, navigator, P/O Hodkinson, bomb aimer, Sgt Hannah, wireless operator, Sgt Strange, Mid-upper gunner and Sgt Brierley, rear gunner. They conducted their first operation on this night in W4175, when joining a force of fifty three other aircraft sent mining around the Frisians. The month closed with a medium raid on Hamburg by elements of 1, 5 and 8 Groups on the 30/31st, and despite creating scores of large fires, it was a scattered and only marginally effective attack. W4835 was one of five missing Lancasters, and was lost without trace with the crew of F/O Moyle. Sgt Jones had to abort his sortie, when W4175 lost the use of its port outer during the outward flight.

Cologne opened the February account on the 2/3rd, as further experimentation took place with marking techniques. It was again scattered with no serious damage reported, but the Jones crew completed their first bombing sortie, again in W4175, and returned safely. Bad weather spoiled a raid on Hamburg on the 3/4th, after which, on the 4/5th, Turin suffered widespread damage at the hands of a mixed force of over 150 aircraft, including the Jones crew, this time in ED430. Also on this night, another force raided Lorient for the sixth time. Lorient came in for more punishment on the 7/8th, this time by a large force which included for the first time a strong Lancaster presence. Wilhelmshaven was one of the other main objectives during the month, hosting the first of its four visits on the 11/12th. Despite the use of skymarkers, the least reliable marking method, the operation was a success, and at least one bomb load hit a naval ammunition dump, which exploded, laying waste to 120 acres of the town and docks areas. The Jones crew missed the excitement, having been forced to return early, when W4355's starboard inner sprang an oil leak. Lorient received its heaviest raid of the war on the 13/14th at the hands of over four hundred aircraft. The Jones crew made it all the way on this occasion in W4887, and their bombs contributed to the thousand tons which heaped further destruction on the port. On the following night, the Lancasters went to Milan, while the other types attacked Cologne with very modest success. The former left many fires burning, but the Jones crew again missed out, after W/T failure afflicted R5483, and forced them to return early. The final raid on Lorient took place on the 16/17th, and after this eighth in the series, the town was little more than a deserted ruin. W4355 behaved itself on this night, and the Jones crew completed their sortie safely.

The next three raids on Wilhelmshaven were mounted between the 18/19th and 24/25th, none of which was successful. Only the first one included a large Lancaster contingent, and the Jones crew was back in R5483, which took them all the way to the target and back. Their next four operations would be with a different aircraft, R5896, which carried them to Nuremberg on the 25/26th, when most of the bombs from the three hundred strong force fell around its northern fringes, although over three hundred buildings were never-the-less destroyed. Cologne's third raid of the month hit the city on the 26/27th without any concentration, and the last night of the month was dedicated to the U-Boat campaign, with the first raid on St Nazaire, where much destruction resulted. 97 Squadron suffered no losses either to operations or accidents during the entire month, but this fine record came to an end on the first night of March, when three hundred crews were briefed for an attack on Berlin. This was one of two major operations for the Command to negotiate before embarking on the year's first campaign against Germany, and it was the most effective raid to date on the Capital, despite again being widely scattered. What concentration there was, occurred in the south-western districts, and over eight hundred houses were left in ruins, along with a catalogue of industrial premises. Seventeen aircraft were missing as a result of this operation, and 97 Squadron's Sgt Innes and his crew died in the wreckage in Germany of W4825. The Jones crew failed to complete their first sortie to the "Big City", again having to return early when R5896 developed a technical fault. Over four hundred aircraft set out for Hamburg on the 3/4th, but an error in marking led to a disappointing outcome, and much of the bombing intended for Germany's second city hit the small town of Wedel, some miles distant from its more illustrious neighbour.

The decks were now cleared for the start of what was really the first major campaign of the war, for which Bomber Command was properly equipped and prepared. Oboe was performing well, although there were still wrinkles to iron out, and all but a few of Harris's squadrons could boast four engined genuine heavy bombers, and these he intended to put to work against the industrial arsenal of the Ruhr. To open the offensive, he selected Essen, the home of the giant armaments producing Krupp organisation, and on the night of the 5/6th. 442 aircraft took off, to atone, with the help of Oboe, for all the failures of the past against this city. 97 Squadron contributed twelve aircraft and crews to this momentous occasion, led by S/L Nind in W4200. The other pilots and aircraft were Capt Johnson in R5914, F/Ls Bell, Covington and Tew in W4355, R5612 and ED425 respectively, F/O Norton in ED430, P/Os Cuelenaere and Lennox in R5896 and R5917, F/S McLoud in R5490, and Sgts Munro, Plaunt and Treacy in R5915, R5483 and R5607. An unusually high rate of early returns and the bombing of alternative targets reduced the numbers reaching the target area to 362, but these delivered the main weight of bombs between the city centre and the Krupps works. Approximately 160 acres of built-up area were destroyed, amounting to over three thousand houses, on top of useful damage to fifty three buildings within Krupps. The operation represented an encouraging start to a campaign which would occupy the bulk of the next five months, but before the next round, Harris switched his attention to southern Germany. Over three hundred aircraft went to Nuremberg on the 8/9th, and deposited half of the bombs outside the city. That which did find the mark, however, destroyed six hundred buildings, and damaged some important war industry factories for the moderate loss of eight aircraft. Eight aircraft was also the cost of a partially effective attack on Munich on the following night, but the third southern city to be targeted in the space of four nights, Stuttgart on the 11/12th, suffered fairly minor damage to residential property, and dummy target indicators may have been responsible for the failure. The Jones crew returned to operations on this night in W4926, and came safely home with the rest of the squadron.

Round two of the Ruhr campaign was launched on the 12/13th, and was once more against Essen, for which over 450 aircraft set off. Although substantially less buildings were destroyed than a week earlier, the Krupps works found itself in the centre of the highly concentrated bombing area, and it sustained 30% more damage. Losses on this night were higher than of late at twenty three aircraft, and there would be a general escalation in failures to return as the offensive progressed and the defences got to grips with the situation. R5607 was the squadron's representative among them on this occasion, and none survived from the crew of Sgt Plaunt when it crashed in Germany. This was the first trip to Essen for the Jones crew, and they were again in W4926. Minor operations occupied the next eight nights, before an accurate attack took place on St Nazaire and its U-Boat facilities on the 22/23rd. The Jones crew completed their sortie in R5896, and then switched to R5612 for a trip to Duisburg on the 26/27th. This operation was a failure, largely because of technical problems afflicting the Mosquito-borne Oboe equipment, and Berlin escaped serious damage on the 27/28th, when most of the bombs fell miles short of the intended aiming point. This provided the Jones crew with another opportunity to add the Capital to the growing list in their log books, and W4932

did not disappoint them. Over three hundred aircraft returned to St Nazaire on the 28/29th with a smallish Lancaster contingent, and again produced concentrated bombing of the port area for the loss of just two aircraft. The sole Lancaster casualty was 97 Squadron's ED754, which crashed into the sea, and took with it the crew of F/O Weight. Success at Berlin continued to elude the Command on the 29/30th, when most of the bombs fell into open country, and it was a disappointment compounded by the loss of twenty one aircraft. 97 Squadron's W4175 made it all the way home as far as Coningsby, before crashing into the village and killing F/O Norton and all of his crew. The Jones gang completed their second trip to the Capital in three nights in W4932, and were now exactly halfway through what they assumed at the outset was to be a standard tour of thirty operations. The month had brought a promising start to the Ruhr campaign, but targets beyond the range of Oboe were continuing to be a problem. April would prove to be a frustrating month, and the least rewarding of the entire campaign, although this would result largely from the number of operations mounted to targets beyond the range of Oboe.

April did, however, get off to a good start, when Essen again suffered widespread destruction in its central and western districts on the 3/4th, but a raid on Kiel on the following night, for which the largest non-1,000 force to date of 577 aircraft took off, reflected what would be the Command's fortunes for much of the month. Decoy fires helped to lure away many bomb loads, and few fell into the target area. The Jones crew were involved in both operations in ED781 and R5614 respectively, and it was in the former that they participated in an attack on Duisburg on the 8/9th. This was another disappointing effort against Germany's largest inland port, which managed to destroy only forty buildings, ten less than in a follow-up raid by a hundred Lancasters twenty four hours later. ED781 continued as the Jones crew's chariot for a raid on Frankfurt on the 10/11th, but this also failed completely, and it was not until a trip to Italy on the 13/14th that success was gained, and this was against the docks at La Spezia, where heavy damage resulted. ED781 carried the Jones crew safely there and back, and this proved to be their last operation for almost six weeks. The creep-back phenomenon, which was an ever present feature of Bomber Command operations, rescued to some extent an attack on Stuttgart on the 14/15th, by spreading across an industrial suburb, but few bombs fell into the intended target area of the city centre. Harris split his strength on the 16/17th, sending over three hundred Lancasters and Halifaxes to attack the Skoda armaments works at Pilsen in Czechoslovakia, while a predominately Wellington and Stirling force carried out a diversionary raid on Mannheim. The former was a total failure which cost a massive thirty six aircraft, divided equally between the two types, and a further eighteen aircraft failed to return from the latter, although this was at least a reasonably effective operation.

On the 18th, 97 Squadron was posted from 5 Group to take up duties with the Pathfinder Force, and it moved to its new station at Bourn. The crews were stood down from operations over the next week, while they were introduced to PFF techniques and prepared for their new and exacting role. The first major success of the month since Essen occurred at distant Stettin on the 20/21st, where around a hundred acres in the central districts suffered severe damage. A moderately effective raid fell on Duisburg on the 26/27th, which left three hundred buildings in ruins, this night providing both 97 and 405 Squadrons with their first taste of PFF operations. The last night of the month brought the fourth raid of the campaign on Essen, and

this was the least rewarding to date, with less than two hundred buildings destroyed, although further hits were scored on the Krupps works.

97 Squadron was enjoying a loss free period, having posted missing not a single crew since St Nazaire at the end of March. May would also be kind to the squadron, despite a hectic schedule, and it would also bring a return to winning ways for the Command. Dortmund was selected to host the largest non-1,000 raid to date on the 4/5th, for which 596 aircraft took off. It was an outstanding success, characterizing the improving effectiveness of operations during May, and the size of the force even allowed a proportion of the bombing to go astray, without compromising the whole attack. Over twelve hundred buildings were destroyed, but the defenders again had their say, and thirty one aircraft failed to return. It was on this night that the squadron suffered its only casualty of the month, when ED880 overshot its landing at Waterbeach on return, and the pilot, Sgt Reilly, was killed, while three of his crew sustained injuries. Following a week's stand-down, another large force took off for Duisburg on the 12/13th, and finally produced a copybook attack on this target, which wilted under a hail of accurately placed bombs. Almost sixteen hundred buildings were left in ruins, and sixty thousands of tons of shipping was sunk or damaged in the port. Losses continued to cause grave concern, however, and on this night they amounted to thirty four heavy bombers, to which were added twenty four from a moderately successful raid on Bochum on the following night. While the latter was in progress, a predominately 5 Group force attempted to rectify the recent failure at Pilsen, but again missed the mark, and this operation cost nine aircraft.

On the night of the 16/17th, 617 Squadron carried out its epic attack on the Möhne, Eder and Sorpe Dams, and passed into bomber folklore. A sprinkling of former 97 Squadron airmen played their part, having been posted as founder members to 617 Squadron during March and April. Gibson's flight engineer for Operation Chastise was Sgt Pulford, who joined 97 Squadron on the 25th of November, and completed ten operations before his posting to 617 Squadron on the 4th of April. F/L Maltby began his first tour with 97 Squadron in June 1942, and returned for his second just ten days before the call came through from Gibson on the 25th of March. With him went his crew of P/O Fort, and Sgts Hatton, Nicholson, Simmonds and Stone, and although they would return from the dams, having seen their bomb seal the fate of the Möhne, they would be lost in the North Sea in September, following a recall while bound for the Dortmund-Ems Canal. The larger-than-life, irrepressible American F/L Joe McCarthy began his operational career with 97 Squadron, and had completed twenty nine sorties before his posting to 617 Squadron in March. Like Maltby, he took with him his crew of F/O Rodger, F/S McLean and Sgts Batson, Johnson and Radcliffe. They would attack the Sorpe Dam and cause crumbling of the crest before returning safely to Scampton, and all would survive the war. New Zealander F/L Les Munro's crew of F/O Rumbles and Sgts Appleby, Clay, Haworth and Pigeon was the other former 97 Squadron outfit to participate in Operation Chastise, but their efforts would end in disappointment, after flak from the island of Texel forced an early return. McCarthy and Munro would go on to complete illustrious careers with 617 Squadron. becoming flight commanders under Cheshire during the squadron's finest period in mid 1944.

After a nine day rest from operations for the majority of the heavy squadrons, a new record non-1,000 force of 826 aircraft was launched on the 4/5th against the unfortunate city of

Dortmund, which had hosted the previous record at the start of the month. Central, northern and eastern districts bore the main weight of bombs, and they were left devastated to the tune of almost two thousand buildings destroyed. Far from a one sided affair, however, thirty eight bombers were brought down by the defences, the heaviest loss of the offensive to date, and no answer could be found to the burgeoning effectiveness of the enemy nightfighter force. This operation signalled a return to the fray for the Jones crew, who completed their sortie in ED917. Results at Düsseldorf on the 25/26th were not commensurate with the effort of launching over 750 aircraft, particularly when viewed against the loss of twenty seven of their number, but moderate success was gained at Essen on the 27/28th, despite stray bombs falling onto other nearby towns. The Jones crew was flying in ED870 on this night, and the Lancaster brought them safely back home. The last major operation of the month, on the 29/30th, was directed at the town of Barmen, which, with its twin Elberfeld, was known jointly as Wuppertal. The attack developed into a frightening demonstration of the power of Bomber Command when everything went according to plan. After the flames had died down, around 80% of the town lay in ruins, and the catalogue of destruction included almost four thousand houses, all but one of the most important war industry factories, and over two hundred other industrial units. The death toll was also the highest to date at a German target, and numbered over three thousand people. In return, the defenders shot down thirty three bombers, but 97 Squadron's remarkable record of loss free operations remained intact, and the Jones crew completed their 23rd operation, again with the help of ED917.

Minor operations took the Command through to the 11/12th of June, when over seven hundred aircraft raided Düsseldorf, and delivered upon it its most destructive assault to date. Even though an errant Oboe marker fell miles from the target and attracted a proportion of the bombing, that which hit the city devastated over a hundred acres in central districts. However, a further thirty eight missing aircraft was right on the margin of acceptable and sustainable losses, and "Happy Valley" was gaining an unpopular reputation among the hard-pressed crews. ED917 "Queenie" again came up trumps for the Jones crew, and brought them home without mishap. Twenty four aircrast sailed to return from Bochum on the 12/13th, and this included one from 97 Squadron, ED816, which was a victim of flak over Holland. F/S Thomas and three of his crew were captured, while the remaining three died in the crash, and this was the first 97 Squadron crew to fail to return from operations for ten weeks. Sgt Jones and his colleagues were operating in ED928 for the first time, and having returned safely, they remained off the order of battle for a week. Seventeen Lancasters were lost from a smallish but highly destructive raid on Oberhausen on the 14/15th, and a similar size of force of almost two hundred aircraft, carried out the first of four raids on Cologne over a three week period. This was on the 16/17th, and fourteen aircraft were missing from what was a moderately destructive raid, which was marked by H2s rather than Oboe.

A predominately 5 Group operation took place on the 20/21st against the highly industrialized town of Frierichshafen, deep in southern Germany. The specific target was the old Zeppelin works, where Würzburg radar sets were being produced, and it was decided to employ the services of a Master Bomber, a role pioneered by Gibson at the Dams. W/C Slee was selected, but his aircraft developed engine trouble, and he handed over to W/C Gomm of 467 Squadron. Four 97 Squadron Lancasters were provided to mark the target for the first phase,

and among them was the Jones crew in ED870. The second phase adopted the 5 Group "time and distance" method, and sufficient bombs hit the small factory area to cause substantial damage. In the first "shuttle" raid of the war, the aircraft flew on to bases in North Africa, where they would remain for a day or so. This preceded a hectic round of four major operations in the space of five nights, which began at Krefeld on the 21/22nd. Accurate Pathfinder marking was exploited by a large main force contingent, and the centre of the city was swallowed up by flame. The largest catalogue of destruction at a single target to date included over five and a half thousand houses, and amounted to almost 50% of the city's built-up area, with more than a thousand people killed. The forty four RAF bombers which failed to return also represented a new record for the Ruhr campaign, and 97 Squadron's fellow Pathfinder unit, 35 Squadron, lost six Halifaxes on this night. Mülheim suffered the destruction of over 60% of its built-up area on the following night, but the Command paid the price of thirty five more aircraft and crews. Among them was 97 Squadron's ED928, in which P/O Armstrong and four of his crew lost their lives when it crashed into the Dutch city of Utrecht. The Jones crew sat out both operations in North Africa, and on the return flight on the 23/24th bombed La Spezia. After a night's rest, over six hundred aircraft took off for the Elberfeld half of Wuppertal, and delivered an attack of even greater ferocity than that which decimated its twin Barmen a month earlier. When the smoke had cleared, there was little left other than gutted shells, and eighteen hundred people lay dead. The tally of missing Bomber Command aircraft rose by another thirty four after this operation, and for the second raid running, 97 Squadron was represented among them, LM327 disappearing without trace with the crew of F/L Moore DFC.

In terms of damage inflicted, these last three operations had been an outstanding success, but at 6%, losses were above the sustainable limit. The run of successes came to an end at the oil town of Gelsenkirchen on the 25/26th, when the results were more reminiscent of 1942, with bombs sprayed all over the Ruhr, and few if any at the intended target. A loss of thirty aircraft for no worthwhile return compounded the disappointment, but spectacular success lay ahead with the resumption of the series against Cologne three nights later. A force of over five hundred aircraft reached the Rheinland Capital, and inflicted upon it its worst experience of the war, far surpassing even the thousand bomber raid of May 1942. Residential, industrial, commercial, public, administrative and military property all shared in the destruction of over six thousand buildings, more than four thousand people died, and a further 230,000 were made homeless. In comparison with recent setbacks, the loss of twenty five aircraft could be viewed as moderate, but 97 Squadron again posted missing a crew, that of F/L Seward in LM323, which was shot down by a nightfighter over Belgium with no survivors. W/C Jones left the squadron on a posting, and he was replaced on the 1st of July by G/C Fresson, who relinquished his post as station commander at Oakington, to combine that position at Bourn with the role of 97 Squadron commanding officer. The assault on Cologne spanned the turn of the month, and six hundred aircraft returned on the 3/4th to heap more misery on the tortured city. It again claimed a 97 Squadron aircraft among the thirty failures to return, however, and this time it was ED917 Queenie, in which P/O Rembridge and his crew were killed. The final raid of the series on the 8/9th employed less than three hundred Lancasters of 1, 5 and 8 Groups, but it was equally destructive, and fell on areas less heavily damaged by earlier attacks. A very modest seven Lancasters failed to return, and 97 Squadron posted missing the crew of F/O Palmer, who were all killed when ED923 fell to the guns of a nightfighter over Belgium. The Jones crew had set out for the target for what would have been their 28th sortie, but EE179 let them down, and they were forced to return early. These three raids in twelve nights laid waste to over eleven thousand buildings, killed almost five and a half thousand people, and bombed a further 350,000 out of their homes, at a cost to the Command of sixty two heavy bombers, or a sustainable 4% of those despatched.

By the time another failure had taken place at Gelsenkirchen on the 9/10th, the Ruhr offensive had effectively run its course, although two more operations would be mounted to the region at the end of the month. Harris could look back over the past five months with genuine satisfaction at the performance of his squadrons and of Oboe, and at the damage which had been wrought in Germany's industrial heartland, much of which now lay in ruins. Despite the grievous losses, the Command was still well placed for what lay ahead, and the factories were more than keeping pace with the rate of attrition. Output was, in fact, even allowing for a gradual expansion, and the Empire Training Scheme was pouring eager new crews into the fray. With confidence high, and with the authorization at last to use, "Window" up his sleeve, Harris now planned the systematic destruction of a major German city, in a short, sharp series of raids, to send shock waves resounding around the Reich. First, however, a number of other operations took place, beginning at Turin on the 12/13th, where heavy damage and casualties were inflicted by elements of 1, 5 and 8 Groups. The now P/O Jones and his crew took part in a new Queenie, ED867, which brought them safely home, and this remained their aircraft for next three operations, which were to Hamburg twice and Essen in between.

Having been spared by the weather from hosting Operation Millennium in May 1942, Hamburg now suited Harris's criteria perfectly for Operation Gomorrah. As Germany's second city, it enjoyed political as well as industrial prominence, particularly as a centre of U-Boat production. Other considerations of an operational nature also made Hamburg an attractive target, and these were its close enough proximity to the bomber stations to be reached in the few hours of darkness afforded by mid summer, its access from the sea without the need to traverse large areas of enemy territory, its location close to an easily identifiable coastline, and beyond the range of Oboe, it had the wide river Elbe as a distinguishing feature for the H2s screens. When almost eight hundred bombers took off and set course for Hamburg on the evening of the 24th, they carried with them thousands of bundles of Window, the tinfoil-backed strips of paper which was designed to render the nightfighter, searchlight and gun-laying radar ineffective.

Few combats took place during the outward flight, but a number of aircraft were shot down at this stage through being off course and outside of the protection of the bomber stream and Window. Once in the target area, the efficacy of Window was made immediately apparent, by the absence of the usually efficient co-ordination between searchlights and flak, and this allowed an opportunity for the Pathfinders to mark accurately. In the event, the markers did not fall precisely where planned, and an extensive creep-back developed, which cut a swathe of destruction from the city centre across the north-western districts along the line of approach, and out into open country, where a proportion of the bombs were wasted. Neverthe-less, it was a successful first round in the battle, and the loss of only twelve aircraft

suggested that Window, for the time being at least, represented a break-through in the war against the nightfighter menace. To take advantage of the body blow dealt to the enemy defensive system by Window, Harris switched his force to Essen on the following night, and an outstandingly concentrated attack destroyed almost three thousand houses, and inflicted the greatest damage to date on the Krupps works for the loss of twenty six aircraft.

A night's rest preceded the second Hamburg operation, which again involved almost eight hundred aircraft on the 27/28th. What followed their arrival over the city was both unprecedented and unforeseeable, and resulted from a combination of circumstances. A period of unusually hot and dry weather during July had produced tinderbox conditions within the city, and the spark to ignite it came with the Pathfinder markers. These fell around two miles east of the planned aiming point, and with great concentration into the densely populated working class residential districts of Hamm, Hammerbrook and Borgfeld. The main force followed up with unaccustomed accuracy and almost no creep-back, and deposited much of their 2,300 tons of bombs into this relatively compact area. The individual fires joined together to create one giant conflagration, which sucked in oxygen from surrounding areas to feed its voracious appetite. Hurricane force winds tore up trees and flung them bodily into the seat of the inferno, along with debris and people, and temperatures exceeded one thousand degrees centigrade. This meteorological phenomenon, the first recorded firestorm in history, was an unplanned by-product of the unusually concentrated nature of the bombing, and on this night alone, over forty thousand people lost their lives. The Jones crew returned safely along with the rest of the squadron participants, and they would not be called into action again for almost a month. Seventeen bombers were missing from this operation, but over 750 crews were available two nights later to continue the onslaught, when another 2,300 bombs rained down onto the beleaguered city, some of that from the creepback falling into the already devastated firestorm area. Other districts also suffered heavy damage, however, and large fires again burned out of control, with the emergency services unable to make more than a token effort. A large evacuation had begun on the morning after the firestorm, and this undoubtedly saved many lives. It was only a matter of time before the Luftwaffe recovered from the effects of Window, and the loss of twenty eight bombers on this night suggested that this process was well in hand. 97 Squadron posted missing its first crews for three weeks, and it was the first time since December, that more than one had failed to return from a single operation. More remarkable still, was the fact that this was only the third time since the squadron's reformation in February 1941, that the loss from a single operation had exceeded one aircraft. P/O Marks DFM and his crew were lost without trace in ED862, and there were no survivors either from the crew of P/O Schnier in EE172, which was shot down by a nightfighter. The tours of both these crews parallelled that of the Jones crew, and the above mentioned were lost on their 30th and 28th sorties respectively. On the 30/31st, a comparatively small force raided Remscheid, and destroyed over 80% of its built-up area, and this operation brought down the final curtain on the Ruhr campaign.

August was, in its way, a momentous month, which brought the conclusion of Operation Gomorrah, the final operations of the war against Italy, a one-off raid of vital importance, and the opening of a new offensive, which Harris believed could bring an early end to the war. The final raid of the Hamburg series took place on the $2/3^{rd}$, and was rendered ineffective by

violent electrical storms during the outward flight, which persuaded many crews to bomb alternative targets or to jettison their bombs over the North Sea. Little further damage occurred at Hamburg, but clearly the Nazi authorities had been shaken by the week's events. and those citizens leaving the battered city did so under strict instructions to remain silent about what they had witnessed. During this short campaign, 97 Squadron despatched seventy four Lancaster sorties, all but two of which completed their assigned tasks, and lost the two crews mentioned above. (The Battle of Hamburg. Martin Middlebrook). Italy was now teetering on the brink of capitulation, and a series of operations was launched against its cities between the 7/8th and 16/17th, the first of which was by a contingent from 1, 5 and 8 Groups against Genoa, Turin and Milan. ED948 suffered a non-operational undercarriage collapse in the hands of F/O Berridge and his crew while taxying at Wyton on the 9th, and later that evening, over four hundred aircraft took off for Mannheim. A scattered attack ensued, which never-the-less resulted in the destruction of thirteen hundred buildings, for the modest loss of nine aircraft. Over six hundred crews set course for Nuremberg on the following night, and a successful raid developed, which caused extensive damage in central and southern districts. Again losses were moderate at sixteen aircraft, but there were two empty dispersals at Bourn that morning, which should have been occupied by ED939 and JA716. P/O Baker and four of his crew were killed in the former, while their two colleagues survived to fall into enemy hands. In contrast, all survived from the latter, which was shot down by a nightfighter over Belgium on the way home, F/L Covington and one of his crew ultimately evading capture, while the others also fell into enemy hands. Milan was the target for all but 3 Group on the 12/13th, and this was followed up by 1, 5 and 8 Group aircraft on the 14/15th and 15/16th.

Since the outbreak of war, the government had been aware through intelligence reports, that German scientists were carrying out research into rocketry. Churchill's chief scientific adviser, Professor Lindemann, or Lord Cherwell as he became, steadfastly refused to accept the feasibility of such weapons, and remained unmoved even in the face of incontrovertible proof. A PRU Mosquito operating in the Peenemunde area on the Baltic coast, captured a V-2 on film at the rocket research and development establishment in June 1943, but Lindemann offered an alternative explanation of its purpose. However, Duncan Sandys and the brilliant scientist, Dr R V Jones, convinced Churchill of the need to act, and a decision was taken to attack the site at the first available opportunity. This arose on the night of the 17/18th, and it was vitally important that success be gained at the first attempt, to avoid what would probably be a costly return. The operation was carefully planned, and was to benefit from the presence of a Master of Ceremonies, a role for which 83 Squadron's G/C Searby was selected. It was to be conducted in three waves, each assigned to a specific target in strict sequence. The first aiming point was the housing estate where the scientists and workers lived, the second wave would attack the factory, and the third wave the experimental site, with the Pathfinders responsible for shifting the point of aim accordingly. 596 crews answered the call for a maximum effort, the numbers somewhat depleted by the late return to their stations, after being diverted, of some of the 3 Group Stirlings, which had carried out the final raid of the war on Italy the night before.

97 Squadron's contribution was seventeen aircraft and crews, led by W/C Alabaster, who was flying with F/L Eaton-Clarke and crew in JA846. W/C Alabaster would survive this operation,

and eventually go on to command 608 Squadron of 8 Group's Light Night Striking Force between November 1944 and March 1945. The other crew captains and aircraft were, S/Ls Garlick, Rodley and Sauvage in EE105, ED839 and JA908 respectively, F/Ls Clayton and Robertson in ED814 and JA958, F/Os Berridge, Fletcher, Riches and de Wesselow in JA711, ED869, EE176 and EE179, P/Os Brown, Fairlie, Montgomery and Munro in EE107, ED950, ED875 and ED938, F/Ss Pond and Stevenson in JA707 and ED868, and Sgt Saxton in ED870. The initial marking of the housing estate went awry, and this resulted in bombs falling onto the forced workers camp at Trassenheide over a mile beyond, and many casualties were inflicted upon these friendly foreign nationals who were trapped inside their wooden barracks. Once rectified, the operation proceeded according to plan, and all three aiming points were bombed. A spoof raid on Berlin by Mosquitos of 139 Squadron was successful in keeping nightfighters away from the area until the final stages of the attack, when predominately 5 and 6 Group aircraft were bombing. Having arrived on the scene, however, they proceeded to take a heavy toll of aircraft both in the skies above Peenemunde, and on the route home towards Denmark, and in all, forty aircraft failed to return. 97 Squadron came through unscathed, and all its crews carried out their assigned tasks. While not totally successful, sufficient damage was caused by the operation to delay the development programme by a number of weeks, and ultimately force testing to be carried out in Poland, out of range of Harris's bombers.

Harris could now embark on the offensive which seemed to have dominated his thoughts for some time. He had long believed that Berlin, as the seat and symbol of Nazi power, held the key to ultimate victory, and that its destruction, along the lines of Hamburg, would so loosen the authorities' grip on the populace, that they might rebel against the leadership. He had stated, that with the involvement of the American 8th bomber force, he could "wreck Berlin from end to end", and win the war without the need for the kind of bloody and protracted land campaigns which he had personally witnessed during the Great War. The Americans, however, were committed to a land campaign, and would not accompany Harris to Berlin, and he must have suspected all along that he would be going there alone. Before the offensive opened, however, he despatched over four hundred aircraft to Leverkusen on the 22/23rd, when in an echo of the past, bombs were sprayed liberally over a wide area of the Ruhr. The Jones crew returned to operations on this night in EE105, another Queenie, ED867 having moved on to 467 Squadron. The former Sergeant and Pilot Officer pilot was now sporting the insignia of a Flight Lieutenant, and the other members of his crew would also by this time have advanced in rank. The first phase of the Berlin offensive would comprise three operations, on the nights of the 23rd, 31st and 3rd of September, after which there would be an autumn break. The Jones crew was among the 727 aircraft which took off after 20.00 hours on the 23rd and headed for the Capital. They were in JA958, while Oueenie was in the hands of another crew, and both contributed to the delivery of a partially successful assault, which destroyed or seriously damaged over 2,600 buildings, this representing the most effective raid of the war to date at this target. Also afflicted though, were many outlying communities, and this would become a feature of all future attacks on the city. Berlin would always be fiercely defended, and this night brought a record loss to the Command of fifty six aircraft, and in a sign of the increasing vulnerability of the Stirling, its losses amounted to 12% of those despatched. In a sign also that 97 Squadron must become accustomed to more frequent multiple losses, it suffered two on this night. ED950 was shot down over Germany, with only one survivor from the crew of P/O Fairlie, and EE105, Queenie, failed to survive a brush with an enemy intruder over Norfolk on return, and crashed. One of the crew was killed in the engagement, and the others abandoned the stricken Lancaster, the pilot, Sgt Chatten, doing so last and from a perilously low altitude. He sustained injuries on landing, although these would not prevent him from completing a full Pathfinder tour.

Having enjoyed a successful night at Nuremberg earlier in the month, the raid on the 27/28th was a disappointment, and problems with H2s hampered the Pathfinders, as they tried to correct the development of a pronounced creep-back. Some scattered bombing hit the fringes of the city, but a lot probably fell in open country. Thirty three aircraft was a substantial loss on top of those missing from Berlin, and 97 Squadron posted missing two more crews, those of F/S Pond and F/L Robertson in JA707 and JA958 respectively. The former was attacked by a nightfighter, and brought to a crash-landing in Luxembourg, where two of the crew were found to be dead. The pilot and three others evaded capture, and the remaining two of the eight man crew were marched off for a spot of extended leave in a POW camp. The other Lancaster crashed in Germany, killing the pilot and four of his crew, while the two survivors also became POWs. One wonders whether the Jones crew was beginning at this stage to get the feeling that they were going to make it to the end of their tour. The last two Lancasters flown by them to Germany had been lost on their very next operations, although this was something which couldn't happen again. As a sign of their now senior status within the squadron, they were assigned their own Lancaster, the brand new JA963, another Queenie.

They had sat out the Nuremberg operation, but took the new Q to the twin towns of Mönchengladbach and Rheydt on the 30/31st, for the first heavy raid of the war on these targets. Unfortunately for the inhabitants, it was one of those occasions when the plan worked perfectly, and 2,300 buildings were reduced to rubble. In comparison with what was to come over the winter, the loss of twenty five aircraft from this operation would seem moderate, but when one considers that this represented one complete three flight squadron being wiped out in one night, it assumes a different perspective. The last night of the month brought the second Berlin raid in the current phase, and it was a complete failure, which deposited bombs up to thirty miles back along the approach. It was a failure which was compounded by the loss of a massive forty seven aircraft, the Stirlings again suffering disproportionately high casualties, and the Halifaxes were not far behind. 97 Squadron's JA916 was one of ten missing Lancasters, and was shot down in the target area by a nightfighter. Flight commander W/C Ken Burns and four of his crew managed to extricate themselves from the stricken bomber either before, or in the case of the pilot, when it exploded in the air, and he lost a hand. All the survivors were taken into captivity, and Burns was eventually repatriated and remarkably, returned to duty. This was the Jones crew's 34th operation, and the 35th came when an all Lancaster heavy force returned to the Capital on the 3/4th of September. Much of the bombing again fell short, although some hit an important industrial district to good effect, and also caused damage to residential areas. There were no 97 Squadron aircraft among the twenty two missing, but F/O de Wesselow and his crew had a lucky escape, when a target indicator exploded during the outward flight, and they were forced to return early. Following examination, JA966 was declared beyond economical repair, and was struck off charge.

It had been a bruising start to the Berlin offensive, and there would now be an autumn break until the long, dark nights returned to cloak the bombers' presence. As if to atone for the unsatisfactory results of the past two weeks, the twin cities of Mannheim and Ludwigshaven were subjected to a massively destructive raid on the 5/6th, but the Command's losses went on unchecked, and this success was paid for by thirty four aircraft and crews. The Jones crew was present on this operation, and on the following night, when Munich escaped serious damage, and the Halifax contingent was hard hit, losing thirteen out of the sixteen missing aircraft. Minor operations occupied the next two weeks, but whenever elements of the main force were engaged in bombing, as opposed to mining, a PFF presence was invariably required. Two operations in mid month provided a change of scene, and involved targets in France. On the 15/16th, 3, 4 and 6 Groups targeted the Dunlop Rubber factory at Montlucon, with a Pathfinder element which included the Jones crew. It was an outstandingly successful raid against a precision target, and was helped by the presence of W/C Dean of 35 Squadron as Master Bomber. The following night's effort against railway yards at Modane in the south was not successful, largely because of its difficult location in a valley. On the 22/23rd, the first operation took place in a series of four against Hanover, which would be spread over the ensuing month. It was not a success, but the Jones crew added another sortie to their tally. Some compensation was gained at Mannheim on the following night, when it suffered its second harrowing night of the month. Two 97 Squadron crews failed to return to Bourn from this operation, those of W/O Stevenson in ED868, which crashed in Germany with no survivors, and F/L Fletcher in JA708, he and three of his crew surviving as POWs. This was the Jones crew's 40th operation, and their next was the second Hanover raid on the 27/28th, which fared no better than the first, and the number of missing bombers from these three raids in the space of six nights amounted to ninety six, or the equivalent of four complete three flight squadrons.

A Pathfinder contingent joined 1 and 5 Groups to open the October account at Hagen on the 1/2nd, and having dealt very satisfactorily with this small town, the same Groups scored a moderate success at Munich on the following night. It was the start of a hectic first eight nights of the new month, which continued at Kassel on the 3/4th, where substantial damage to the western fringes compensated for many bomb loads being wasted on outlying communities and open country. A terrifying ordeal awaited this target in less than three weeks, but in the meantime, Frankfurt was subjected to a heavy assault on the 4/5th by a force numbering under four hundred aircraft. This brought about the demise of 97 Squadron's JA923, and F/L Brown and his crew died in its wreckage in Germany. A telling blow by a smaller force hit Stuttgart on the 7/8th, on the night that saw the operational debut of 101 Squadron's ABC radio countermeasures Lancasters, and this was the first operation of the month for the Jones crew. In contrast to the high casualties suffered by the Command during the three main raids at the end of September, these five operations at the start of October cost a total of forty eight aircrast, a remarkable 50% sewer. Hanover had so far escaped serious damage, but the third raid in the series, employing five hundred aircraft on the 8/9th, was an outstanding success, and this time all the bombs fell within the built-up area, destroying almost four thousand buildings. Operations to central Germany were rarely completed without fairly high casualties, and twenty seven bombers failed to return on this night. 97 Squadron's JB174 was destroyed by an explosion in the nose while over the target, and only the pilot, P/O Nicholl,

survived to be taken prisoner. The Jones crew completed this operation without mishap, and it would be almost two weeks before they notched up their next sortie. They were, in fact, detailed for the final Hanover raid on the 18/19th, but F/L Jones and his wireless operator reported sick with heavy colds, and S/L Garlick borrowed the flight engineer to fill in for his, who was also unavailable. The raid was conducted by an all Lancaster force, and a lot of earth was turned outside the city. The squadron's JB220 was one of eighteen failures to return, and this crashed in Germany with just one survivor from the crew of F/L Moodie. An attempt to hit the distant city of Leipzig foundered in foul weather on the 20/21st, and the squadron posted missing the crew of P/O Painter, who died with four of his crew in JB275. This was the penultimate operation of their tour for the Jones crew, and although the flight engineer had now done his forty five, crew loyalty insisted he be present at Kassel on the 22/23rd. A night of terror for this city began with the accurate visual marking of its centre by the Pathfinders, and the main force followed up with concentrated bombing, setting off a similar chain of events which had devastated parts of Hamburg in July. The hundreds of individual fires joined together to create the second firestorm of the war, although it was by no means as extensive as the first, and over twenty six thousand individual dwelling units were destroyed. The death toll was probably in excess of eight thousand people, but the defences hit back, and claimed forty three bombers, the Halifaxes again faring disproportionately badly. The Jones crew returned safely to Bourn for the forty fifth time, not counting their five aborted sorties, and the celebrations began. This was the last major operation of the month, and only one would take place in early November, before the decks were cleared for the resumption of the Berlin offensive.

The above mentioned raid fell to good effect on Düsseldorf on the 3/4th, while a small contingent of 8 Group Lancasters and Mosquitos delivered a highly accurate attack on Cologne as a diversion without loss. 8 Group also supported two minor operations to French railway targets, and on the eve of the return to Berlin, the Group operated alone, successfully bombing the I G Farben chemicals factory at Ludwigshafen by using H2s without target indicators. The long and rocky road to Berlin was rejoined on the 18/19th by an all Lancaster force, while a predominately Halifax and Stirling effort was directed at Mannheim and Ludwigshafen as a diversion. The Berlin force produced scattered results, and the loss of just nine Lancasters was probably indicative of the success of the diversionary raid, which suffered higher casualties. This night signalled the most expensive week of its operational career to date for 97 Squadron, and Berlin would be the main culprit. JB367 was hit by flak over Aachen, and struggled back over Belgium, where it was abandoned by all of the crew except the pilot, F/S Johnson DFM, who died in the ensuing crash. His crew all arrived safely on the ground, and three of them ultimately evaded capture. A maximum effort was called on the 22/23rd, with Berlin again the objective, and despite complete cloud cover, which was invariably the case over this part of Germany in winter, an outstandingly successful operation took place, which devastated an area of the Capital from the centre to the western suburbs, and produced large areas of fierce fire. It was the most effective raid of the war on this target, and was accomplished for the loss of twenty six aircraft. Two empty dispersals at Bourn showed that JB227 and JB238 had failed to make it back, the former disappearing without trace with the crew of F/L Munro, and the latter producing four survivors from the crew of P/O McEgan, although he was one of those who died in the crash in Germany. A

predominately Lancaster force returned on the following night, and continued the success gained twenty four hours earlier, guided to the mark by the glow of fires still burning beneath the clouds. 97 Squadron again posted missing a crew among the total of twenty missing Lancasters, and only the pilot, F/S Penny, survived the demise of JB218, and he fell into enemy hands.

After a night's rest, and before the next assault on Berlin, Frankfurt was raided by Halifaxes of 4 and 6 Groups, with a few Lancasters in support, and 8 Group providing the marker force. It was only moderately effective, and cost eleven Halifaxes and the 97 Squadron Lancaster containing the crew of F/L Brown, who were all killed when JB221 crashed in Germany. The fourth operation to Berlin since the resumption took place on the 26/27th, by an all Lancaster heavy force. Following inaccurate marking by the Pathfinders, the attack should have been a failure, but the majority of the bombing fell within the north-western districts, and many war industry factories were destroyed or damaged. For the first time since the resumption, 97 Squadron came through from Berlin unscathed, but December was about to deliver a sting in the tail, and visit a disaster on the squadron which was totally out of proportion to anything it had experienced in the past. This had been the most effective series of raids on Berlin during the entire war, and a massive catalogue of damage included over one hundred thousand dwelling units destroyed, and four times that number damaged. The death toll was also high at over four thousand people, but it would be generally downhill from here on for the Command, and those operations which remained to be negotiated over the next four months would bring a pattern of ever decreasing returns. The Stirling casualties had been giving cause for concern for a considerable time, and after the raid of the 22/23rd, they were withdrawn from operations over Germany.

The new month began with the now familiar briefings for Berlin on the 2nd, for a predominately Lancaster operation that night. It was an inauspicious start to December, the results at Berlin falling well short of being commensurate with the effort expended and the cost incurred. The bombing was partially wasted in open country, and that which hit the Capital lacked any concentration. Some useful industrial damage did not compensate for the forty missing aircraft, and 97 Squadron's run of losses at Berlin continued on this night with the failure to return of JB190. Five of the crew successfully abandoned the Lancaster over northern Germany, but S/L Garlick DFC* and one other lost their lives. Twenty four hours later, Leipzig was targeted by a force of around five hundred aircraft, and in contrast to the night before, this was a highly successful operation, which left in its wake extensive damage to industry and housing alike. JB232 did not arrive back at Bourn from this operation, and its fate was never determined, P/O Coleman and his crew becoming the latest entries in the squadron's growing Roll of Honour. It was left to the Mosquitos of 8 Group to harass the enemy from this point until mid month, before the Lancaster crews were briefed for the sixth trip to the "Big City" since the resumption.

The night of the 16/17th will forever be remembered for what happened when the tired crews returned to their stations following a moderately successful raid, which again achieved no concentration, and mostly fell onto residential districts. Twenty five aircraft were lost to the defences, including 97 Squadron's JA963, the Lancaster which had seen the Jones crew

through the last twelve sorties of their tour, and in which the eight man crew of F/L Brill were killed. On return sometime after midnight, the surviving crews encountered an impenetrable blanket of fog. particularly in the area surrounding the 8 Group stations, and the nightmare began of fumbling blindly through the murk to find somewhere to land. It had the direct of consequences for 97 Squadron, whose crews began to call for assistance over the radio, some of them lacking the fuel to stay aloft much longer. At 00.35, F/O Mooney and his crew abandoned JB482 near Wyton, and all arrived safely on the ground for what would be only a temporary reprieve. Also over Cambridgeshire, P/O Smith and his crew were instructed to do likewise and leave JB531 to its fate, and they too owed their lives to the unsung parachute packing heroes, whose parting shot was often, "if it doesn't work, bring it back". At 00.42, JB119 crashed at Bourn, and S/L MacKenzie and two of his crew died at the scene, while their four colleagues sustained injuries. Twenty minutes later, JB117 came down near Graveley, and F/S Scott and his crew were all killed, and after another twenty minutes had elapsed, JB243 crashed nearby, and only one man survived, albeit with injuries. Among the dead was the pilot, S/L Deverill DFC AFC DFM, a veteran of the epic Augsburg raid of April 1942, and two of those who died with him were also holders of the coveted DFM. The night had not yet done with 97 Squadron, however, and at 01.45, JB219 crashed near another PFF station at Gransden Lodge, killing P/O Kirkwood and all others on board. The final tragedy was reserved for F/O Thackway and his crew in JB176, which crashed at Bourn as the clock approached 02.00, one man surviving with injuries and one walking away. Although afflicted to a greater degree than any other squadron, 97 Squadron was not alone in suffering grievous losses on this night, and in all, twenty nine Lancasters crashed or were abandoned by their crews as a result of the conditions. The death toll from these tragic circumstances amounted to around a hundred and fifty airmen. (The timings for the above are taken from Bomber Command Losses Vol 4, by W R Chorley).

After a three night break, the crews of the heavy squadrons set out for Frankfurt on the night of the 20/21st, and produced a moderately effective attack, partly thanks to a beneficial creepback resulting from the bombing of decoy fires and dummy target indicators beyond the intended target. It was another bad night for losses, however, and forty one crews were posted missing, although none on this occasion from 97 Squadron. Two more major operations remained to be negotiated before 1943 was over, both to Berlin, on the 23/24th and 29/30th, the latter the first of a three raid series on the Capital over five nights spanning the turn of the year. Neither was more than moderately effective, and cost a combined total of thirty six aircraft, but 97 Squadron was not represented among them, and in fact had suffered no casualties since the disaster in mid month. All-in-all, it had been a good year for the Command, and a number of highly successful campaigns lay behind it. Even the Berlin offensive had thus far inflicted widespread damage, and losses had been no heavier than those experienced at the Ruhr, but Berlin was no Hamburg, and its modern layout, wide streets and open spaces provided natural firebreaks, which would save it from the fate suffered by some of the other places visited by the Command during the year, 97 Squadron had a remarkable record compared with many others, and its low point was at the hands of the weather rather than the enemy. The New Year would see a continuation of its lower than average losses once the winter campaign was over, and this would also bring another change of role.

New Year's Day brought the arrival of a new commanding officer to replace G/C Fresson, who had relinquished his station commander role on the 24th of November, but had remained at 97 Squadron. W/C "Jimmy" Carter would preside over the next round of operations to Berlin, and see the squadron through until his loss on D-Day. He was an experienced officer, who had formerly commanded 150 Squadron during the second half of 1942. No doubt the crews of Bomber Command and the inhabitants of Berlin shared the common wish, that the Capital would cease to be the main focus of attention from now on, but it was not to be, and it would be some time yet before both camps' hopes were realised. Berliners first and Germans second, 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 developed a strong sense of community. Banners were paraded through the shattered streets proclaiming, "You may break our walls, but not our hearts," and the most popular song of the day, the melodic Nach jedem Dezember kommt immer ein Mai, After every December comes always a May, was played endlessly over the radio, hinting at a change of fortunes with the onset of spring.

Before New Year's Day was over, however, four hundred Lancasters were winging their way eastwards, arriving over Berlin at around 03.00 on the 2nd. It was not a promising start to the year for the Command, and a lot of bombs were wasted on wooded and open country. Twenty eight Lancasters fell victim to the defences, and 97 Squadron registered its first loss of 1944. when JA960 failed to return, and this time F/O Mooney and his crew were not saved by their parachutes. A few Halifaxes and Mosquitos accompanied the Lancasters back to Berlin on the following night, and twenty seven of the last mentioned were missing from a raid which produced only superficial scattered damage. This time there were no empty dispersals at Bourn, but when another predominately Lancaster force was switched to distant Stettin on the 5/6th, it cost the squadron two aircraft, although the operation produced a successful outcome as some compensation. JB191 and JB720 were the errant Lancasters, and they contained the crews of P/O Flack and F/O Anstee respectively, only one man from each surviving to fall into enemy hands. The heavy squadrons enjoyed a stand-down from operations until mid month, and the crews at briefings on the 14th must have been pleased to see the red tape on the wall maps stop short of Berlin. It stopped, in fact, at Brunswick, a city in the same region of Germany as Hanover, which had proved such a difficult nut to crack during the autumn. All but two of the five hundred strong force were Lancasters, and a massive thirty eight of these failed to return from a raid which almost entirely missed the target. 97 Squadron posted missing the crews of P/O Hodgson and F/L Steven in JB726 and ND421 respectively, and twelve crewmen were killed, including both pilots.

Six nights later it was back to Berlin, this time with a force of well over seven hundred aircraft. Complete cloud cover left the crews uncertain as to the effectiveness of their attack, but it was later established that much of the bombing had fallen into the hitherto less severely damaged eastern districts. It was the Halifax contingent which represented the bulk of the thirty five missing aircraft on this occasion, and like the Stirling before it, the older versions of this aircraft would soon be withdrawn from operations over Germany. There were thirteen Lancasters which also failed to make it home on this night, and a bad month for 97 Squadron

became worse when the crew of P/O Wakley had to be posted missing. He and three of his crew were killed when ND367 crashed, and three others fell into enemy hands. Undaunted, Harris launched over six hundred aircraft against Magdeburg on the following night, and suffered his heaviest defeat to date of fifty seven aircraft, and to make matters worse, the raid itself was a complete failure. It had begun badly, when the enemy nightfighter force picked up the bomber stream before it crossed the north German coast, and remained with it all the way to the target, where the raid was ineffective. JB299 was the 97 Squadron representative among the losses, and F/L Roberts was killed with his entire crew. A short lull preceded the next round of operations, which brought three trips to Berlin in an unprecedented four nights at the end of the month. The series began on the night of the 27/28th, and was undertaken by an all Lancaster heavy force numbering five hundred aircraft. Moderate damage resulted from a scattered attack, which sprayed bombs over a wide area of Berlin and the outlying countryside, and cost thirty three aircraft. On the following night, the Halifaxes participated as well in another scattered raid, during which dozens of outlying communities were once more peppered with stray bombs. A substantial amount of damage occurred within Berlin, however, with industry, housing and public buildings alike contributing to the catalogue of destruction, while 180,000 people were bombed out of their homes. The "Big City" continued to take its toll of 97 Squadron crews in this night's heavy loss of forty six bombers, and on this occasion it was those of F/L Wilson and F/O Allison in JB353 and JB712 respectively, no trace of which was ever found. A single night's rest preceded the next Berlin operation on the 30/31st, when Lancasters made up the bulk of the force of over five hundred aircraft. The familiar pattern of widely scattered bombing and substantial damage in the city resulted in a death toll in excess of one thousand people, and the defences hacked down a further thirty three bombers, all but one of them Lancasters. 97 Squadron sacrificed two more crews to this target, those of F/L Clarke in JB535 and P/O Hart in JB659, both victims of nightfighters over Holland, and again there were no survivors. It had been the squadron's worst month to date, with eleven crews posted missing, and the entire Pathfinder force had suffered grievous losses during the period since November, 7 and 156 Squadrons heading the list of those hardest hit. It was a time of numerous sideways postings between the PFF units to fill the gaps created by the loss of experienced crews, arguably the cream of the Command, and squadron and flight commanders were not exempt from the attentions of the Grim Reaper.

Although the crews were unaware of the fact, this series at the end of January represented the final concerted effort against the Capital. Two more operations to this destination lay ahead, but they would be in isolation, one in February and the other in March, and thereafter, no more heavy bombers would be sent there during the war. As events turned out, Berlin was to be the target for the very next raid to be launched, and this took place after a two week enforced stand-down through bad weather conditions. It did, however, provide the Command with a much needed period in which to rest and replenish. This opportunity was put to good use, to the extent that the force assembled for Berlin on the night of the 15/16th was the largest non-1,000 effort to date, and contained in the bomb bays of the 891 aircraft was a record weight of bombs totalling over 2,600 tons. A large proportion of this was effectively deposited into the built-up area of the city, particularly in central and south-western districts, which had been the main recipients of the last raid two weeks earlier. The tenacious defenders played their part in a ferocious battle, and forty three bombers failed to return

home, among them another one from 97 Squadron. ND478 was despatched by a nightfighter over Denmark, and P/O McLean and one of his crew escaped with their lives to become POWs. Three nights later, another force of over eight hundred aircraft set off for Leipzig, and headed into the greatest disaster to befall the Command to date. Nightfighters picked up the bomber stream as it crossed the Dutch coast, and the two forces remained in contact all the way into eastern Germany. Wrongly forecast winds brought some crews to Leipzig ahead of the Pathfinders, where around twenty of them were shot down by the local flak as they waited for the marking to begin. When all the aircraft which were going to return home had done so, there was an unbelievable shortfall of seventy eight, but somehow 97 Squadron managed to escape the carnage and come through unscathed. The Merlin powered Halifaxes suffered disproportionately heavy losses, and these, like the Stirlings before them, were now exempt from operations over Germany.

Despite the catastrophic losses of the night before, almost six hundred aircraft and crews were available for Stuttgart on the 20/21st, and although the ensuing bombing was scattered, much of it fell into central and northern districts, and this caused extensive damage to cultural and industrial buildings. The failure to return of a modest nine aircraft somewhat redressed the balance with regard to recent events, but 97 Squadron registered the loss of a badly damaged JB312 to a crash on final approach to Bourn. It was just another tragedy of war that F/L Emerson and his crew should lose their lives when so tantalisingly close to home and safety. New tactics were employed for the next two operations, which were mounted against Schweinfurt on the 24/25th, and Augsburg on the following night. Each raid took place in two phases, with two hours between, and whilst the former was not in itself successful, the second wave lost 50% fewer aircraft than the first, in an overall casualty figure of thirty three. 97 Squadron again posted missing one of its crews, this time that of F/O Smith in ND497, and there were no survivors. In contrast, the Augsburg operation was a devastating example of Bomber Command at its most destructive, and the highly concentrated attack ripped the heart from this beautiful and historic city, and destroyed by fire centuries of cultural heritage.

The March account opened at Stuttgart on the 1/2nd, and those areas which bore the brunt of the February raid, again received most of the bombs. Thick cloud on the routes to and from the target protected the bomber stream, and remarkably, only four aircraft were missing. The bulk of the main force now enjoyed a break from operations until mid month, but the squadrons equipped with Stirlings and Halifaxes, which had been withdrawn from operations to Germany, were put to work in a new campaign against the French railway system, in preparation for the forthcoming invasion. Once the winter offensive had been concluded at the end of the month, the rest of the Command would join in, but in the meantime, over eight hundred of them returned to Stuttgart on the 15/16th, for the third time in under a month. Sadly, it was not a happy return, and although some bombs fell where intended, the majority found open country, and this disappointment was compounded by the loss of thirty seven aircraft. 97 Squadron posted missing the highly experience crew of F/L Meyer DFC* in JB361, and with him died three other holders of the DFC, and two of the DFM. Two outstandingly accurate and concentrated attacks were delivered on Frankfurt on the 18/19th and 22/23rd, both employing over eight hundred aircraft. Over six thousand buildings were destroyed or seriously damaged in the first raid alone, and following the second one, half of the city was left without electricity, gas and water for an extended period. This success was won at a combined cost of fifty five aircraft, and the squadron was represented among the missing from each operation. JB300 failed to return from the first one, and six men were killed in the crash in Germany, while the pilot, F/O Callan, succumbed to his injuries shortly afterwards. The dispersals of JB731 and ND351 were unoccupied after the second one, the former Lancaster having crashed into the sea, taking with it P/O Moroney and his crew, and the latter falling in Germany, and delivering P/O Cooper and five of his crew into the hands of the enemy.

The final raid of the war on Berlin by Bomber Command's heavy brigade was launched on the 24/25th, for which over eight hundred aircraft again took off, including a contribution of fourteen from 97 Squadron, led by flight commander W/C Dunnicliffe. His remaining time with the squadron would be brief, and on the 18th of April, he would become the first commanding officer of the newly formed addition to the PFF heavy ranks, 582 Squadron. The other crews involved in this milestone operation were those of S/L Lynch, F/Ls Comans, Hyde and Owen, F/Os Benton, Drane, Ellesmere, Reid and Todd, and P/Os Coates, Edwards, Gee and van Rhalte. The operation was beset by an unusually strong wind from the north, which drove the bomber stream off track and broke its cohesion, and this led to the now familiar pattern of scattered bombing within the city, with more than a hundred outlying communities also reporting bombs. Most of the damage was to housing in south-western districts, and about twenty thousand people were bombed out. Nightfighters made their presence felt in the target area, and a substantial number of aircraft were shot down during this stage of the operation. The winds continued to hamper the return flight, and many crews found themselves being driven over heavily defended areas of Germany, and paid the price. Seventy two aircraft failed to return home, over two-thirds of them falling to the flak batteries, which enjoyed their most successful night of the war. This was the fate suffered by P/O Todd and crew of 97 Squadron while traversing the Ruhr on the way home, although they managed to coax a good few miles more out of ND440, before a ditching in the North Sea became inevitable. The pilot and all but one of his crew survived, but they were rescued by the enemy, and marched off into captivity. Less fortunate were their colleagues P/O Coates and his crew in JB671, which crashed in Holland with no survivors. 97 Squadron's contribution to the campaign against Berlin was impressive indeed, but the experiences of the squadron, accustomed as it was to comparatively low losses, was a reflection of the carnage which afflicted all the heavy units of 8 Group throughout this winter of discontent. The squadron was present on all nineteen of the main raids sent against the Capital, and despatched a total of 342 sorties, the fifth highest in the Command. Seventeen of its aircraft failed to return, a further eight crashed in England, and 120 men lost their lives. (The Berlin Raids. Martin Middlebrook).

The period which became known as The Battle of Berlin, or more accurately, the winter campaign, still had a week to run, and two more major operations for the squadrons to negotiate. The first of these was to Essen on the 26/27th, and it was another outstanding raid, thus continuing the remarkable run of successes against this target since the introduction of Oboe to main force operations a year earlier. It was concluded for the notably low loss, in the light of recent events, of just nine aircraft. This was followed on the 30/31st by a standard

maximum effort operation to Nuremberg, for which almost eight hundred aircraft were made available. The only departure from normal routine was the selection of a 5 Group inspired long, straight leg from Belgium across Germany, to a point about fifty miles north of the target, from where the final run in was to begin. This was undertaken in the face of strong and heated protests from 8 Group, whose own raid planners incorporated feints and diversions as a matter of course, to confuse the enemy nightfighter controllers. The weather conditions also gave rise to concern, although it is doubtful that anyone appreciated the degree of assistance that they would lend to the enemy. The moon light was unusually bright, and the visibilty crystal clear, and the forecast cloud at cruising altitude failed to materialize, while a backdrop of white cloud developed beneath the bombers, to silhouette them like flies on a table cloth. The "jetstream" winds which had so adversely affected the Berlin raid a week earlier, were also again present, only this time from the south, and as the final insult, condensation trails began to form to further advertise the bombers' presence. All these factors combined to hand the force on a plate to the waiting nightfighters, whose patrol beacons lay close to the route. The bomber stream was picked up by the enemy over Charleroi in Belgium, and the opposing forces remained in contact all the way to the target. The route to the target became littered with the burning wreckage of RAF bombers, and many crews who were either unaware of the strength of the winds, or unwilling to believe the evidence, turned towards Nuremberg from a false position, and bombed Schweinfurt in error. An astonishing ninety five aircraft failed to return, and this represented by far the Command's heaviest defeat of the war. Among them were two of the fourteen Lancasters despatched by 97 Squadron, ND390 and ND640, with the crews of F/L Rowlands DFC and F/L Hyde DFC respectively. Neither crew produced a survivor, and flying as rear gunner with the former was F/L Richard Trevor-Roper, who ten months earlier had accompanied W/C Guy Gibson to the Möhne and Eder Dams. These were the final acts in a long and bitter winter campaign, which had brought the Command to its lowest ebb, and it is a testimony to the remarkable courage and esprit de corps of the crews, that morale, though tested to the limit, was never broken.

What lay ahead was in marked contrast to that which had been endured over the past months, and in place of the long slog to Germany on dark, often dirty nights, shorter range hops to France and Belgium became the order of the day in improving weather conditions. These operations would, however, be equally demanding in their way, and require of the crews a greater commitment to accuracy, to avoid casualties among friendly civilians. The only fly in the ointment was the decree from on high that most such operations were worthy of counting as just one third of a sortie towards the completion of a tour, and until this flawed policy was rescinded, an air of mutiny pervaded the crew rooms. Despite the catastrophic losses of the past eight months, the Command was in remarkably fine fettle to face its new challenge. Harris was now in the enviable position of being able to achieve what his predecessor had attempted to do but failed, 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, depending upon operational requirements, and even though the Transportation Plan was the new priority, with Harris at the helm, old fashioned city-busting would never be entirely shelved in favour of other considerations. The Command's brief was to systematically dismantle the French and Belgian railway networks. and thereby to paralyse the movement of enemy troops and armour to the intended beachhead areas. Railway yards at Trappes, Le Mans, Amiens, Laon and Aulnoye had been attacked in March by forces of predominently Stirlings and Halifaxes, and the offensive got into full swing on the 9/10th of April, when similar targets were bombed at Lille and Villeneuve-St-Georges. Both were highly successful, but the successes were marred by the heavy casualties inflicted on French civilians. On the following night, 1 Group went to Aulnoye, 3, 6 and 8 Groups to Laon, 4 Group to Tergnier, 5 Group to Tours, and another element from 6 Group attacked Ghent, and all but one of the railway yards suffered severe damage. Whenever an opportunity presented itself, however, Harris would return to his preferred policy of city-busting, and on the 11/12th, he despatched elements of 1, 3, 5 and 8 Groups to Aachen, which suffered its worst raid of the war. Officially from the 14th, Bomber Command became subject to the dictates of SHAEF, and would remain thus shackled until the Allied ground forces were sweeping towards the German frontier.

On the 18th, a year to the day from its transfer to 8 Group, 97 Squadron was posted back to 5 Group on what was effectively a permanent detachment. Fellow former 5 Group 83 Squadron was included in the move, and both squadrons took up residence at Coningsby, while 627 Squadron flew its Mosquitos from Oakington to Woodhall Spa, the home of 617 Squadron. This was a bitter blow to the 8 Group AOC, AVM Don Bennett, made more unpalatable by the fact that 5 Group was the recipient of three of his finest squadrons. The much publicized animosity between Bennett and 5 Group's AVM Cochrane was born out of a difference of opinion with regard to target marking. Bennett had worked wonders in developing the Pathfinder Force from its hesitant beginnings, and much of the success of the past twelve months was to his credit. Meanwhile, W/C Cheshire and S/L Martin at 617 Squadron, had been experimenting with low level visual marking techniques in Lancasters, and these were found to be highly effective, if somewhat "hairy". Cheshire tried the system in a Mosquito, put the idea to the ever open-minded Cochrane, who in turn took it to Harris, and after 617 Squadron had registered some spectacular successes with the method in early April, the Group was given its own target marking force. It was not any failure on the part of Bennett or his magnificent squadrons which led to the transfer of the three units in question, but rather an indication of the success of the 5 Group method. From now on, 83 and 97 Squadrons would provide the illumination as the flare force, and 627 Squadron would go in at low level to place the spot fires. The 83 and 97 Squadron crews, like their former master, were also indignant at being removed from what they saw as an elite status with the Pathfinders, and few of them had been with the squadron during its former 5 Group days. It took time for them to develop a grudging loyalty to their new masters, although the rest of 5 Group, which had always considered itself to be the Command's elite, probably felt that the former 8 Group crews should consider the move as promotion. Relations began badly on the day of the crews' arrival, when they were immediately summoned to the briefing room to be addressed by the 54 Base commander, Air Commodore Sharpe, an officer with no relevant operational experience. Instead of welcoming them as brothers in arms, he lectured them on the need to discard their bad 8 Group habits, and knuckle down to the business of learning 5 Group techniques. This was an insult to men who, after the intricacies of their Pathfinder role, would find the requirements of illuminating a piece of cake.

On the night of the move to Coningsby, two pilots hitched a ride to a railway target at Juvisy, to observe the 5 Group marking method in action, but it was not long before the whole squadron was back in the action in its new role, and registering its first losses. All three new squadrons joined a two phase 5 Group raid on railway yards at La Chapelle on the 20/21st, and after initial difficulties with the marking, the operation proceeded well, and severe damage was inflicted. 97 Squadron's ND748 was one of six Lancasters missing, and S/L Leatherland died with five of his crew after they were shot down by a nightfighter. The 22/23rd took the Group to Brunswick, for the first attempt to mark a heavily defended German target using the low level visual marking method. 617 Squadron Mosquitos carried out their assigned tasks accurately, but the main force failed to exploit the situation, and the operation failed. Two nights later, it was tried again at Munich, when W/C Cheshire dived onto the aiming point in the face of a spirited defence from the flak batteries, and then made good his escape across the rooftops of the city. The main force deposited its bombs into the centre of the target area, and over a thousand buildings of a mainly residential and public nature were destroyed. It was this operation which probably sealed the award of the Victoria Cross to Cheshire at the conclusion of his tour. Nine Lancasters were lost from this operation, including the squadron's ND500, in which F/L Waugh and all but one of his crew were killed. There were no further losses to the squadron during the remainder of the month, despite operations to Schweinfurt on the 26/27th, which failed, and two small ones to two factories in France and Norway on the 28/29th. The former was abandoned part way through because of haze and smoke, but the latter was accurate and effective.

It was two factories at Toulouse which opened the Group's May account on the 1/2nd, while a second element went to Tours to an aircraft repair works. On the 3/4th, what was expected to be a straight-forward attack on a Panzer training camp and transport depot at Mailly-le-Camp was launched by 1 and 5 Groups, as a result of which, controversy abounds to this day. The raid was controlled by G/C Deane of 83 Squadron, with W/C Cheshire acting as marker leader. A degree of confusion seems to have arisen out of their separate briefings, and the assigning of a "special" target to 1 Group's Special Duties Flight added a further dimension. Interference on the R/T channel by a commercial broadcasting station prevented many crews from hearing instructions, and a delay resulted in calling in the main force to bomb, once the marking had taken place. This gave the nightfighters an opportunity to infiltrate the bombers as they milled around in the target area, and when burning Lancasters were seen to fall all around the sky, a few crews succumbed to indisipline in their frustration and anxiety, and some questionable comments were broadcast. Once in progress, the bombing was accurate and caused extensive damage, but forty two aircraft were shot down, and many accusations were unjustly directed at Cheshire. Just one 97 Squadron Lancaster fell victim, and this was ND706 with the crew of F/O Ellsmere, and there were no survivors. The next week brought pinpoint factory type targets for small elements of the Group, and then on the 10/11th, five railway yards were earmarked for destruction, with 5 Group briefed for the one at Lille. A total of thirteen aircraft were lost from these attacks, twelve of them from that involving 5 Group, and this time 97 Squadron posted missing two crews from its contribution of eight. F/L Smith's JB708 exploded over France, and all on board were killed, and ND813 also crashed in France with no survivors from the crew of P/O Edwards. Railway targets continued to occupy the Command, until Harris switched a five hundred strong force drawn from 1, 3, 5

and 8 Groups to Duisburg on the $21/22^{nd}$, for the first assault on this target for a year. A successful outcome was followed by another failure at Brunswick for 1 and 5 Groups twenty four hours later, and this demonstrated the only flaw in the 5 Group marking method, which was rendered impracticable by the presence of thick cloud. 97 Squadron's ND415 was involved in a collision with a 57 Squadron Lancaster, LL967, over Lincolnshire on return, and F/L Jardine and his crew were killed in the ensuing crash, while the other aircraft landed safely.

June brought the long awaited invasion of Europe, and the first few days of the month were occupied by further attacks on communications and coastal defences. On the 3/4th, the squadron participated in an operation against a signals station at Ferme-d'Urville, and on the following night attacked a coastal battery at Maisy, close to where American forces would soon be landing, while other elements raided gun positions in the Pas-de-Calais to maintain the deception. That night, D-Day Eve, over a thousand aircraft took part in operations against ten coastal batteries, while others carried out spoofs and diversions to mislead the enemy. The 97 Squadron contingent was airborne after midnight, and heading across the Channel towards Pierre du Mont. Although not appraised of what was going on beneath them, all crews were given a minimum height, and instructed not to jettison any bombs over the sea. They bombed at 05.00, just as dawn's early light revealed the American forces landing, and on the way back they met large formations of American bombers heading towards the French coast. There had been little intervention by nightfighters, but a JU88 shot down W/C Carter's ND739, which contained a highly experienced and decorated crew. This included the squadron gunnery and signals leaders, and all eight men on board were killed. ND815 also failed to return from this operation, and Lt Jespersen and his crew died in its wreckage in France.

The following three nights were devoted to communications targets, and on the 9/10th, a large contingent from 1, 4, 6 and 8 Groups attacked airfields south of the beachheads. 5 Group was active elsewhere on this night, and 97 Squadron registered a further loss during the attack by the Group on a railway junction at Etampes, which although effective, caused colateral damage and casualties within the town itself. The missing Lancaster was ND764, in which P/O Giddings and four of his crew lost their lives, while one became a POW and the other evaded capture. A new oil campaign began at Gelsenkirchen with spectacular success at the hands of 1, 3 and 8 Groups on the 12/13th, and all production was halted for several weeks. The first daylight operations since the departure of 2 Group a year earlier were conducted against Le Havre and Boulogne on the evenings of the 14th and 15th. The attempt to destroy E-Boats was entirely successful, and reduced the numbers available to harass Allied shipping supplying the beachhead. A second new campaign opened on the 16/17th, this one against flying bomb launching and storage sites in the Pas-de-Calais, and it was to feature prominently right through until the end of August. Four sites were attacked on this night, with all but 3 Group taking part. 5 Group's first taste of the oil campaign came on the 21/22nd, and it was a chastening experience. Two operations were mounted on this night, one at Wesseling and the other at Scholven/Buer, both with a small contingent from 1 Group, and the latter supported by Oboe Mosquitos from 8 Group. Thick cloud thwarted use of the 5 Group marking method at both targets, and bombing went ahead at Wesseling on H2s alone. The major damage here was not to the oil plant, but to the attacking aircraft, which were set upon by nightfighters and lost thirty seven of their number. Four 5 Group squadrons, 44, 49, 57 and 619 each lost six aircraft, but at least the Scholven force fared better, losing a more modest eight aircraft, which included 97 Squadron's ND451. This Lancaster was shot down by flak over Germany on the way to the target, and five of the crew survived to be captured, while S/L McLeod and one other were killed.

Flying bomb sites were small and difficult to identify, and their destruction would be aided by daylight operations, for which formation flying was a necessity, but something to which the crews of the heavy squadrons were unaccustomed. A formation flying training flight was arranged for the squadron on the 23rd, and it ended in tragedy. ME625, with F/L Van Rhalte at the controls, hit the slip-stream of F/O Gee's Lancaster, and pitched into ND981 of P/O Perkins. Both aircraft plunged into the Lincolnshire Fens, and just one man survived from the latter aircraft. In the event it was a night operation on the 24/25th, which gave the squadron its first involvement at a flying bomb target, as part of a large force briefed for seven sites. A squadron element joined the attack aimed at Prouville, and NE124 failed to return, having been shot down by a nightfighter over France. F/L Walton managed to evade capture, while three of his crew died, and three others fell into enemy hands. This was the seventh 97 Squadron aircraft to be lost during the month. Later in the day, W/C Heward arrived to assume command of the squadron, having just relinquished the post at 50 Squadron. An exacting, and some considered humourless man, and a stickler for discipline, there is a suggestion that his appointment was intended to lick 97 Squadron into shape, and banish for good any lingering 8 Group attitudes.

Flying bomb sites dominated the first half of July, a month which would be much kinder to the squadron. Railways were not forgotten, however, and tactical support for the ground forces would also place demands on the crews. 5 Group's first activity of the month involved an attack on a flying bomb store in caves at St-Leu-d'Esserent on the 4/5th, following up an attack by 617 Squadron earlier in the evening. V-Weapon sites were attacked by daylight on the 6th, and 5 Group returned to St-Leu on the 7/8th. The operation was successful, but twenty nine Lancasters and two Mosquitos failed to return home after nightfighters arrived on the scene. It was railway targets for the Group on the 12/13th, and 14/15th, before tactical operations were carried out in support of the British Second Army at Caen on the 18th, as part of Operation Goodwood. That night, the Group delivered a successful attack on a railway junction at Revigny, a target which had already thwarted 1 Group on two occasions over the past week. It was a very expensive operation, and cost twenty four Lancasters. A railway yard and junction at Courtrai were the targets for the Group on the 20/21st, and this operation cost the squadron PA979 and the eight man crew of F/O Edwards, who were lost without trace. This preceded the first raid on a German city by the heavy brigade for two months. Kiel was attacked by a force of over six hundred aircrast on the 23/24th, which appeared suddenly from behind an RCM screen provided by 100 Group, and delivered the most punishing blow of the war on this target. The first of three raids in five nights hit Stuttgart on the 24/25th, and was followed up on the 25/26th and the 28/29th. The series was an outstanding success, but the final operation ran into heavy nightfighter activity, and thirty nine aircraft were lost. More tactical support was given to the land campaign by daylight on the 30th, when German positions were attacked ahead of American forces. Briefed for Cahagnes, the squadron's NE121 failed to return with the highly experienced and decorated eight man crew of F/L Baker, three of whom survived, and this was only the second loss of the month.

August would bring both an end to the flying bomb campaign, and the start of a new concerted effort against industrial Germany. Flying bomb related targets monopolized most of the effort during the first six days of the month, and it was from such an operation on the 6th, that the squadron registered its first loss. ND840 was one of three Lancasters missing from an attack on the supply site at Bois de Cassan, and was a victim of flak over France. It took F/O Bucknell and six of his crew to their deaths, while the sole survivor evaded capture. Over a thousand aircraft were launched against five enemy strong points in support of ground forces on the 7/8th, but only 660 were called in to bomb. An experimental raid on Brunswick on the 12/13th was intended to gauge the ability of crews to find and bomb a target on H2s alone, without Pathfinder assistance. The results were not encouraging, however, and this town continued to be an elusive target. Eight hundred aircraft returned to Normandy by daylight on the 14th, to support Canadian forces advancing on Falaise. Some of the bombing went astray, and thirteen soldiers were killed, while over fifty others were wounded. 5 Group, meanwhile, conducted two raids on the former French warships Clemenceau and Gueydon, and left them sinking in Brest harbour.

In preparation for his new night offensive against Germany, Harris launched a thousand aircraft against nightfighter airfields in Holland and Belgium on the 15th. PB358 was hit by flak over its target of Deelen, and F/O Lindsay eventually ditched it in the sea off the Dutch coast, from where all on board were rescued. On the 16/17th, a force of over four hundred Lancasters attacked Stettin, while other Lancasters and Halifaxes tried their luck at Kiel, and over eighty aircraft carried out mining operations in the Baltic and Kiel Bay. Also operating was 97 Squadron, which sent an element to mine the Swinemunde Canal, overseen by W/C Porter in NE167. He had commanded 9 Squadron during its most testing period throughout the winter campaign, and was presumably now on the staff of 54 Base at Coningsby, from where 5 Group Master Bombers tended to come. This aircraft was flying at low level when brought down by flakships moored along the waterway, and there were no survivors from among the eight man crew. F/O Locke's aircraft was also badly damaged, and he belly-landed safely at Coningsby on return. On the 18th, S/L Ingham returned with crew casualties from attacking an oil storage depot at Bordeaux, and he crash-landed his badly holed Lancaster at Tangmere. Darmstadt escaped serious damage at the hands of 5 Group on the 25/26th, but its reprieve would be short lived. PB398 failed to return from this operation, and just one man survived from the crew of S/L Parkes. They were joined on the register of the missing on the following night by the crew of F/O McCurdy, all but one of whom died, when ND807 disappeared into the Baltic. This was one of only four Lancasters lost by the Group from what was a moderately successful raid on the distant port of Königsberg, which was being used by the enemy to supply its eastern front. The Group returned to this target on the 29/30th, and produced an outstanding attack at what was extreme range, destroying an estimated 40% of the town's housing and 20% of its industry.

September was largely devoted to the liberating of the three French ports still in enemy hands. The first of six operations against enemy strong points around Le Havre took place on the 5th,

and others followed daily until the 11th, and within hours of the final raid, the German garrison surrendered to British forces. During the course of this mini campaign, a small force from 5 and 8 Groups devastated Mönchengladbach on the 9/10th. On the 11/12th, 5 Group returned to Darmstadt, and the highly accurate and concentrated bombing resulted in a firestorm, which killed over twelve thousand people, and dehoused a further seventy thousand. It cost the Group twelve Lancasters, among which was the squadron's PB510. captained by S/L Belleroche, and he and three others survived to become POWs. The northern and western parts of central Stuttgart were reduced to rubble by elements of 1 and 5 Groups on the 12/13th, and then a single heavy raid on the Boulogne area on the 17th, persuaded the German garrison to surrender. Bremerhaven's first heavy raid of the war was delivered by 5 Group on the 18/19th, and over 2,600 buildings were destroyed. On the following night, over two hundred aircraft of 1 and 5 Groups returned to Mönchengladbach and its twin Rheydt, for which W/C Gibson VC acted as Master Bomber. This was a role in which he was not experienced, and he was also a novice at flying a Mosquito. The operation was a little confused but highly destructive, and sadly, Gibson's 627 Squadron Mosquito crashed at Steenbergen in Holland on the way home, and he and his navigator were killed. The first of six operations against Calais was mounted on the 20th, and would continue daily from the 24th to the 28th, after which it too fell to Allied forces. A target which had particular, almost personal associations with 5 Group was the Dortmund-Ems Canal. On the 23/24th, 130 aircraft were sent to attack it at a point near Ladbergen north of Münster, while a separate 5 Group force hit the nearby Handorf nightfighter airfield as a diversion. Breaches in the canal bank were probably the work of Tallboys dropped by the 617 Squadron element, and a stretch of the vital waterway was drained. Comparatively heavy losses were incurred by the Lancaster force at this target, and included among the fourteen missing aircraft was 97 Squadron's PB409, in which S/L Higgs and five of his crew were killed. The other raid cost just one aircraft, and this was 97 Squadron's PA974, which found the sea off the Norfolk coast, and there were no survivors from the crew of F/O Lopez.

There now followed for the squadron an unprecedented period of loss free operations, which took it through October and November and into the final third of December. A new commanding officer was appointed on the 3rd of October in the person of G/C Johnson, who had previously commanded 49 Squadron between March and October 1943, and he would now preside over 97 Squadron until after war's end. Also on this day, the first of a series of operations was mounted against the sea defences on the island of Walcheren in the Scheldt Estuary. Heavy gun emplacements were barring access to Antwerp, and the plan was to inundate some of them, and produce waterlogged terrain to hamper an enemy defence of a ground attack. 5 Group went to Wilhelmshaven on the 5th, and produced inconclusive results, and joined 1 Group at Bremen on the 6/7th, when almost five thousand houses were destroyed. This was the night on which a new Ruhr offensive opened at Dortmund at the hands of 3, 6 and 8 Groups, and later on the 7th, while the frontier towns of Cleves and Emmerich were being heavily bombed in support of the land battle, 5 Group returned in modest numbers to Walcheren, and breached the sea walls. A force of sixty one Lancasters from the Group failed to create further breaches on the 11th, while other larger elements from the Group attacked gun batteries on both banks of the River Scheldt. The 14th brought the first round of Operation Hurricane, a demonstration to the enemy of the overwhelming superiority of the Allied air forces ranged against it. Duisburg was selected to host the first of these, and at first light, over a thousand aircraft took off, and 957 of them delivered almost four and a half thousand tons of bombs onto the already battered city. That night, a similar number returned to press home the point about superiority, and this remarkable number of sorties was achieved without the participation of 5 Group. Taking advantage of the activity over the Ruhr, 5 Group tried again at Brunswick, the scene of four past failures, and finally produced an accurate and concentrated attack, which inflicted severe damage on all parts of the town. The Group carried out further attacks on Walcheren on the 17th, 23rd and 30th, and in between sent forces to Nuremberg on the 19/20th, and to attack U-Boat pens at Bergen in Norway on the 29/30th. This last mentioned operation did not hinder U-Boat operations, but the town itself suffered damage, and casualties among the inhabitants were high. Meanwhile Essen received its visits from the Hurricane force on the 23/24th and by daylight on the 25th, by which time it had already ceased to be a major centre of war production. Cologne's turn came on the 28th, 30th and 31st, after which it also became less than a fully functioning city.

The remainder of the year was dominated by the continuing offensive against oil related targets and the enemy communications system. Whenever small towns found themselves in the path of either the Allied advance or the enemy retreat, they would be mercilessly bombed. 5 Group's November account opened at Homberg on the 1st, but it was a disappointing start to the month. The Hurricane force pounded Düsseldorf on the 2/3rd, and while Bochum was receiving similar treatment on the 4/5th, 5 Group returned to its old enemy, the Dortmund-Ems Canal at Ladbergen. Further repairs had been carried out since the last attack, and this was an open invitation to the Group. Accurate bombing left a section of the waterway drained and unnavigable. Gelsenkirchen was heavily bombed by seven hundred aircraft on the 6th, and that night, the Canal-busters of 5 Group visited the Mittelland at its junction with the Dortmund-Ems at Gravenhorst, but was forced to abandon the raid after only a few aircraft had bombed. The squadron's first losses since September arose not out of operations, but training flights to France to test the American Loran navigation system, which was similar although inferior to Gee. PB200 and PB450 both failed to return on the night of the 10/11th, the former crashing in France, and the latter missing without trace, and there were no survivors from the crews of F/O Peters and F/L Runnacles. The Rhenania-Ossag oil refinery at Harburg was the Group's target for the 11/12th, but it seems that the town received most of the bombs. On the morning of the 16th, the three small towns of Düren, Jülich and Heinsberg were all but erased from the map in support of advancing American forces. 5 Group was joined by elements of 1 and 8 Groups at the first mentioned, and over three thousand people lost their lives. The recent failure at the Mittelland Canal was rectified by one 5 Group force on the 21/22nd, while a second element breached an aquaduct section of the Dortmund-Ems near Ladbergen. The Group was out in force to attack Munich on the 26/27th, returning crews claiming a successful operation, and this was the last operational activity of the month for what had been christened by 8 Group in April the "Independent Air Force".

Heilbronn was a link in the north-south railway network, and for this reason it hosted its one and only heavy raid of the war on the 4/5th of December. In a few minutes of accurate 5 Group bombing, over 80% of its built-up area was reduced to ruins, and around seven thousand people lost their lives. The town centre and railway yards at Giessen also suffered

extensive damage at the hands of the Group on the 6/7th, before an inconclusive attack was delivered against the Urft Dam in the Eifel region of western Germany on the 8th. 280 5 Group Lancasters and eight Mosquitos set out for Munich on the 17/18th, and crews again reported widespread damage to the city centre and railway installations. The distant port of Gdynia provided the target twenty four hours later, where shipping and port installations were included in the catalogue of damage. The squadron's remarkable period of immunity from operational losses came to an end on the 20/21st, when PB461 failed to return from a raid on a synthetic oil refinery at Pölitz. The Lancaster crashed in Norway with fatal consequences for F/O Sinclair and his crew, but this proved to be an isolated setback, and unlike many squadrons, whose losses began to escalate again in 1945, 97 Squadron would post missing just four more crews before the end of hostilities. The Group's final operations of the year came at Rheydt on the 27th in company with elements of 1, 3 and 8 Groups, and with two small scale attacks on shipping in Oslo Fjord on the 28/29th and on New Year's Eve, the latter sandwiching a raid on a supply line at Houffalize in the Ardennes on the 30/31st. Despite the German breakout in the Ardennes, the scent of victory was unmistakeable, and it was just a question of time. Sadly, enough of that remained to cost the lives of many more men of Bomber Command.

1945

The New Year started with a bang on the Continent, courtesy of the Luftwaffe's ill-conceived and ultimately ill-fated Operation Bodenplatte. Launched at first light on New Year's Morning, it was an attempt by the enemy day fighter force to destroy elements of the Allied air forces on the ground at the recently liberated airfields of France, Holland and Germany. In return for some limited success, which the Allies could make good in hours from their vast resources, the Luftwaffe sacrificed around 250 front-line fighters and fighter-bombers, and 150 of the pilots were killed, wounded or captured, and it was a setback from which there would be no recovery. The year began for 5 Group with a return to the familiar task of canal busting, at the Dortmund-Ems in the morning, and the Mittelland at Gravenhorst on New Year's Night. It was a promising start to a recurring theme for the next two months, and a number of breaches were created. The pattern of operations remained as before, with oil and communications dominating proceedings, and occasional outings on behalf of the advancing Allied armies. A controversial operation was mounted against the small French town of Royan in the early hours of the 5th, in response to requests from Free French Forces which were laying siege. Many of the residents turned down an offer from the German garrison commander of safe passage from the town, and lost their lives in the ensuing bombing by 1 and 5 Groups, which all but totally destroyed the town. In the event, their deaths were in vain, and the enemy remained in place until well into April. On the following night, a 5 Group element returned to bomb the supply lines at Houffalize, and on the 7/8th, the Group participated in the final major raid of the war on Munich. A return to the oil refinery at Pölitz was successfully concluded by the Group on the 13/14th, and this was followed by attacks on other oil related targets at Leuna in eastern Germany and Brüx in Czechoslovakia on the 14/15th and 16/17th respectively. There was little further activity during the remainder of the month, and 97 Squadron came through its involvement without mishap.

The opening operations in February brought some unaccustomed failures for 5 Group, and indeed the whole Command. Poor weather conditions over the targets were partly responsible, and a strong wind over Siegen on the $1/2^{nd}$ helped to scatter the skymarkers, and led to the bombing missing the town. It was a similar story at Karlsruhe on the $2/3^{rd}$, when thick cloud hampered the Mosquito markers, and the operation again failed. The hat-trick of disappointments came at the Dortmund-Ems Canal at Ladbergen on the $7/8^{th}$, and this was compounded for 97 Squadron by the first operational loss of a crew since December, and indeed, ND961 was only the second Lancaster since September to fail to return. Its loss was the result of a tragic collision with 83 Squadron Lancaster PB181 over Holland, and the eight man crew of Lt McGregor were all killed, while just the pilot of the other aircrast escaped with his life to fall into Allied held territory. The final raid on the oil refinery at Pölitz was delivered by 1, 5 and 8 Groups on the $8/9^{th}$, and this halted all further production at the plant.

Operation Thunderclap, the Churchill inspired offensive against Germany's eastern cities, was unleashed against Dresden on the 13/14th, in a two phase operation led by 5 Group. Initial marking was by the 5 Group method, and 244 of the Group's Lancasters followed up, and delivered eight hundred tons of bombs in a moderately successful attack. The fires from this opening phase acted as a beacon to the all Lancaster force from 1, 3, 6 and 8 Groups following three hours behind, and they dropped a further 1,800 tons with great accuracy and concentration into the beautiful and historic city. The meteorological phenomenon which had overtaken Hamburg and Kassel earlier in the war, now ripped through the heart of Dresden, and subjected its populace, swelled enormously by the influx of refugees from the eastern front, to a horrifying ordeal. The Americans joined in on the following morning, and estimates of the final death toll have settled at 50,000, although some believe the figure to be substantially higher. The Thunderclap force went to Chemnitz on the following night without 5 Group, but failed to gain more than very modest success. 5 Group was, in fact, also engaged over eastern Germany on that night, attending to the oil refinery at Rositz near Leipzig. It was a partially successful attack, and certainly more effective than the one at Böhlen on the 19/20th, which foundered after the Master Bomber's Mosquito was shot down by flak over the target. Cloud cover forced the abandonment of a raid on the Mittelland Canal on the 20/21st, and the operation was rescheduled for the following night. This time, a successful attack was carried out in clear conditions, and the waterway was rendered unnavigable. Sadly, this operation cost the Command one of its characters, the Coningsby station commander, G/C "Tiny" Evans-Evans, a huge man who had commanded 115 Squadron earlier in the war, and who had never lost his desire to be "one of the boys". His 83 Squadron Lancaster was shot down by a nightfighter, and crashed in Holland, killing seven of the eight very experienced men on board. While Pforzheim was being erased from the map by 1, 6 and 8 Groups on the 23/24th, a smallish 5 Group element went to Horten in Oslo Fjord, to attack what was believed to be a U-Boat base. Just one aircraft failed to return, and this was 97 Squadron's PB588, which was seen to be shot down by a JU88 over the sea. Despite the fact that at least two parachutes were observed by other crews, F/L Hinds and his crew all lost their lives. 170 5 Group Lancasters and Mosquitos took off for the Dortmund-Ems Canal on the 24th, but they were forced to abandon the attack in the face of complete cloud cover over the target, and this was the last operation of the month.

The last major raid of the war on Cologne was delivered by over eight hundred aircraft on the morning of the 2nd of March, and four days later it fell to American forces. 5 Group's final visit of the war to the Dortmund-Ems Canal left the Ladbergen aquaduct breached in two places on the 3/4th, and it remained effectively out of action. The Thunderclap force rectified the recent failure at Chemnitz, by inflicting massive fire damage in central and southern districts on the 5/6th, while 5 Group was gaining only modest success on the oil refinery at Böhlen. The small port of Sassnitz on the island of Rügen north of Peenemünde was targeted by the Group on the 6/7th, and extensive damage was caused to the port area and shipping moored in the harbour. An oil refinery and a rubber factory were the main victims of a 5 Group raid on Harburg on the 7/8th, and this was followed by two milestones in Bomber Command's war. A new record force of 1,079 aircraft set out on the late morning of the 11th for the final raid of the war on Essen, but this was surpassed on the following day, when 1,108 aircraft departed their stations in the early afternoon, to deliver the last raid of the war on Dortmund, and this was a record which would stand to the end of hostilities. The Group returned to the oil campaign on the 14/15th, when attacking with moderate success the Wintershall refinery at Lützkendorf. While the final raid of the war against Nuremberg was in progress on the 16/17th, 5 Group delivered a seventeen minute orgy of destruction on Würzburg, which destroyed almost 90% of its built-up area, and left at least four thousand people dead. The end came for the oil refinery at Böhlen on the 20/21st, and it was still out of action when American ground forces took the area a few weeks later. This operation resulted in the 97 Squadron's penultimate loss, when PA973 was lost without trace with the crew of F/O Cottman. The final loss came just twenty four hours later, when PB521 was lost raiding a similar target, the Deutsche Erdölwerke, at Hamburg. This Lancaster, which crashed in the target area, was captained by F/L Taylor DFC, who survived the incident, but sadly succumbed to his injuries while in captivity. Four others of the crew died in the Lancaster's wreckage, and the two survivors were taken prisoner. Smallish elements from the Group were switched to railway bridges at Bremen on the 22nd and 23rd, and on the night of the latter, the Group participated in the final of many recent raids on the unfortunate town of Wesel, which just happened to lie too close to the land battle for its own good.

The bombing war ended for the heavy squadrons in April, and 5 Group began the month with an attack on what was believed to be a military barracks at Nordhausen on the 4th. It was, in fact, a camp for forced workers at the underground secret weapons factory, and many of these friendly foreign nationals were killed in this attack, and one by 1 Group on the previous day. The Group continued its assault on the enemy's oil industry with an attack on a benzol plant at Molbis on the 7/8th, and a return to the Wintershall refinery at Lützkendorf on the 8/9th, and this ended production at both sites. Small scale raids were mounted by the Group against oil storage tanks at Hamburg on the 9th and railway yards at Leipzig on the 10/11th, and then came attacks on three distant railway targets at Pilsen on the 16/17th, Cham in south-eastern Germany on the 17/18th, and Komotau in Czechoslovakia on the 18/19th, all of which were completely successful. The Group operated for the last time in anger on the 25th, when participating in an attack on the SS barracks at Hitler's Eaglesnest retreat at Berchtesgaden in the morning, and going alone that night to an oil refinery at Tonsberg in Norway.

97 Squadron came quite late into the fray compared with many of the best known squadrons of 5 Group, but once involved, it produced an excellent record of achievement, which few if any squadrons bettered. It served both 5 and 8 Groups with distinction, and consistently suffered lower losses than most of its contemporaries, and even on its blackest night, on the 16/17th of December 1943, seven of its eight casualties fell victim to the weather conditions rather than the enemy. The performance of a squadron was normally indicative of the quality of its leadership, and 97 Squadron was well served in this regard. Unaccountably, little appears to have been written specifically about this magnificent squadron, and I hope that this modest work will in some way act as a small tribute to its outstanding air and ground crews who served it so well.

STATIONS

WADDINGTON	25.02.41. to	10.03.41.
CONINGSBY	10.03.41. to	02.03.42.
WOODHALL SPA	02.03.42. to	18.04.43.
BOURN	18.04.43. to	18.04.44.
CONINGSBY	18.04.44. to	11.46.

COMMANDING OFFICERS

WING COMMANDER D F BALSDON	25.02.41. to 18.12.41.
WING COMMANDER J H KYNOCH DFC	23.12.41. to 31.03.42.
WING COMMANDER J D D COLLIER DFC*	31.03.42. to 26.10.42.
WING COMMANDER G D JONES DFC*	26.10.42. to 01.07.43.
GROUP CAPTAIN N H FRESSON DFC	01.07.43. to 01.01.44.
WING COMMANDER E J CARTER DFC	01.01.44. to 06.06.44.
WING COMMANDER A W HEWARD DFC AFC	25.06.44. to 03.10.44.
GROUP CAPTAIN P W JOHNSON DFC AFC	03.10.44. to 05.06.45.

AIRCRAFT

MANCHESTER	02.41. to	02.42.
HAMPDEN	07.41. to	08.41.
LANCASTER I/III	01.42. to	07.46.

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SECTION 2

OPERATIONAL RECORD

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OPERATIONAL RECORD

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
424	3934	109	2.8
	CATEGORY	Y OF OPERATIONS	•
	BOMBING	MINING	6°
	375	49	3
	5	GROUP	
OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
328	2469	51	2.1
CATEGORY OF OPERATIONS			
	BOMBING	MINING	
	279	49	
MANCHESTERS			
OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
36	151	8	5.3
CATEGORY OF OPERATIONS			
	BOMBING	MINING	

LANCASTERS

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
388	3783	101	2.7
CATEGORY OF OPERATIONS			
	BOMBING	MINING	
	342	46	So

5 GROUP LANCASTERS

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
292	2318	43	1.9
CATEGORY OF OPERATIONS			
	BOMBING	MINING	
	246	46	

8 GROUP LANCASTERS

OPERATIONS	SORTIES	AIRCRAFT LOSSES	% LOSSES
96	1465	58	4.0

The above figures do not include those relating to Hampden operations, which were few, and conducted mostly in 106 Squadron aircraft.

TABLE OF STATISTICS

(Heavy squadrons)

28th highest number of overall operations in Bomber Command.33rd highest number of sorties in Bomber Command.34th highest number of aircraft operational losses in Bomber Command.

Out of 59 Lancaster squadrons.

Highest number of overall Lancaster operations in Bomber Command.

17th highest number of Lancaster sorties in Bomber Command.

17th highest number of Lancaster operational losses in Bomber Command.

Out of 22 squadrons in 5 Group.

9th highest number of overall operations in 5 Group.

13th highest number of sorties in 5 Group.

15th highest number of aircraft operational losses in 5 Group.

Out of 8 Manchester squadrons.

3rd highest number of overall Manchester operations. 4th highest number of Manchester sorties. 5th highest number of Manchester operational losses.

Out of 17 Lancaster squadrons in 5 Group.

10th highest number of Lancaster overall operations in 5 Group. 13th highest number of Lancaster sorties in 5 Group. 13th highest number of Lancaster operational losses in 5 Group.

Out of 8 heavy squadrons in 8 Group.

Lowest number of overall operations in 8 Group. Lowest number of sorties in 8 Group. 5th highest number of aircraft operational losses in 8 Group.

Out of 8 Lancaster squadrons in 8 Group.

Lowest number of Lancaster overall operations in 8 Group. Lowest number of Lancaster sorties in 8 Group. 3rd highest number of Lancaster operational losses in 8 Group. THE SECOND STREET, SE

SECTION 3

AIRCRAFT LISTING

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97 SQUADRON.

HAMPDEN. From July 1941 to August 1941. **AD735** ZN-R From 106Sqn on loan. FTR Mönchengladbach 7/8.7.41. From 106Sqn on loan. Crashed off Plymouth on return from Brest **AD861** 7.7.41. **AE293** To 106Sqn. **AE300** To 106Sqn. To 106Sqn. **AE301 AE302** To 106San. FTR Essen 7/8.8.41. **AE303** MANCHESTER. From March 1941 to February 1942. From 207Sqn. No operations. Became ground instruction machine. L7282 L7283 From 207Sqn via 25 OTU. No operations. To1660CU. L7288 From 207Sqn. To 61Sqn. L7290 To 49Sqn. L7291 To 106San. L7292 From 207Sqn. To 61Sqn. L7294 To 50Sqn. L7298 From 207Sqn. To 1654CU. From 207Sqn. No operations. To 39MU. L7299 L7306 Crashed on take-off from Coningsby during training 13.9.41. L7307 From 61Sqn. No operations. To 1654CU. L7308 Crashed on take-off from Coningsby 28.10.41. To 61Sqn. L7315 L7323 OF-A FTR Berlin 10/11.5.41. FTR Berlin 15/16.5.41. L7324 L7325 To 49Sqn via 25 OTU. L7374 FTR Kiel 26/27.6.41. L7375 OF-B Crashed in Lincolnshire during air-test 28.9.41. L7382 OF-D To 207Sqn. L7383 OF-F Crashed in Norfolk during training 14.9.41. FTR Düsseldorf 16/17.8.41. L7384 L7423 OF-S To 83San. FTR Berlin 12/13.8.41. L7424 OF-Z L7425 OF-G To 44Sqn. To 83Sqn. L7427 L7453 OF-X To 83San. From 207Sqn. To 50Sqn. L7455 OF-X To 83San. L7457 OF-Y

Crashed on take-off from Coningsby for night flying training 8.1.42.

L7459 OF-N/V

L7460 OF-J To 50Sqn. **L7461** OF-R To 106Sqn.

L7462 OF-Z FTR Bremen 20/21.10.41.

L7463 OF-P To 106Sqn. **L7464** OF-N To 61Sqn.

L7466 OF-N FTR from air-sea-rescue operation 8.11.41. L7467 From 25 OTU. Conversion Flt only. To 106Sqn.

L7473 OF-H To 61Sqn. L7474 OF-Z To 106Sqn. L7475 OF-B To 50Sqn. L7476 OF-K To 207Sqn.

L7482 From 25 OTU. Conversion Flt only. To 1660CU.

L7488 OF-F To 207Sqn. **L7489** OF-T/K To 50Sqn.

L7490 OF-A/U Crashed on approach to Coningsby on return from Brest 18.12.41.

L7491 OF-C To 207Sqn.
L7492 OF-A To 50Sqn.
L7522 OF-V To 83Sqn.
L7525 OF-D/O To 83Sqn.

R5783 OF-V Force-landed in Lincolnshire on return from Bremen 21.10.41. To

83Sqn.

R5792 Crashed near Kings Lynn after collision with a Hurricane during

training 24.11.41.

R5795 OF-W FTR Brest 18.12.41.

R5797 To A.V.Roe.

LANCASTER. From January 1942.

BT308 From 44Sqn. Training only. To 207Sqn.

L7531 From 44Sqn. Crashed on take-off from Coningsby during training

24.3.42.

L7532 From 44Sqn. To 61Sqn via 97CF. L7538 From 44Sqn. Returned to 44Sqn.

L7569 OF-A To 44Sqn.

L7570 OF-B Crashed in Lincolnshire during a mining sortie 20,3.42.

L7571 OF-X To 61Sqn.

L7572 OF-L FTR Trondheim (Tirpitz) 27/28.4.42. L7573 OF-K FTR Augsburg S/L Sherwood 17.4.42. L7574 OF-N Completed 27 operations. To 467Sqn.

L7575 OF-Y F/O Deverill's aircraft for Augsburg raid 17.4.42. To 1654CU.

L7576 Conversion Flt only. To 44Sqn.

L7577 OF-T To 106Sqn on loan for one operation. To 106CF.

L7578 To 207CF.
R5482 OF-C To 101Sqn.
R5483 OF-C/D To 1654CU.

R5486 OF-P Crashed while landing at Finningley during training 23.3.42. R5487 OF-V FTR Hamburg 26/27.7.42. F/O Rodley's aircraft for Augsburg raid 17.4.42. To 61Sqn. R5488 OF-F **R5490** OF-B/M/H To 1654CU. R5495 OF-U/N From 44Sqn. FTR Essen 8/9.6.42. From 44Sqn. F/L Penman's aircraft for Augsburg raid 17.4.42. FTR R5496 OF-U Bremen 4/5.9.42. From 44Sqn. FTR Neustadt 17/18.12.42. while on 39th operation. **R5497** OF-W/Z R5502 OF-M Temporary detachment to 207CF. FTR Nuremberg 28/29.8.42. Completed 23 operations. FTR Duisburg 20/21.12.42. R5512 OF-C FTR Augsburg W/O Mycock 17.4.42. **R5513** OF-P F/L Hallows aircraft for Augsburg raid 17.4.42. FTR Frankfurt R5537 OF-B 24/25.8.42. **R5538** OF-H Completed 41 operations. To 1660CU. From 61Sqn. Crash-landed in Lincolnshire while training 30.4.42. R5541 Completed 32 operations. Burned out on the ground at Woodhall Spa R5548 OF-A 28.12.42. To 106Sqn. R5551 R5552 OF-P To 166San. Crash-landed at Woodhall Spa on return from Stuttgart 5.5.42. **R5553** OF-S Crashed off Norfolk coast on return from Duisburg 14.7.42. R5558 OF-J/T Completed over 30 operations. To 1662CU. **R5559** OF-W R5569 OF-X/D/B To 83Sqn and back. Crashed in Scampton circuit while training 13/14.11.42. R5571 OF-A FTR Essen 1/2.6.42. To 106Sqn. **R5572** OF-F R5575 OF-T/L To 106CF and back. FTR Berlin 17/18.1.43. FTR Essen 12/13.3.43. **R5607** OF-X To 106Sqn. **R5609** OF-S R5612 OF-R To ETPS. To 106Sqn. **R5614** OF-G To 1664CU after 17 operations. R5634 OF-L To 83San. **R5672** OF-D R5675 OF-H FTR Bremen 27/28.6.42. **R5696** OF-H FTR Danzig 11.7.42. R5701 OF-Y FTR Aachen 5/6.10.42. **R5738** OF-D FTR Essen 9/10.1.43. FTR Saarbrücken 1/2.9.42. **R5741** OF-K From 61Sqn. Conversion Flt only. To 1660CU. R5845 OF-T R5853 Conversion Flt only. To 61CF. R5854 From 106Sqn. To 1660CU. R5889 OF-T/V From 49Sqn. To 1661CU. Conversion Flt only. To 207Sqn via 1660CU. R5895

From 49Sqn. To 15Sqn via 1660CU.

From 9Sqn. To 622Sqn via 1660CU.

R5896 OF-Y

R5915 OF-O

R5917 OF-K From 9Sqn. To 1660CU. W4127 Conversion Flt only. To 619Sqn via 1660CU. W4135 OF-A From 44Sqn. FTR Düsseldorf 27/28.1.43. W4139 OF-V FTR Kassel 27/28.8.42. W4170 OF-K FTR Cologne 15/16.10.42. W4175 OF-U Crashed at Swinderby on return from Berlin 29/30.3.43. W4197 From 9Sqn. To 1667CU. **W4200** OF-W From 9Sqn. To 1656CU. W4239 From 9Sqn. Crashed in Woodhall Spa circuit while training 31.10.42. W4249 OF-L From 9San. To 1661CU. To 1654CU. W4255 OF-V Crash-landed at North Luffenham on return from Genoa 23.10.42. W4278 OF-T W4355 OF-T To 15Sqn via 1661CU. Crashed in Cumberland while training 6.12.42. W4356 W4825 OF-H FTR Berlin 1/2.3.43. From 49Sqn. FTR Hamburg 30/31.1.43. W4835 OF-H W4887 OF-N To 1660CU. To 617San. W4926 OF-Z W4932 OF-N To 50Sqn. From 49Sqn. To 15Sqn via 1654CU. **ED310** To 15Sqn via 1661CU. **ED323** OF-O **ED333** OF-B FTR Neustadt 17/18.12.43. **ED425** OF-E To 622Sqn via 1660CU & 1654CU. **ED430** OF-C To 50Sqn. To 50Sqn. **ED588** To 1654CU. **ED591** OF-M **ED754** OF-A FTR St Nazaire 28/29.3.43. **ED781** OF-Z To 57Sqn. **ED814** OF-D To 100Sqn. FTR Bochum 12/13.6.43. **ED816** OF-U **ED839** OF-C To 619Sqn. **ED862** OF-P FTR Hamburg 29/30.7.43. To 619Sqn. **ED866** OF-G **ED867** OF-F/Q To 467Sqn. **ED868** OF-A From A&AEE. FTR Mannheim 23/24.9.43. To 44Sqn. **ED869** OF-S/P To 50San. **ED870** OF-T To 467Sqn. **ED871** OF-K **ED873** OF-O To 106San. **ED874** OF-L To 106Sqn. **ED875** OF-R To 166Sqn. **ED880** OF-D/N Collided with Stirling BF393 near Waterbeach on return from Dortmund 5.5.43. **ED882** OF-H To 103Sqn.

To 405San.

ED911 OF-E

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ED917 OF-O/U
                   FTR Cologne 3/4.7.43.
                   FTR Cologne 8/9.7.43.
ED923 OF-V
                    FTR Mülheim 22/23.6.43.
ED928 OF-B
ED938 OF-J
                    To 100San.
ED939 OF-M
                    FTR Nuremberg 10/11.8.43.
ED940 OF-N
                    To 625San.
ED948 OF-W
                    Damaged beyond repair at Wyton 9.8.43.
                    FTR Berlin 23/24.8.43.
ED950 OF-X
ED953 OF-H/W/X/Y To 467Son.
                    Shot down by intruder at Marham on return from Berlin 23/24.8.43.
EE105 OF-L/O
EE107 OF-F/L
                    To 100Sqn.
EE120
                    From 83Sqn. To 1655CU.
EE168 OF-B
                    To 619Sqn.
                    FTR Hamburg 29/30.7.43.
EE172 OF-O
                    To 50Sqn.
EE174 OF-W
                    From 7San. To 61San.
EE176 OF-N/O
                    From 7Sqn. To 44Sqn.
EE179 OF-U/T
                    FTR Nuremberg 27/28.8.43.
JA707 OF-W/T
JA708 OF-Z/P
                    FTR Mannheim 23/24.9.43.
JA711 OF-Y
                    To 9Sqn.
                    To 576Sqn.
JA715 OF-H/X
JA716 OF-V
                    FTR Nuremberg 10/11.8.43.
JA846 OF-E/M/N/O
                   From 7Sqn To 5LFS.
                    To 35San.
JA857 OF-G
JA908 OF-N/W
                    To 1668CU.
JA916 OF-L
                    FTR Berlin 31.8/1.9.43.
JA923 OF-A/H
                    FTR Frankfurt 4/5.10.43.
                    FTR Nuremberg 10/11.8.43.
JA939 OF-M
JA958 OF-K
                    FTR Nuremberg 27/28.8.43.
                    FTR Berlin 1/2.1.44.
JA960 OF-E
                    FTR Berlin 16/17.12.43.
JA963 OF-O
JA966 OF-S
                    Damaged beyond repair during operation to Berlin 3/4.9.43.
JA970
                    To 7San.
                    To 405Sqn.
JA974
JA976
                    To 405Sqn.
                    Crashed on landing at Bourn on return from Berlin 16/17.12.43.
JB117 OF-C
                    Crashed on landing at Bourn on return from Berlin 16/17.12.43.
JB119 OF-F
JB174 OF-S
                    FTR Hanover 8/9.10.43.
                    Crashed on landing at Bourn on return from Berlin 16/17.12.43.
JB176 OF-K
                    To 405Sqn.
JB183
JB189 OF-G
                    Destroyed on the ground at Bourn 9.10.43.
JB190 OF-V
                    FTR Berlin 2/3.12.43.
                    FTR Stettin 5/6.1.44.
JB191 OF-B/A
                    FTR Berlin 23/24.11.43.
JB218 OF-Y
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JB219 OF-R Crashed near Gransden on return from Berlin 16/17.12.43. FTR Hanover 18/19.10.43. **JB220** OF-O FTR Frankfurt 25/26.11.43. **JB221** OF-W **JB224** To 7San. **JB227** OF-J FTR Berlin 22/23.11.43. **JB232** OF-U From 83Sqn. FTR Leipzig 3/4.12.43. **JB238** OF-A FTR Berlin 22/23.11.43. **JB239** To 156Sqn via NTU. Crashed at Graveley on return from Berlin 16/17.12.43. **JB243** OF-P FTR Leipzig 20/21.10.43. **JB275** OF-H FTR Magdeburg 21/22.1.44. **JB299** OF-D/W JB300 OF-D/B FTR Frankfurt 18/19.3.44. **JB312** OF-Z/L/B/A Crashed on approach to Bourn on return from Stuttgart 21.2.44. **JB348** To 405Sqn. **JB353** OF-F/L From 156Sqn. FTR Berlin 28/29.1.44. From NTU. Completed 10 ops to Berlin. To 635Sqn **JB356** OF-X **JB361** OF-B FTR Stuttgart 15/16.3.44. JB367 OF-S FTR Berlin 18/19.11.43. JB410 To 405San. **JB422** OF-H/N To 635Sqn. To 83Sqn. JB459 **JB470** OF-T/M To 635Sqn. **JB482** OF-S From 405Sqn. Abandoned on return from Berlin 16/17.12.43. **JB531** OF-Y Abandoned on return from Berlin 16/17.12.43. **JB535** OF-O FTR Berlin 30/31.1.44. **JB653** To 7Sqn. FTR Berlin 30/31.1.44. JB659 OF-T/J **JB671** OF-V/A From 7Sqn. FTR Berlin 24/25.3.44. **JB683/G** OF-C To 12Sqn. **JB706** OF-F/H From 83Sqn. To 635Sqn. **JB708** OF-J From 83Sqn. FTR Lille 10/11.5.44. **JB712** OF-U FTR Berlin 28/29.1.44. From 156Sqn. FTR Stettin 5/6.1.44. **JB720** OF-S From 156Sqn. FTR Brunswick 14/15.1.44. **JB726** OF-Y **JB728** OF-P/S From 405Sqn. To 635Sqn. From 7Sqn. Abandoned over sea on return from Frankfurt 22/23.3.44. **JB731** OF-A/F **LM314** OF-R From 156Sqn. To 103Sqn. **LM323** OF-U FTR Cologne 28/29.6.43. FTR Wuppertal 24/25.6.43. LM327 OF-B From NTU. To 35Sqn. LM346 OF-N/O/U **ME382** To 50Sqn. ME533 OF-O/Q **ME623** OF-G From 582Sqn. **ME625** OF-O/T From 32MU. Collided with ND981 over Lincolnshire while training

23.6.44.

ME630To 106Sqn.ND333To 83Sqn.ND340To 156Sqn.ND343To 405Sqn.ND346 OF-N/O/T/VTo 467Sqn.

ND351 OF-P FTR Frankfurt 22/23.3.44.

ND355 OF-T To 635Sqn. **ND359** OF-M To 635Sqn.

ND367 OF-K FTR Berlin 20/21.1.44.

ND390 OF-S From 83Sqn. FTR Nuremberg 30/31.3.44. F/L R.A.D Trevor-Roper,

Rear gunner in Gibson's Dams crew, killed.

ND415 OF-Z/B Collided with LL967 (57Sqn) over Lincolnshire on return from

Brunswick 22/23.5.44.

ND421 OF-S FTR Brunswick 14/15.1.44. **ND440** OF-K/H FTR Berlin 24/25.3.44.

ND448 To 83Sqn. **ND450** OF-Y To 635Sqn.

ND451 OF-W/R/L FTR Gelsenkirchen 21/22.6.44.

ND452 OF-E/S To 625Sqn. **ND455** OF-G To 635Sqn.

ND478 OF-O FTR Berlin 15/16.2.44.

ND495 OF-Q/M/N

ND497 OF-Q FTR Schweinfurt 24/25.2.44. **ND500** OF-L/P/G FTR Munich 24/25.4.44.

ND501 OF-U/M/Q To 106Sqn. **ND508** OF-J To 635Sqn.

ND589 OF-D From SIU. Converted for Coastal Command duties.

ND617 To 405Sqn.

 ND640 OF-F/R
 FTR Nuremberg 30/31.3.44.

 ND706 OF-H/A
 FTR Mailly-le-Camp 3/4.5.44.

 ND739 OF-E/Z
 FTR Pierre-du-Mont 5/6.6.44.

ND740/G OF-F From 35Sqn. To 83Sqn.

ND746 OF-N/W From 35Sqn.

ND748 OF-O/M FTR La Chappelle 20/21.4.44. ND764 OF-E/B FTR Etampes 9/10.6.44. ND807 OF-P FTR Königsburg 26/27.8.44.

ND813 OF-Q From 582Sqn. FTR Lille 10/11.5.44.

ND815 OF-M/G From 156Sqn. FTR St Pierre-du-Mont 5/6.6.44.

ND840 OF-J From 83Sqn. FTR Bois de Cassan 6.8.44.

ND961 OF-U FTR Dortmund-Ems Canal at Ladbergen 7/8.2.45.

ND981 OF-H Collided with ME625 (97Sqn) over Lincolnshire while training

23.6.44.

NE121 OF-E FTR Cahagnes 30.7.44. **NE124** OF-J FTR Prouville 24/25.6.44.

NE167 OF-Y FTR from mining sortie 16/17.8.44.

PA973 OF-A/C FTR Böhlen 20/21.3.45. **PA974** OF-B FTR Münster 23/24.9.44.

PA979 OF-R To 582Sqn and back. FTR Courtrai 20/21.7.44.

PB133 From 7Sqn. **PB156** OF-R/O From 7Sqn.

PB157 OF-B From 582Sqn. To 83Sqn.

PB181 To 83Sqn.

PB200 OF-G From 35Sqn. Crashed in France during night exercise 10/11.11.44.

PB358 OF-J Ditched on return from Deelen 15.8.44.

PB372 From 35Sqn. **PB376** OF-S To 83Sqn.

PB398 OF-N FTR Darmstadt 25/26.8.44.

PB408

PB409 OF-F FTR Dortmund Ems Canal at Ladbergen 23/24.9.44.

PB410 OF-J From 7Sqn.

PB422

PB438 OF-U From 156Sqn. To 83Sqn.

PB450 OF-G/D FTR from night exercise over France10/11.11.44.

PB461 OF-E/M FTR Pölitz 21/22.12.44.

PB473 OF-F From 7Sqn.

PB510 OF-Q FTR Darmstadt 11/12.9.44.

PB521 OF-Q From 405Sqn. FTR Hamburg 21/22.3.45. **PB588** OF-E From 635Sqn. FTR Horten 23/24.2.45.

PB624

PB691 To 189Sqn.

PB700 OF-H

PB706 PB881

PB895 OF-M

PB900

 PB905 OF-K
 To 9Sqn.

 PD200
 From 625Sqn.

 PD400
 From 218Sqn.

RE115 OF-C/G **RE119** OF-G

RE129

HEAVIEST SINGLE LOSS.

16/17.12.43. Berlin. 8 Lancasters. 1 FTR. 7 crashed or abandoned on return.

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 Scool of General Reconnaissance.

Sgt Sergeant.

SHAEF Supreme Headquarters Allied Expeditionary Force.

SIU Signals Intelligence Unit.

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

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SOURCES OF INFORMATION

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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

STOCK LIST

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SQUADRON PROFILES CURRENTLY AVAILABLE

7 9 10 12 XV 35 40 44 49 50 51 57 61 75(NZ) 77 78 83 90 97 100 101 102 103 105 106 115 139 144 149 150 153 156 189 207 214 218 405 408 419 460 467 550 578 617 619 622 625 626 627 630

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