

of smoke and dust covering the target area, with 1 second overshoot' as instructed by the master bomber. Even so, a few bombs fell short, fortunately into open country.⁵⁷

The group that attacked Aisy had rather more difficulty. Although there was 'no cloud over the target ... vertical visibility [was] poor due to dust and smoke from earlier attacks.' Moreover, some could not make out the master bomber's broadcast clearly. In the end, because of the debris in the air, he apparently called off the attack on 'TIs Y[yellow],' asking them instead to aim (like those to the north) for the 'centre of smoke and dust ... with a one second overshoot.'⁵⁸ On the whole, results were good. All seven targets were struck hard and the Canadian troops were able to advance with light casualties past enemy positions that had previously held them up.⁵⁹

A few bombs did not fall in the proper area, however, and the master bomber 'was heard to stop some crews from bombing a quarry short of the target, and there were a number of undershoots, 3 or more miles short of the aiming point.' In fact, 126 crews, including forty-four from No 6 Group, had bombed the quarry in question, which was being used as a staging area by the 12th Field Regiment, Royal Canadian Artillery. All told, sixty-five soldiers were killed, 241 wounded, and ninety-one were missing. In addition, according to Major-General George Kitching, the commander of the 4th Canadian Armoured Division, 'the radios in the tanks and on the jeeps were badly affected at the most critical time.'⁶⁰

The army's curious request that, notwithstanding unfavourable winds, the bombing should take place from north to south, perpendicular (rather than parallel) to the front, 'in order to conform to the ground movement,' was in part responsible for the accident.⁶¹ Such subordination of Bomber Command's effort to army requirements had bothered Harris when he first saw the plan for Totalize, but Sir Arthur had also been nervous because, persuaded that they would not show up in daylight, the army had chosen not to fire coloured marker shells to identify the target. Accordingly, elaborate precautions had been taken to reduce risks. There would be both visual and Oboe marking; each of the seven targets would have its own master bomber and a deputy; crews were to make timed runs from the Channel coast to the target; and navigators and bomb-aimers were to map-read carefully.⁶²

Some airmen actually blamed these precautions for the subsequent target-finding error. 'Perhaps too many different safeguards were devised,' recalled Flight Lieutenant J.A. Morris from No 429 Squadron, 'which confused the bomb-aimers and navigators.'

We were to do a timed run from the coast to a check point inland, and from there use stop watches to calculate the number of seconds required to reach the target. In

⁵⁷ Following the abortive attempt to begin Operation Cobra on 24 July 1944, US General Omar Bradley had been shocked and astonished to discover that the Eighth Air Force had made a perpendicular bomb run in support of the American First Army, charging the airmen with 'a serious breach of good faith in planning.'

addition to this, we were using GEE, and Pathfinders would mark the aiming points. Map-reading was also stressed, but the artillery marking by star shells, that had been so successful* in the first raid, had been abandoned.

There were three separate targets to be covered, all close together, and ours was timed to be the last. When we reached the area, there was a great deal of smoke around from the first attacks, and it was not clear which was the last target. At this moment of uncertainty some aircraft dropped his bombs short, others followed, and the damage was done. The bomb-aimers were probably concentrating on their stop-watches instead of map-reading, and when they saw bombs falling ahead, either lost count, or mistrusted their calculations. Anyway, some forty planes bombed two minutes early, and hit concentrations of our armour waiting for zero hour. The Master Bomber, instead of using the code-word to stop the attack, called on R.T. 'Don't bomb the quarry; your target is ahead.' The bombs continued to fall.

I had no idea at the time that anything was wrong, and was horrified when [Wing Commander A.F.] Avant called me aside after interrogation and told me of the short bombing. Cameras were sealed and the films sent to Group, with the navigators' and bomb aimers' logs. I felt quite confident that we were not involved because Brownie [Flight Lieutenant J. Brown, Morris's navigator] reported that we bombed at the correct time. However, the next day it was disclosed that practically the whole squadron was involved; photographs showed that a quarry being used as an assembly point ... had been straddled. Our own picture showed bombs falling beside the main road leading to Falaise, far short of the target; fortunately there was nothing on the road. We all felt very badly about the mishap. It was a serious business, and was bound to have consequences; the worst could be that the army might lose confidence, and not request any further assistance from us.⁶²

Despite his later claim that he had 'no idea ... that anything was wrong,' Morris was so unsure of himself at the time that he brought one 500-lb bomb back to base. Others in his squadron were equally flummoxed when they could not see the yellow target markers that were supposed to mark the aiming point and were instructed (somewhat vaguely it must be said) to bomb the middle of the smoke instead, while still observing all the safeguards built into the mission. While Flying Officer J.C. Lakeman's stop-watch timing was 'right on' when he released his bombs, others were nearly a minute early when they followed the master bomber's instructions. For some, it proved altogether impossible to follow the prescribed procedures. 'Timed run from Caen ... was not used,' Flying Officer P.J. Cormier reported. 'Had to weave to avoid other aircraft.'⁶³

It was not just No 429 Squadron that had difficulty, and upon their return to base many crews indicated they were uneasy about whether they had bombed the correct target, an alarming state of affairs given its proximity to friendly troops. 'M[aster] B[omber] called for bombing yellow TIs, some con-

* Morris exaggerates. The star shells were not brilliant enough to show through dust and debris, and the master bomber, it will be recalled, had to call off the attack early.

fusion over which A[iming]/P[oint] was ours,' announced one; 'approaching column of smoke which we took to be our target 50 secs. early on E[stimated] T[ime] of A[rrival],' reported another. Several said they had witnessed 'under-shooting,' and some, like Flying Officer W. Edmondson of No 428 Squadron, freely admitted dropping his bombs '1 min early in error.' The formal investigation which ensued asserted, unforgivingly, that the bombing of the quarry at Hautmesnil 'was started by two aircraft of No 428 (RCAF) Squadron who bombed almost simultaneously,' was continued by crews from an Australian squadron, and completed by crews from No 1 Group.⁶⁴

Soldiers subjected to the bombing found the experience not nearly as stimulating as watching the enemy being bombed. 'The second wave hit at the factory buildings south of Quesnay Woods,' Captain T.J. Bell of the 12th Field Regiment recalled:

and as this bombing was very close to us everyone had a grandstand seat for the show. It really looked impressive and one wondered how the Jerries could live through it. Soon we were to know ... The next wave bombed behind us. Great pillars of smoke arose and at our gun position we thought perhaps the *Luftwaffe* was bombing from above our heavies. It wasn't so, however, as the next wave dropped their bombs directly on us. The giant planes came over at less than a thousand feet and as they approached we could see the bomb doors open and the bombs come tumbling out ... In a steady, stately procession the heavies came over, wave after wave, unendingly. The first bombs dropped on us at 1430 hours and at 1540 hours we had our last.

During that time there were frantic efforts by officers and men to set out our identification markers and ignite our yellow smoke canisters. The attempts were dismal failures as they only seemed to rivet the attention of the bombers on us, as a target, more thoroughly. They not only bombed us but they machine-gunned us as well. No Germans ever presented a finer tactical target than we did on that day with all our guns pointing unmistakably south and all our vehicles with their clearly visible white stars. The bombers were so low we could clearly see the figures of the pilot and co-pilot and surely they could see us as well.⁶⁵

Knowing, as we do, that the Pathfinders were dropping yellow target indicators, it is easy to understand why, as the gunners fired their yellow smoke, they felt they were becoming even more of a target for the bomber stream. And when, a little later, an army-controlled and piloted Auster observation aircraft had taken off and fired red Verey lights in a further attempt to halt the bombing, these too were mistaken for target indicators.

The Canadians, in fact, had been following Eisenhower's (and First Canadian Army's) standing orders when they fired yellow smoke to mark their forward positions and warn friendly aircraft away – orders of which High Wycombe was unarguably aware. Apoplectic at the way in which the press was holding his command entirely responsible for the mishap, however, and even more incensed that the Auster crew was credited with preventing a still greater tragedy, Harris lamely tried to spread the blame by maintaining that during the planning for Tractable the soldiers had made no specific mention

of their intention to fire yellow smoke as a warning – a bizarre way, indeed, to interpret and treat 'standing' orders. The AOC-in-C was also more than a little aggrieved that, having made manifest his misgivings about the Tractable bombing plan, Bomber Command was now said to be at fault when things happened as he had cautioned they might.⁶⁶

Sir Arthur attached no blame to the master bombers. So far as he was concerned, they had done a difficult job well, as evidenced by the fact that the majority of main-force crews had bombed where they were supposed to. Furthermore, he did not fault the one master bomber who had tried to stop the bombing at the quarry but did not use the recognized code that would have called off the entire attack. Rather, the misadventure had resulted from incomplete planning, and particularly from the failure to generate a simple, standardized procedure to call off a few crews bombing inaccurately while the rest were where they should have been. Even so, although only No 6 Group had issued stop-watches to all crews and taken particular care to ensure that they understood the importance of the timed run, it had been RCAF crews 'who were the most in error' despite these precautions, and they had to shoulder some of the responsibility as well.⁶⁷

The AOC-in-C's conclusions by and large reflected those reached by the groups involved. No 6 Group's report of findings, for example, heavily criticized those who had bombed before their timed runs had expired – despite the mitigating circumstances that could be adduced in their favour.

The attack on A[iming] P[oint] 23 was preceded by attacks on 3 aiming points in the same area and consequently it was anticipated that the resulting dust and smoke would probably make definite identification ... difficult. Therefore, in order to avoid the very mistake which was subsequently made, all the aircrews ... were briefed to make a timed run from the enemy coast to Caen and from Caen to the release point.

It now transpires that one of the chief contributing factors was that those crews which bombed short had their navigators take the time check, and thus intercommunication between the navigator and the bomb aimer was essential to ensure against dropping before the ETA at the target. Unfortunately, the Master Bomber's comments received over the intercommunications system seriously interfered with the time checking conversation.

Nonetheless, the report concluded, 'the blame for this inaccurate bombing appears to lie with the bombing teams in that they neglected to check their E[stimated] T[imes of] A[rrival] carefully ... thus disobeying the carefully prepared instructions.'⁶⁸

Under these circumstances, crews who had bombed short were left with very little excuse for their part in the incident. 'No matter what misleading conditions and indicators existed,' Harris observed, 'any adequate effort to maintain the check on a timed run from the coast line to the target areas could and would have prevented ... errors.' Accordingly, squadron and flight commanders personally implicated lost their appointments and their acting rank, and most were posted away to other units. (The Pathfinders who had gone wrong

– none of whom were from No 405 Squadron, it should be said – left No 8 Group and returned to normal flying duties.) A list was also compiled of all crews who had bombed in the vicinity of the quarry so they would not again be 'employed within thirty miles forward of the bomb line until reassessed by the AOsC after further experience on targets outside the operational area of our own troops.' That, Harris thought, should lessen the chance of a similar occurrence in the future.⁶⁹

No 429 Squadron's Jerrold Morris was one pilot who lost command of his flight. 'I was called to Six Group for an interview with a high ranking officer,' he explained. 'He told me that he was very sorry to have been deputed to carry out the orders of the Command ... All officers involved were to be deprived of acting rank, and all crews were to undertake bombing details on the ranges, to produce results up to specified standards, before being allowed to take part in further army co-operation raids. He said that he realized that the accident was not due to carelessness, as much as to fortuitous circumstances. I felt quite sorry for the man.'⁷⁰

High Wycombe also took a number of steps to strengthen the 'essential safeguards' built into its army support operations after Tractable. Wind direction and smoke drift would henceforth be 'overriding considerations' in planning such missions; timed runs were to be adhered to by all crews; a master switch was to be installed on the navigator's panel 'with which he can prevent bombs being released by the bomb-aimer before the expiry of the timed run'; extra master bombers with 'cancellation pyrotechnics' were to be employed; and the troops on the ground were to be given orders 'to use no pyrotechnics likely to be confused as target markers.'⁷¹ General H.D.G. Crerar, commanding the First Canadian Army, was satisfied. 'I remain a very strong advocate of the use of Heavy Bombers in closely integrated support of the Army,' he told Harris, '... by day as well as by night.'⁷²

In his memoirs, Sir Arthur Harris argued that 'without the intervention of Bomber Command the invasion of Europe would have gone down as the bloodiest campaign in history unless, indeed, it had failed outright – as it would undoubtedly have done.' Overstatement was still the AOC-in-C's forte, and whatever he may have said after the fact about the pride and pleasure he took from Bomber Command's contribution to the battle for Normandy, he sent his crews back to the cities of Germany as soon and as often as he could: five times in July, not counting raids on synthetic oil plants, twelve times in August, and five again in the first two weeks of September, before the strategic bomber forces were released from Eisenhower's control. The target lists were all too familiar – Kiel, Stuttgart, Hamburg, and Brunswick, among others – and so, at times, were the casualty lists as well. It should be noted, at the same time, that in terms of weight of attack the air war was entering a new phase. Of all the bombs that were dropped on Germany during the Second World War, '72 per cent fell after 1 July 1944.'⁷³

The first of these 'extra-curricular' raids, against Kiel on 23/24 July, involved 629 crews (but only forty-two from No 6 Group). Having lost sight of the low-flying main force at Rostock, where it had appeared for an instant through the Mandrel screen and was dismissed as a Gardening effort, the German air-defence system gave only a few minutes' early warning. Only four bombers failed to return. Stuttgart was attacked the next night by 614 crews, forty of them from No 6 Group. Despite haphazard navigation – some aircraft (including a number from No 6 Group) 'violated Swiss territory on return from Stuttgart,' upsetting the Swiss and forcing Bomber Command to concoct suitably soothing replies – damage was heavy, with both the Bosch and Zeiss lens factories hit. But so were Bomber Command's casualties. Twenty-three crews, 4.6 per cent, failed to return, including one from No 419 Squadron.⁷⁴

Stuttgart was also the target on the next two raids into Germany. On 25/26 July, with 85 per cent of crews bombing within three miles of the aiming point, damage was very heavy, but the low casualty rate of 2.2 per cent mystified the analysts at High Wycombe. From intercepted radio traffic it was clear that the target had been identified by the enemy in good time; fighters were scrambled at nearby beacons from bases in Germany, Belgium, and France; there were no diversions; and yet there was 'nothing ... to account for the comparative lack of success which the enemy ... achieved ... Their tactical moves were timely and their general dispositions organised to put a large force of fighters into the bomber stream well before the target was reached.' There being little else to go on, the chief signals officer at Bomber Command deduced that weather had been the bomber stream's greatest ally, and that 'on a night when visibility was poor and considerable reliance was placed on the use of AI, our ... WINDOW ... prevented a large numbers of fighters from completing an interception.'⁷⁵

Wing Commander J.K.F. Macdonald, a veteran of the 1942 Aleutian campaign against the Japanese who had recently taken over command of No 432 Squadron, chose to fly this operation because 'we had had a series of relatively short-distance trips down into the Brittany Coast, and I didn't feel like sending the squadron off to Stuttgart, which was a ten hour trip, unless I was prepared to go myself.' As his own crew had been screened, Macdonald 'cast around ... to find out who I had who could come with me.'

Unfortunately ... the only people available were the navigator leader, gunnery leader, and engineering leader ... We never got to Stuttgart. We went down somewhere east of Chateaudun, France. In the crew I had picked up, the radio man didn't know how to operate FISHPOND ... I didn't know that he didn't know ... The first we knew that we were under attack was when we were hit with 20 [mm] cannon on the starboard inner engine ... We were on fire ... I ordered them to abandon the aircraft ... Apart from [the rear gunner, who had cut his jugular vein while parachuting] we all got out reasonably safely ... I hid under a cornstalk ... The farmer that picked me up was not part of the underground, but he had contact with somebody who was.

After obtaining civilian clothes and an identification card showing him to be 'a French labourer, deaf and dumb,' Macdonald was moved through the Resistance network back to Chateaudun, where he waited until the Americans arrived in late August. Returning to England, Macdonald refused the normal evaders' leave and asked for re-assignment to his old squadron, only to be told by Air Vice-Marshal McEwen that 'there was no way ... I would get it ... I should be court martialed for losing all those leaders.' Promising never to take his senior staff on operations again, Macdonald repeated his request, McEwen relented, and on 27 September he resumed command of No 432 Squadron.⁷⁶

Two nights later, this time in good weather, Bomber Command levelled Stuttgart's city centre (but scored 'no hit ... on armaments firms where only superficial damage was inflicted'). There was heavy Windowing, and a 'clever' plan made full use of all available counter-measures – Mandrel, Drumstick, Airborne Cigar, Tinsel, Jostle, and Fidget – all for nought. Taking full advantage of the clear skies, 'the enemy's dispositions ... were good ... fighters were so placed that they could intercept in strength,' and thirty-nine Lancasters, 7.9 per cent of the attacking force, were shot down. All 235 of No 6 Group's crews were sent to Hamburg that night – it was the first anniversary of the firestorm raid – and although the skies were not quite so clear there as at Stuttgart they, too, suffered heavily, especially on their homeward flight. Twenty-two crews (7.2 per cent, but 9.6 per cent of the Halifaxes) failed to return, with No 431 Squadron losing five of seventeen.⁷⁷

With results like that to ponder, by the end of July the operational researchers had arrived at a disheartening conclusion. 'The enemy night fighter organization has got ahead of our tactical counter-measures,' they cautioned, and 'unless there is a radical change in the tactical picture we would be likely to incur prohibitive casualties in strategical operations by night against Germany in the coming winter.' Sir Charles Portal thought the same, submitting on 31 July his own, equally pessimistic, predictions about the future of bombing to the prime minister. Recent losses, he asserted, were 'another pointer to the increasing efficiency' of the Luftwaffe and illustrated how the enemy was 'surmounting the difficulties presented by our radio countermeasures,' especially in good weather. If such loss rates continued, he added, Bomber Command would have to alter its tactics, provide better defensive equipment for its aircraft, use long-range escort fighters at night, or switch over to day bombing.⁷⁸

For his part, Harris told the undersecretary of state for air that 'it is an acknowledged fact that the only branch of the German Air Force which has survived and maintained a high degree of efficiency and morale is the Night Fighter force, and it is logical to suppose that the rate of loss which will follow the renewal of strategic bombing with the deeper penetration involved, will not fall below that previously experienced and may well prove considerably more severe.'⁷⁹

Because of the tactical situation in Normandy – and the continuing need to take on V-weapon sites – there were no further operations to German cities until mid-August. By then, Bomber Command was the beneficiary of an extra-

ordinary bit of good luck. On the night of 13 July the crew of a Ju 88 night-fighter, having lost their way while chasing a small Gardening force, landed by mistake in Suffolk. From it, the British learned the secrets of SN2 radar (hidden up to now because it used a frequency that was also employed by part of the Freya chain) as well as Flensburg and Naxos. High Wycombe recognized at once the vulnerability of H2S, Monica, and IFF, and from this date forward periods of radar and radio silence were included in all its operational plans. Counters to SN2 were also quickly developed – first type MB ('Long') Window, then the Piperack jammer.⁸⁰

However, the Ju 88 revealed more than just electronic secrets, for when the airframe itself was examined Bomber Command discovered the extent to which the Germans had fitted armour to their night-fighters. The ten-millimetre plate in the nose was 'virtually invulnerable' to .303 ammunition, and that led Harris once again to ask that production of turrets capable of taking .5-inch guns be hastened. The Air Ministry, annoyed by Harris's inconsistent and infelicitous demands (first for better vision, then for more firepower) as much as by the ease with which he brushed aside difficult design and production problems, did not relish entering into another prolonged argument with him on the issue of bomber defence, but it was agreed that work on the Frazer Nash 82 turret would be accelerated. But only a few were produced by the end of the war, while work on turrets mounting 20-millimetre cannon never advanced beyond the prototype stage.⁸¹

Moreover, although the radar-assisted automatic gun-laying turret (AGLT, or Village Inn) was ready for operational testing in the summer of 1944, the somewhat tardy recognition of how advanced the enemy were in exploiting Bomber Command's radio and radar transmissions as clues to finding the bomber stream led to fears that it, too, might become a homing device for the Luftwaffe. Not only were there radar emissions for night-fighters to intercept and track, but the infra-red IFF signal that had been designed for it could be detected from the ground as well as in the air. Harris, however, was only too eager to provide his crews with a radar that searched out to 1330 yards in a 30° cone that could be increased, by traversing the turret, to 100° left/right and 60° up/down. Even with its .303-inch guns, he exclaimed, Village Inn was 'a formidable weapon against the night-fighter,' and he urged that production forge ahead. To bring the sad story of AGLT to a close, however, only four squadrons had been equipped by May 1945, and although their loss rate was cut by two-thirds they did not utilize it fully. The equipment proved to be too sophisticated for some air gunners, while others, who understood intuitively that they were more likely to shoot down bombers than night-fighters unless AGLT's IFF component worked perfectly, relied on Village Inn as a warning device only. Because its radar was a marked improvement over other varieties, they were at least able to take evasive action earlier – hence their lower casualties – but blind-firing occurred in only four sorties per thousand.⁸² To all intents and purposes, then, Bomber Command ended the war with the same defensive armament it began with five years earlier.

That was all in the future. For the present, losses suffered on the experimental 12/13 August 1944 H2S blind-bombing raid to Brunswick – 'a complete failure' with fewer than 10 per cent of crews hitting the target – and an accompanying mission to Rüsselsheim, merely confirmed Portal's and Harris's suspicions that the enemy was more capable of thwarting attacks than ever. The German controllers had not responded to the initial incursions appearing on their screens, and the fighters sent to intercept the two genuine main forces arrived in plenty of time. Losses were heavy: 7.1 per cent of the force sent to Brunswick (slightly higher in the last wave, to which Nos 4 and 6 Groups were assigned), and 6.7 per cent of those who went to Rüsselsheim.⁸³ Once it was realized that careless use of H2S was not altogether to blame, but that the enemy tracking and radio-intercept services were cleverly using all their resources and all kinds of clues* including Oboe 'to identify the target and often to recognise diversions as such,' it seemed to some that the only recourse was 'to stop all transmissions from our aircraft.' That was not going to happen; if nothing else, night-bombing required electronic aids to navigation to remain at all practicable.

At the same time, Air Ministry scientists were warning Harris that the time had come to cease relying exclusively on evasion and electronic jamming to protect the bomber stream; instead, they explained, 'nearly all the emphasis needs to be put on destroying enemy fighters' – a daunting task given Bomber Command's meagre armament.⁸⁴ The solution, it was clear, was to take the offensive, and on 15 August Harris dispatched a thousand aircraft to join nearly seven hundred American bombers – all supported by a thousand fighters – in a massive daylight assault on nine fighter bases in Holland and Belgium. 'There is one section of the G[erman] A[ir] F[orce] which is not merely intact,' briefing notes pointed out, 'but is actually gaining in strength.'

This operation in which American and RAF Bomber Command will be working together is aimed primarily at the airfields used by the GAF Night Fighters during the short summer nights. These fighters operate from forward aerodromes fairly near the coast and while they are thus sticking their necks out it is a good opportunity to take a crack at them and to reduce them to the same level of impotence as the enemy's day fighters. The airfields allotted to Bomber Command are in the heart of the night fighter area and carry an average of 20 to 30 night fighters each; many of them operate whenever night attacks are made on the continent which they will not be able to do if the airfields and runways are pitted with craters. The intention of these combined and simultaneous attacks is to produce an immediate reduction in the fighting efficiency of the GAF by direct attack – in other words to deliver a smashing punch on the

* Besides the Naxos and Flensburg devices with which we are familiar, the German Y Service employed a number of direction-finding devices against the broad range of British radio and radar transmissions. Laubfrosch looked for H2S, at a distance of 500 kilometers; Gerhard looked for Monica at a similar distance; Flamme and Sägebock were used against Bomber Commands IFF; Lux and Grille looked for the AI used by Mosquito night-fighters; Donnerkell was aimed at Oboe; and Dudelsack looked for the British R/T and W/T jammers.

nose which, if it does not knock the [opponent] completely out of the ring, will anyway keep him on the floor at this critical moment.⁸⁵

Favoured by good weather and meeting scarcely any opposition, Bomber Command did considerable damage to six of the airfields. No 405 Squadron provided Pathfinders for the attack on the Brussels/Melsboek facility.

At 1156:12 hours, Master Bomber dropped T1 red 50 yards N.E. of Aiming Point 'A' on the runway and told Main Force to bomb 50 yards to starboard of them. Backers-Up dropped T1s between Aiming Point and S[outh] dispersal area and also 500 to 1,000 yards NE of Master Bomber's reds on runway. Meanwhile, Main Force, which was two minutes late, had thoroughly bombed the S[outh] dispersal area and the E[ast] and S[outh] runways, so Master Bomber later told them to undershoot reds on runway by 100 yards. After he repeated this several times, the bombing moved back to the N[orth] dispersal area. Bombing was good. Only two or three sticks seen outside the airfield ... By the end of the raid, the airfield was covered in smoke and dust.⁸⁶

For the next two weeks, loss rates on all raids, including those to Germany, dropped significantly, but the Luftwaffe soon bounced back. The six damaged sites were repaired, aircraft replaced, and as August turned to September – and Anglo-Canadian ground forces overran the flying-bomb sites, thus eliminating them from High Wycombe's targeting calculations – losses began to rise again. While a raid on Stettin early in August had suffered very few casualties, another on 29/30 August cost 5.7 per cent of crews, while operations against Königsberg the same day brought losses of 7.9 per cent.⁸⁷

In response, and also in anticipation of the Market Garden operation of 6 September, 670 crews (including 105 from No 6 Group), escorted by more than two hundred fighters, attacked German fighter fields at Deelen, Soesterberg, Venlo, Volkel, Eindhoven, and Gilze Reijen, in the late afternoon of 3 September, knocking out all six. Like almost all the daylight missions to France, Holland, and Belgium at the time, this attack produced very few casualties. Just two crews failed to return. Indeed, as we shall see, American P51 Mustangs had so diminished the Luftwaffe's day-fighter strength that daylight raids to Germany were only marginally more costly.⁸⁸

With operations taking place by both night and day to support Operation Overlord and subsequent army operations in France, Bomber Command's (and No 6 Group's) sortie and tonnage-dropped statistics had climbed significantly while they were under General Eisenhower's control. So had the number of consecutive nights (and days) when operational flying took place. Nevertheless, under McEwen's direction the number of flying training hours was also increased. That may have accounted for the very high number of crews attacking the primary target – indeed, from January to August 1944 the Canadian average was the best in Bomber Command – and it probably contributed to the declining early return and flying accident rates as well (see table 10).

At the same time, the quickening tempo of operations put a tremendous strain on groundcrew, who were almost entirely Canadian by this time. Not

TABLE 10
No 6 Group Operations, January–August 1944⁸⁹

	January	February	March	April
Sorties	651	678	1,665	1,646
Operational flying hours	7,020	9,179	13,147	11,525
Training flying hours	3,165	3,718	5,213	5,104
Flying accidents/1000 hours	26	27	27	18
Loss rate: per cent of sorties	7.4	5.4	7.8	2.1
Early return rate: per cent	8.6	9.0	4.8	2.6
	May	June	July	August
Sorties	1,719	2,929	2,742	3,704
Operational flying hours	12,097	16,573	16,798	21,969
Training flying hours	5,535	4,350	6,415	7,257
Flying accidents/1000 hours	19	15	13	14
Loss rate: per cent of sorties	1.8	1.5	1.6	0.6
Early return rate: per cent	2.3	1.4	1.4	1.9

only were they loading many more aircraft much more often – it took about five hours to bomb-up the machines on a two-squadron station with up to two hundred tons of bombs – but, with the variety of operations undertaken, particularly those involving army support, they often had to do so on extremely short notice. Although fewer aircraft were being lost over France, there was nevertheless considerable battle damage to repair: 3 per cent of all sorties in June, 3.2 per cent in July, 4.6 per cent in August, and 11.1 per cent in September, most due to daytime Flak. However, serviceability rose to near 90 per cent in June and July (and the number of non-starters fell), and even the falloff to 83 per cent in August caused only passing comment. McEwen was satisfied with serviceability of about 85 per cent, and noted that the group's performance over the summer of 1944 was a marked improvement over the 1943 average of 64.7 per cent. In the Luftwaffe, at this time, the serviceability rate was about 65 per cent.⁹⁰

The September 1944 submission recommending the award of an MBE to Flight Lieutenant W.S. Hall – he was eventually Mentioned in Despatches – for his work at Tholthorpe illustrates the calibre of the groundcrews' effort:

Non-starters have been kept to an absolute minimum by this officer's constant and vigilant supervision of the Daily Servicing Line. During the past six months, out of a total of 2,000 aircraft detailed for operations, there have been only nine non-starters. From the 21st April 1944 to the 7th July 1944, thirty-five operations were carried out from this station without one non-starter. On June 6th 1944, when this station was asked for a maximum effort from both squadrons, 36 aircraft were detailed, 36 aircraft took off, and 36 aircraft returned. One of these aircraft had been received on this station on the afternoon of June 5th, and upon inspection was found to have unserviceable turret generators. The Servicing Squadron immediately set to and by almost superhuman efforts were able to get this aircraft on line and carry out a successful sortie on June 6th.⁹¹

Groundcrews were also in some danger – fuelling and bombing up aircraft could be a perilous business – and the summer of 1944 saw a number of ground personnel recognized for their courage. The most memorable incident probably took place at Tholthorpe, on 27/28 June. Although the attack on a V-1 site at Ardouval had proceeded without any losses, a crew from No 425 Squadron landing on three engines collided with another machine on the ground 'which was parked in the dispersal area and fully loaded with bombs.'

The former aircraft had broken into three parts and was burning furiously. [The base commander], Air Commodore Ross, was at the airfield to attend the return of aircraft from operations and the interrogation of aircrews. Flight Sergeant St Germain, a bomb aimer, had just returned from an operational sortie and Corporal Marquet was in charge of the night ground crew, whilst Leading Aircraftmen Mackenzie and Wolfe were members of the crew of the crash tender. Air Commodore Ross, with the assistance of Corporal Marquet, extricated the pilot who had sustained severe injuries. At that moment ten 500-pound bombs in the second aircraft, about 80 yards away, exploded, and this officer and airman were hurled to the ground. When the hail of debris had subsided, cries were heard from the rear turret of the crashed aircraft. Despite further explosions from bombs and petrol tanks which might have occurred, Air Commodore Ross and Corporal Marquet returned to the blazing wreckage and endeavoured in vain to swing the turret to release the rear gunner. Although the port tail plane was blazing furiously, Air Commodore Ross hacked at the perspex with an axe and then handed the axe through the turret to the rear gunner who enlarged the aperture. Taking the axe again the Air Commodore, assisted now by Flight Sergeant St Germain as well as by Corporal Marquet, finally broke the perspex steel frame supports and extricated the rear gunner. Another 500-pound bomb exploded which threw the three rescuers to the ground. Flight Sergeant St Germain quickly rose and threw himself upon a victim to shield him from flying debris. Air Commodore Ross' arm was practically severed between the wrist and elbow by the second explosion. He calmly walked to the ambulance and an emergency amputation was performed on arrival at station sick quarters. Meanwhile, Corporal Marquet had inspected the surroundings and, seeing petrol running down towards two nearby aircraft, directed their removal from the vicinity by tractor. Leading Aircraftmen McKenzie and Wolfe rendered valuable assistance in trying to bring the fire under control and they also helped to extricate the trapped rear gunner, both being seriously injured by flying debris.

Ross was awarded the George Cross, Flight Sergeant St German and Corporal Marquet the George Medal, and LACs Mackenzie and Wolfe the British Empire Medal. LAC E.T.L. Foidart was Mentioned in Despatches for driving an ambulance to the immediate vicinity and 'unhesitatingly' giving assistance, and LAC F.W. Jardine and Squadron Leader K.H. Running, the medical officer, were similarly recognized. Jardine, it was reported, 'drove a Fire Crash Tender into the vicinity of the fire and unhesitatingly carried out his duty until he was rendered unconscious by an explosion,' while Dr Running 'entered the burning aircraft and with assistance removed the pilot who was seriously injured. Squadron Leader Running continued the rescue and as the last occupant was

being removed [he] and his staff were thrown to the ground by the explosion of ten 5-cwt bombs from the aircraft in dispersal. Despite this, Squadron Leader Running continued with his rescue and first aid, being subjected to a further explosion a few minutes later. When all personnel were safely removed, the Squadron Leader proceeded to Station Sick Quarters and carried out an emergency amputation on one of the injured [Air Commodore Ross].⁹² Usually unsung, and often taken for granted (in this history as well as in their work), the ground staff were the glue which held No 6 Group together.

Armageddon over Germany, September 1944–May 1945

Although it had taken longer than anticipated for the Allies to break out of Normandy, victory seemed to be in sight by mid-September 1944. In the west, most of France had been liberated, British and Canadian forces were deep inside Belgium, and the Americans had arrived on the German frontier near Aachen. In Italy, Anglo-American armies (including a Canadian corps) had broken through the Gothic Line and were approaching Ravenna. On the Eastern front, the Red Army had taken Romania in the south and was poised to debouch onto the Hungarian plain; further north, having reached an armistice with Finland, the Soviets were preparing to clear their Baltic flank and push through Poland into East Prussia.

Bomber Command was already benefiting from the advance across France and Belgium – something of an ironic twist, given Sir Arthur Harris's early opposition to Operation Overlord and his initial reluctance to provide bombing support for the Allied armies as they fought their way inland. However, their success on the ground had forced the Luftwaffe to pull most of its fighter units back to Germany, abandoning many of its early warning radar sites in the process. With less time left for 'anticipatory deployment' and 'Schwerpunktbildung' – concentration at the vital point – 1 Jagdkorps and Luftflotte Reich had far fewer opportunities to organize and undertake the kind of route interception that had proved so costly to Bomber Command during the Battle of Berlin.¹

At the same time, Luftwaffe bases in western and central Germany were beginning to come within operational range of the Allied tactical air forces established on the Continent and closing up behind the advancing armies, and night-fighter losses on the ground, incurred during the day, began to exceed those sustained in the air. Already on the rise, the latter would increase dramatically from 2.5 per cent of sorties flown in September to 6.2 per cent in October and 11.6 per cent in December. Although slightly over half did not involve any Allied action – overworked night-fighter crews were suffering from fatigue, and the flying accident rate was climbing sharply – 'Mosquiphobia' was becoming a very real phenomenon. Indeed, despite the fact that many Mosquito sorties involved bombing and target-marking rather than Intruding, some Nachtjagdgeschwader appear to have ordered their crews to land whenever Mosquitoes were reported in the vicinity.²

Luftflotte Reich's combat effectiveness was being further eroded by the shortage of fuel and lubricants felt throughout the Wehrmacht after the Russian capture of the Ploesti oilfields and Allied bombing attacks on the synthetic plants in western Germany over the spring and summer of 1944. With production of aviation fuel having fallen by about three-quarters since June, and with reserve stocks dwindling, consumption now had to be strictly controlled. Thus, while the operational strength of the night-fighter force was actually rising, from 792 machines in September to 982 in December 1944, because of the fuel shortage the number of combat sorties would fall from 1300 in September to nine hundred in October, climbing only slightly to 955 in November and 980 in December. Training, too, had to be curtailed.³

Yet, from a Luftwaffe perspective, the situation was not entirely hopeless. Most nights at least one radio channel was open for the running commentary. Similarly, although Allied jamming of AI was often very effective, so that fighter crews knew they were in the bomber stream 'only ... from the air disturbance caused by the slipstreams of the bombers'⁴ – the same clue that had helped the pioneers of German night-fighting three years before – Naxos and Flensburg enabled them to track and intercept bombers through their H2S and Monica emissions. In fact, 'hair-raising' accounts about the efficiency of Naxos would soon produce 'great disquiet' at High Wycombe, especially when linked to the 'unpleasant potentialities' of Schräge Musik's upward-firing guns.⁵ Even after tactical countermeasures had been devised and instructions laid down to restrict the use of H2S until the bomber stream was well inside Germany, the morale problem in Bomber Command was 'not ... readily redeemable.' Many crews remained convinced that, for all its value as a navigation aid, H2S was also a potential danger even when used judiciously, and they conveniently forgot to turn it on.⁶

It was difficult, then, to say that the tide of war had necessarily or inevitably turned in Bomber Command's favour. Indeed, persuaded there were few holes left to exploit in the enemy's air-defence system, and beginning to see the electronic war as something of a stalemate, Sir Arthur Harris feared that his crews might again suffer 'prohibitive losses.' 'Like the U-boat,' he told Winston Churchill on 30 September, 'the heavy bomber ... will meet its counter in the end,' and it was therefore essential to 'get going while the going is good.'⁶

In fact, the going would remain better than Harris anticipated for quite some time. Although senior Luftwaffe officers spoke wistfully about new radars able to withstand jamming and the commitment of jet-powered aircraft in large numbers to the night-fighter role, it was expecting too much of an economy under siege to produce such technologically advanced and sophisticated equipment quickly and in quantity. As for active defence, Adolf Hitler still insisted that Flak should have first priority, and until November 1944 he

³ The director of air tactics had produced a reasonably accurate analysis of Schräge Musik in August 1944. His estimates were confirmed in December 1944 when a Do 117 equipped with upward-firing guns landed at Zürich, Switzerland. Before destroying the aircraft (in exchange for ten Me 109 fighters), the Swiss made a thorough investigation of the equipment, and their findings found their way to the Air Ministry.

was determined that the jet-engined Me 262 should not be employed defensively.⁷

While German aircraft production had finally begun to drop, between them the US Eighth and Fifteenth air forces could now call upon an average of just over 3000 heavy bombers and perhaps a thousand fighters every day. The sixty-seven main-force squadrons of Bomber Command (forty-two Lancaster, twenty-five Halifax) added another 1300-1400 to the total. (No 6 Group's fourteen squadrons – eleven Halifax, three Lancaster – accounted for just under three hundred.) In Bomber Command alone, the monthly average number of sorties had risen from 5400 in 1943 to 14,000 in 1944, while average payload per sortie had nearly doubled.⁸ Beyond that, there were about 1000 medium bombers in the Allied tactical air forces, along with another 3100 fighters and fighter-bombers – most of them now the equal of or better than their German counterparts and their pilots far better trained.⁹

At the beginning of September 1944, all this striking power was still at the direct disposal of Eisenhower and no date had been set for the return of the heavy bombers to air force control. Although initially reluctant to serve under SACEUR, Harris had come to welcome the operational freedom he enjoyed over the summer and was relieved not to have been 'harassed by confused and conflicting directives' emanating from the Air Ministry. For a number of reasons, however, the air staff was not content to leave Bomber Command under Eisenhower until victory had been won. Air Commodore S.O. Bufton, for one – an original champion of 'panacea' targets – had now been persuaded that it might be useful to mount at least one massive operation (Thunderclap) against the centre of Berlin in the hope that 'total devastation' of the German capital would not only provide 'a spectacular and final object lesson to the German people on the consequences of ... aggression' but also offer 'incontrovertible proof to all people of the power [and] the effectiveness of Anglo-American air power.' But if one purpose of the lesson would be to reinforce the air force's operational independence, it would be illogical to do so while its main striking power was under the control of a soldier; and it was partly in that context that the director of bomber operations recommended Bomber Command's return to Air Ministry jurisdiction. Bufton also agreed with Sir Charles Portal, an original architect of area bombing who was increasingly receptive to the strategic importance of oil, that Bomber Command must revert to Air Ministry control to ensure that Harris would bomb the enemy's synthetic plants as often as possible.⁹

The Americans, by comparison, had little interest in tampering with the existing chain of command. However, at the Octagon conference, held in

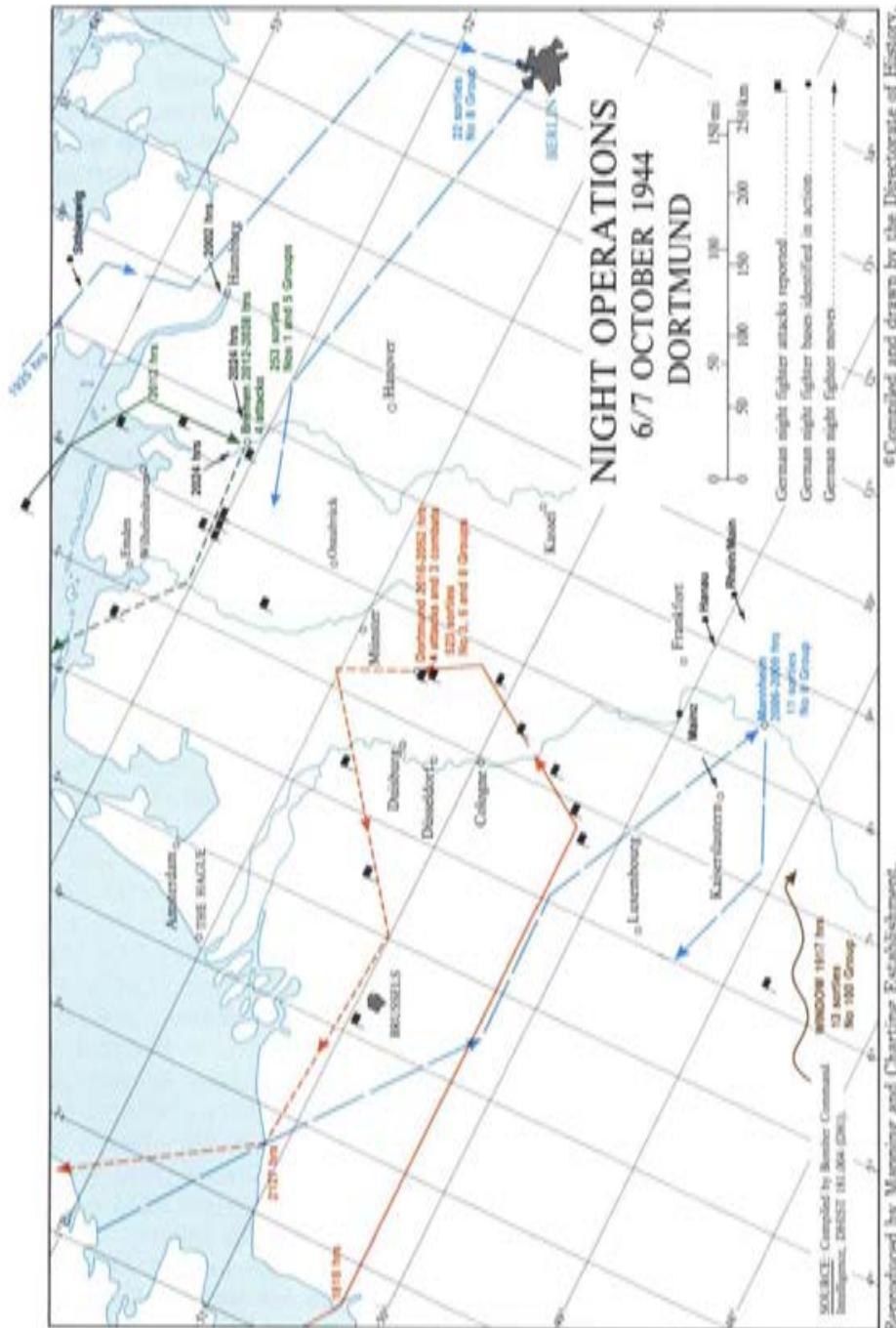
⁷ Striking power depended on payload as well as numbers. The range of an American Boeing B-17 – the workhorse of the US Eighth Air Force – carrying 4000 lbs of bombs was about 2000 miles. The Avro Lancaster could carry an internal bomb load of 18,000 pounds without modification to the standard bomb bay, while specially modified machines could carry the 22,000-lb 'Grand Slam' over a range of 1500 miles. Even the maligned Halifax III could carry an 8000-lb 'Blockbuster' to Berlin.

Quebec City from 10 to 17 September, Portal and Churchill convinced their American allies that a change would be beneficial. As a result, on 25 September overall control of the Combined Bomber Offensive was passed back to Portal, as CAS, and to General H.H. Arnold, commanding general of the US Army Air Forces. A new bombing directive issued the same day reflected their joint strategic vision. Oil was the first priority; tank and motor-vehicle production came second; while direct support of land operations should be furnished 'promptly' upon request from Eisenhower. The area offensive had not been put aside, however, and attacks on important industrial cities 'using blind bombing techniques as necessary' would still be permitted 'when tactical conditions are unsuitable for operations against specific primary objectives.'¹⁰

Indeed, area bombing of a sort received important new support just four days after that directive was issued. With the palpable failure of Field Marshal Montgomery's Operation Market Garden to force a crossing of the Rhine at Arnhem, the Allied air commanders agreed to mount a massive assault on the Ruhr (Operation Hurricane) to 'demonstrate ... the overwhelming superiority of the Allied Air Forces [and] bring home to the enemy a realisation ... of the futility of continued resistance.' Oil, transportation, and civilian morale would be the principal targets, with High Wycombe directed to take on 'the undamaged parts of the major industrial cities [with] the maximum tonnage ... in order to achieve a virtual destruction of the areas attacked.' The Americans, meanwhile, were to attack more specific objectives.¹¹

Bomber Command's third battle of the Ruhr, which would eventually involve 14,000 sorties delivering 61,000 tons of bombs, began the night of 6/7 October 1944, when 523 crews were detailed to bomb Dortmund. Boasting six railway marshalling yards and the southern terminus of the Ems Canal, the city was a transportation and communications target of considerable significance and also had a munitions industry. Underscoring the nature of the campaign, however, the main force was directed to attack the undamaged section of the town around the aiming point rather than any of these specific objectives. Operation Sprat involved three hundred RCAF crews: seven Pathfinders from No 405 Squadron, and 293 main force from No 6 Group. Since it was the largest single enterprise ever attempted by Canada's bomber force, the raid of 6/7 October deserves more than a passing mention.¹²

With a satisfactory weather forecast in hand, Harris chose Dortmund as the target at mid-morning. The hours of daylight had decreased with the coming of autumn and bombing would begin relatively early in the evening, the main force attacking in four waves over a fourteen-minute span between 2025 and 2039 hours. The specialist briefings began shortly after lunch. That was when the navigators learned what routes and altitudes would be used to and from the target, which Flak batteries and night-fighter beacons were likely to be encountered en route, where route-markers (if any) would be dropped, where spoof and secondary raids would take place – in this instance at Berlin and Ludwigshafen/Mannheim, while No 5 Group attacked Bremen – and which emergency airfields would be available on their return.



卷之三

The bomb-aimers, meanwhile, learned what payload they would carry, how they should set their sights for the correct bombing altitude, and which pyrotechnics would be employed by the Pathfinder Force that night – red, with green backers-up. Using master stations now established in France, the Pathfinders would employ Oboe ground-marking with visual backing-up and correction by the master bomber. Although fog was expected over the coast as the main force returned to England (and many crews, including the majority from No 424 Squadron, would have to divert to other landing fields), the skies over Europe were forecast to be clear, with a few patchy clouds.

Following the specialist briefings, which lasted about forty-five minutes, crews gathered for the main briefing, when the intelligence officer explained the significance of the target, repeated what the navigation leader had said about enemy defences, gave the location of reference points and decoy fires on the ground, and (this night) warned against any jettisoning of bombs near '52.14°N 05.57°E where there is a Red Cross POW Camp.' At Leeming, he concluded with a warning: 'Remember to empty your pockets. If you have the bad luck to become a POW, remember security and give name, rank, and number only. Do not emulate the [non-Canadian] Beaufighter crew who gave the Hun a complete history of the Squadron's activities ... also special equipment of which [the enemy] had no knowledge.'¹³ After that it was time for the preflight meal and then to dress. Once in their flying gear, crews boarded the trucks that took them to the dispersal point where, following further preflight inspections and other arcane rituals,¹⁴ they climbed aboard, taxied to the runway, and awaited the green flare that heralded their takeoff.

While twenty-two Mosquitoes mounted a diversionary operation to Berlin, No 5 Group flew to Bremen at low altitude, hoping to avoid detection; but that was not feasible for the main force heading inland to Dortmund. There was heavy Flak to contend with on the approaches to the city and everyone had been told to strive for height as they crossed France on a track for Frankfurt. When they finally turned north to the target, near Coblenz, the secondary stream continued on to Ludwigshafen/Mannheim, taking most of the night-fighters with it. Only nine fighter attacks were recorded between Coblenz and Dortmund and just five machines went missing. That represented a loss rate of less than 1 per cent, and on a clear night over the Ruhr results like that were unacceptable to Luftflotte Reich. In a subsequent radio message intercepted by the British Y Service, Generalleutnant Schmid expressed his astonishment that 'in spite of pains and admonitions, and orders throughout the whole year, I have not succeeded in bringing the Jagddivisionen at least to the point of being able to distinguish in what strength and in what direction the enemy is approaching. In my view there is no excuse whatever for this failure.'¹⁴

The two Canadian crews who failed to return both fell to Flak. One, from No 426 Squadron, lost both port engines and caught fire shortly after leaving the target, forcing the crew to bail out. The other was hit before it reached

¹³ Many crews habitually urinated on the tail wheel, either in a group or in a pre-established pecking order, before climbing into the aircraft.

Dortmund, but the pilot pressed on and bombed the target before crash-landing at Duisburg. In a bizarre twist of fate, the four crew members who had taken up their crash positions perished while those who had not, though badly injured, survived.¹⁵

The bombing proved to be heavy, accurate, and concentrated, and crews in the last wave over the city saw numerous fires taking hold.¹⁶ Reconnaissance flights the next day revealed 'extremely severe and widespread damage.'

All the through-running tracks of the main passenger station were cut, and the carriage sidings were 80 per cent unserviceable ... All the approaches to the marshalling yards were severed ... The *Stahlwerke* [and] *Elektrizitätswerke* and ... municipal power station ... were badly damaged ... Business/residential property was largely devastated, 70 per cent of the fully built-up area being quite destroyed.¹⁷

Half the city was without gas, water, and electricity, and the largest steel works was shut down for three weeks.¹⁸

Because of commitments to the British and Canadian armies clearing the Scheldt estuary, Harris was able to take on only two German industrial targets over the next week. Both were largely Canadian operations since, as we shall see, No 6 Group was not called upon to help their fellow countrymen secure the approaches to Antwerp. On 9/10 October the RCAF provided just under half the 435 crews who attacked Bochum in a raid that, because of dense cloud, did only scattered damage. This was followed by a daylight attack on the oil plant at Wanne-Eickel on the 12th, for which No 6 Group provided the entire main force of 111 Halifaxes and Lancasters. Although the refinery was not knocked out, a large chemical factory producing synthetic ammonia was destroyed.¹⁹

Bomber Command resumed Operation Hurricane two days later, when Duisburg was attacked twice within the space of fourteen hours by a total of 2013 sorties. No 6 Group contributed 258 of the 1013 crews taking part in the morning raid, covered by a heavy fighter escort that included twelve Mark IX B Spitfires of No 441 Squadron (fitted with jettisonable fuel tanks to achieve the necessary range) which had just been transferred back from Second TAF to No 11 Group of Fighter Command.* As explained in the briefing given at Leeming, No 1 Group's task was to 'destroy steel works. The purpose of all other attacks including ours is to destroy dispersed intact areas of the town.' 'This time we went after the city,' a gunner from No 429 Squadron recalled, 'aiming the bombs at any built-up area, no matter what it was,' and most crews selected the built-up area that lay between the Rhine and the marshalling yards. A few scattered fires were seen as the attack petered out, but these must have taken hold later because, when crews returned that night, 'they found the target clear of cloud and burning fiercely.' Only one fighter was observed during the first raid – it was apparently shot down – and all fourteen bombers lost (1.4 per cent) fell to Flak.²⁰

When the Canadians returned to their bases, at about noon, the groundcrews

* The Air Defence of Great Britain was renamed Fighter Command on 15 October 1944.

NO 6 GROUP NOTABLE STATISTICS

Figure 23.1

MOST SORTIES TO A SINGLE TARGET, 1943-1945

Duisburg	1,312
Hamburg	1,298
Cologne	1,138
Essen	1,117
*Berlin	1,070

GREATEST TONNAGE DROPPED ON A SINGLE TARGET, 1939-1945

Duisburg	4,903
Hamburg	4,666
Cologne	4,248
Essen	3,594
*Dortmund	3,141

GREATEST TONNAGE DROPPED IN A SINGLE RAID

** St. Leu d'Esserent	1,194	5 Aug 1944
Duisburg	1,179	14 May 1943
Essen	1,107	23/24 Oct 1944
Oberhausen	995	1/2 Nov 1944
Cologne	978	30/31 Oct 1944

MOST SORTIES DESPATCHED ON A SINGLE RAID

Dortmund	293	6/7 Oct 1944
Essen	261	23/24 Oct 1944
Duisburg	250	14 Oct 1943
Oberhausen	244	1/2 Nov 1944
** St. Leu d'Esserent	240	5 Aug 1944

MOST SORTIES LOST ON A SINGLE RAID

Magdeburg	24	21/22 Jan 1944
Hamburg	22	28/29 Jul 1944
Leipzig	18	19/20 Feb 1944
Berlin	15	28/29 Jan 1944
Nuremberg	15	30/31 Mar 1944

* Raids to distant targets like Berlin sacrificed bomb load for fuel.

** V.I storage site in France.

SOURCE: PRO Air 48/67.

began at once to repair, refuel, and rearm them for the night raid. For the second time that day they had to load hundreds of thousands of gallons of fuel, oil, and coolant, several million litres of oxygen, and millions of rounds of ammunition. This time Duisburg was to be attacked in two waves, two hours apart, in the hope of catching fighters on the ground refuelling and rearming when the second wave arrived, and there would also be several smaller operations and spoofs to complicate the task of Luftflotte Reich. Sixteen Mosquitoes were to bomb Berlin, twenty would attack Hamburg, and eight the marshalling yards at Mannheim. Another thirty-seven from No 100 Group would fly Intruder sorties over night-fighter fields and beacons, while forty-seven equipped with Serrate (which homed on to German AI radar) were to accompany the bomber stream, seeking out the night-fighters en route. In addition, forty-five crews from No 100 Group would conduct Window, Mandrel, Jostle, and other jamming; No 5 Group was to send 250 sorties to Brunswick; and 141 Halifaxes, Wellingtons, Lancasters, and Stirlings from Heavy Conversion and Operational Training Units would make a diversionary raid on Heligoland. Including the thousand-odd machines sent to Duisburg, Harris had committed 1575 aircraft to the night's operation and, in the process, mounted the 'most ambitious deception scheme yet attempted'.²¹

The largest of the main-force groups, No 6 Group contributed more crews than any other to each of the two Duisburg missions. Moreover, although the Canadians and No 1 Group were the only formations to have conducted large-scale operations in the two days prior to the double raid, the former met 98 per cent of their commitment in the morning and 96 per cent that night, with an early return rate only two-thirds of No 1 Group's. That was testimony not only to the generally low casualties suffered on the first attack – No 6 Group lost three sorties (1.16 per cent) – but also to the Canadians' steadily improving maintenance and repair organizations.²²

The combination of depleted fuel stocks, limited early warning, jamming, spoofs, and multiple incursions humiliated the German night-fighter organization again. None of the bomber streams was plotted accurately. Reacting like 'a badly battered boxer swinging desperately in the hope of scoring a lucky hit,' Luftflotte Reich mounted only eighty-nine sorties and only seven machines were shot down (some of them by Flak and only one from No 6 Group), about 0.7 per cent.²³

The only Canadian crew lost was commanded by Flight Lieutenant J. Gali-peau, on his twentieth mission with No 425 Squadron, who 'received a direct hit in the starboard wing by Flak, the shell going through without exploding' just after releasing his bombs.

Then the mid-upper gunner spotted a fire in the wing and told me so. The engineer told me one tank was draining fast. After that I tried to feather the propellers without success. We could not put out the fire. I told the crew we might have to bale out. The only other thing which I could do was to take a chance and dive the aircraft a bit in hopes of blowing out the flames ... but the effort was not successful.

I expected the aircraft to blow up at any time so reduced the speed to about 160 mph and told the crew to do an emergency bale-out ... After I saw the bomb aimer leave I checked the intercom to see that everybody was out. Having no answer I started to get out of my seat. I looked back and there was quite a bit of smoke in the aircraft. I could not see anyone so I baled out. I saw the aircraft go in a spiral and enter a thin layer of cloud. I went through the clouds after which I saw two or three other chutes. When I got down fairly close to the ground the Germans opened fire on me ... I spilled air out of my chute and luckily enough I reached the ground without being hit. I was captured immediately on reaching the ground.

Three other crew members also survived.²⁴

Wilhelmshaven was attacked next, in part to 'further disrupt [Germany's] internal supply situation' but also to destroy the factories producing the Schnorkel-equipped U-boats which were proving so elusive at sea.²⁵ Then, so far as large raids were concerned, it was the turn, in order, of Bonn, Stuttgart, and Nuremberg – at a cost of only sixteen crews out of 1402 sorties, 1.14 per cent.²⁶

Interspersed among army support and specialist attacks by both Nos 3 and 5 Groups, Bomber Command returned to the Ruhr in strength on 23/24 October. Essen was the target, and the 1055 aircraft dispatched represented the largest number yet sent to a single objective. (Unlike the 'thousand' raids of 1942, this total was achieved without the participation of No 5 Group, and no training units had to be called upon.) Carrying mainly high-explosive bombs – there was little left to burn – the attackers caused extensive damage, which was added to by a large daylight raid involving 771 crews thirty-six hours later. The aiming point in both cases was 'the centre of Krupp's large clutch of factory buildings which is west of the central city area but still roughly in the centre of Essen proper.' Because of cloud, crews had to bomb on sky-markers and that inevitably spread the attack out, but the effect on Krupp's facilities was 'severe to very severe in most departments.' About 1500 buildings were destroyed in the rest of the city and some 1400 people were killed, while bomber losses were negligible: twelve crews, three from No 6 Group, failed to return, 0.65 per cent of those sent. That same day Lancasters from Nos 6 and 8 Groups also attacked the Meerbeck oil refinery at Homberg, near Duisburg, without loss, but the weather system that concealed Essen also hid Meerbeck – a much smaller target – and spoiled their effort.²⁷

The assault on the Ruhr-Rhine area continued with three quick strikes against Cologne involving 2031 sorties, one to Düsseldorf (992 sorties), and another to Bochum (749 sorties). There was almost no opposition at Cologne and the loss rate at Düsseldorf was under 2 per cent, but at Bochum, on 4/5 November, twenty-eight crews were shot down, 3.7 per cent, including five from No 6 Group. The attackers were discovered by the Horchdienst while still assembling over the English coast and, because of heavy cloud over France, they had approached their objective via the old North Sea route, which compelled them to fly a considerable distance over German territory. Interceptors scrambled in good time and order were easily inserted into the bomber stream,

and pursuit night-fighting worthy of the previous winter took place all the way to the target. Battered, reeling, even punch-drunk, the Nachtjagdgeschwader may have been, but like many an old boxer they were still capable of landing hard blows.²⁸

With the Allied armies closing up on the German border, however, the chances of evading capture were much better, even for aircrew who parachuted into the Reich. His Halifax hit by Flak and ordered to bale out, Flying Officer O. Cook, a navigator with No 426 Squadron, hit his head on the hatch as he jumped and lost consciousness. Approximately an hour later he awoke 'in a field.' Seeing no one, but hearing voices 'which seemed to be getting louder ... I vaguely remember walking in a westerly direction, using my escape compass and the stars as a guide.'

... I estimated that I had touched down near [Mönchen]-Gladbach. I was considerably dazed at the time and I cannot remember how I disposed of my parachute, harness, etc.

At dawn the next day I repaired my trousers which had been slit up the sides and removed my Canada flashes and navigator's brevet from my tunic. I continued walking west through the woods and fields, and apart from two German convoys which I saw moving along a nearby highway I encountered no-one. I heard gun fire to the west and assumed it to be coming from the front line so I continued in that direction. At this point I must have again lost consciousness, as I do not remember anything of my further movements or what happened to me until I awoke the following morning and found that I was in a tent in a US Army field hospital. I have no idea how I got there and I was not told by the hospital staff.

On arrival at the field hospital I was wearing a German airman's jacket and was wounded in my neck. The bullet had entered the left side of my neck and passed out below my left shoulder, but strangely enough there was not any bullet mark in the German jacket. I had also lost my identity bracelet, a wrist watch, some money, and a chamois leather jacket. I am unable to explain how I was wounded, where I got the German jacket, or what had become of my belongings which were missing.

Kept under guard until he was returned to England and questioned by puzzled intelligence officers, Cook's story was finally accepted at face value.²⁹

The casualties sustained during the Bochum raid were entirely at odds with High Wycombe's most recent assessments of Luftflotte Reich's capabilities. Noting particularly the 'complete failure of the ground control organization' during recent operations, the research teams at Bomber Command Headquarters believed that the German air-defence organization had 'deteriorated into hopeless confusion and impotence,' and they would soon speak confidently and optimistically about the 'eclipse' of the enemy's night-fighters.³⁰ Bochum, in short, could be dismissed as a lucky hit. These days, of course, an occasional

²⁸ The Germans themselves were scarcely more sanguine, Josef Schmid going so far as to argue that useful results would be obtained only by going over to the offensive – in a massive intruder effort aimed at catching Bomber Command as it returned to base. But Operation Gisela, as Schmid's plan was called, would not be approved and attempted until February 1945.

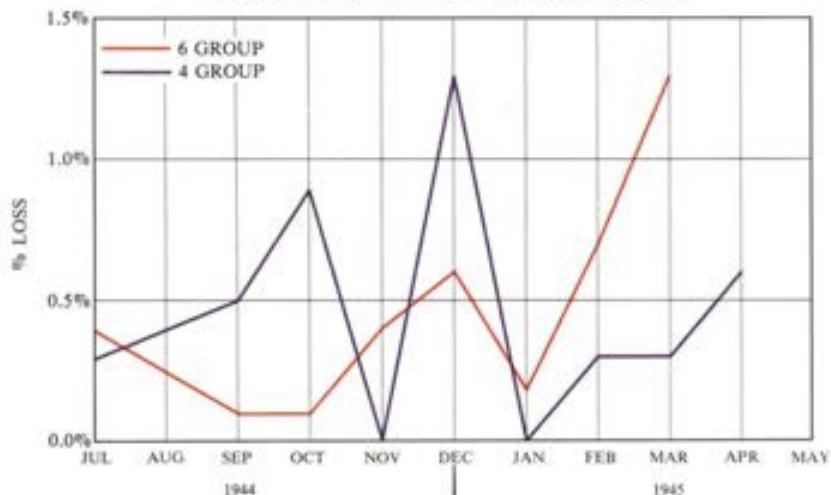
lucky hit was not likely to disconcert, much less deter, Sir Arthur Harris. Unlike the battle of Berlin, when he had been risking almost his entire front-line strength in a few very large attacks, now the raids against the Ruhr were only one part of Bomber Command's multiple attacks. Yet there were those who had been arguing for many months that the best way for High Wycombe to deal with the possibility of a night-fighter revival was to avoid it altogether by taking up daytime operations. Such had been the Americans' success in winning the battle for air superiority, they said, that even over Germany proper the risks of daylight bombing had been dramatically attenuated. And, indeed, pressure on Harris to recast his thinking mounted steadily as his crews proved time and again during the battle for Normandy that they could do what he had always maintained they could not.³⁰

The AOC-in-C nevertheless had legitimate reasons to be sceptical about taking up daylight bombing full time. Partly it was a matter of scale. Relying on No 11 Group's Spitfires and Hawker Tempests to escort small to medium-sized forays into France – and even as far as the Rhine – over the summer of 1944 had been practicable, but No 11 Group had too few first-line fighters to accompany major raids deep into Germany on a regular basis. The Americans might be able to help out from time to time, but High Wycombe certainly could not count on their assistance as a matter of course. The main thing, however, was that there was no room for error. As everyone knew, or should have known by now, inadequately protected Halifax and Lancaster crews operating by day would be helpless if the Germans decided to attack.³¹

There were also complex questions of tactics and training. The Americans flew in tight formations, in order to concentrate their heavier (.5-inch versus .303-inch) defensive fire against the 20- or 30-millimetre cannon of their opponents, and they had found that, done properly, formation bombing carried out in unison reduced the overall bombing error. Since it did not employ formations at night, Bomber Command had never wasted valuable hours of its training syllabus preparing pilots for something they would not be expected to do; and so far as High Wycombe was concerned any attempt to bring them up to American standards would have been prohibitively time-consuming.³² At the same time, knowing full well that some daylight missions would be necessary if only to support the Allied armies, as early as 9 July 1944 attempts had been made to introduce a degree of order to the daytime bomber stream in order to make the escorts' job easier. Although each group was free to experiment further, Harris decreed that, at minimum, crews would fly in a more cohesive column of pairs.³³

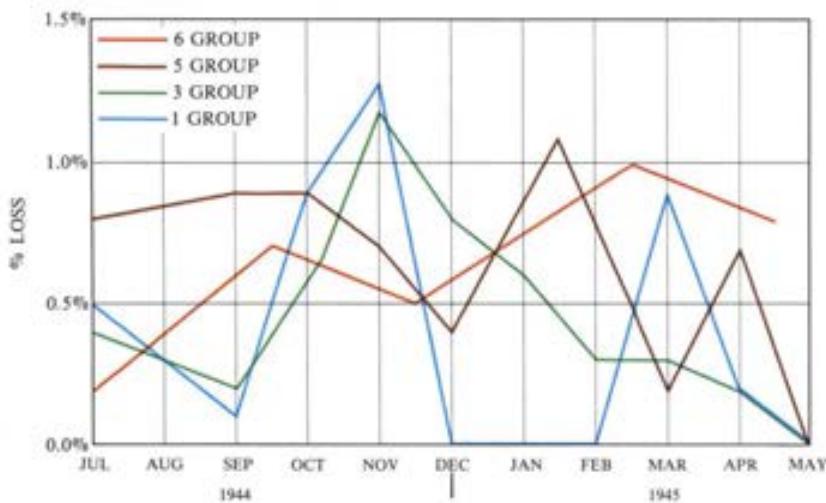
Air Vice-Marshal McEwen, for one, had taken up the invitation with considerable enthusiasm, and for a time in August the Canadians had experimented with the American 'twelve-ship stagger' or squadron wedge, an intricate formation which proved too difficult (even in practice) for most of his crews to master and was soon dispensed with. Instead, the group tried to arrange squadrons in Vics of three but that, too, was less than satisfactory and in October experiments began with yet another rudimentary formation. Squadrons from each station would 'form up in Vics of 3 aircraft, spaced at 100 ft intervals ...

**LOSS RATES, BY GROUP,
ON HALIFAX DAY OPERATIONS,
JULY 1944 - MARCH 1945**



SOURCE: Air Force Headquarters, Operational Research Centre, London; heavy bomber operations in Bomber Command: HQS, 19-17-6, vol. 1, DHHS 179/220.

**LOSS RATES, BY GROUP,
ON LANCASTER DAY OPERATIONS,
JULY 1944 - APRIL 1945**



in line astern stepped down with 100 yards between each Vic ... according to their take-off order, and not necessarily as squadrons.' That too proved cumbersome, so that from late November most daylight raids were mounted in 'gaggles.' Considerably less rigid than American-style formations yet also more compact than the traditional bomber stream, a gaggle theoretically comprised a number of ten-aircraft groupings flying in reasonably close proximity to each other. In the event, however, individual crews made enough minor errors in height and time-keeping that most gaggles came to resemble nothing so much as a shortish 'stream.' And, at least once, gaggles from two different bases, sent to two different targets, got mixed up with each other.³⁴

It was not just the enemy's day-fighters that worried High Wycombe, however. Although jamming remained effective, electronic counter-measures were less significant during the day when Flak gunners often did not need radar to see their prey; and when Bomber Command's Halifaxes and Lancasters flew below 18,000 feet (as they had to when instructed to identify the aiming point visually), they were well within range of both heavy and medium guns. Aware that the incidence of Flak damage had already risen significantly over France – it had damaged 2.5 per cent of night sorties, but 36.7 per cent of daytime sorties – High Wycombe feared that the toll over Germany would be greater still. Furthermore, although operations over France had shown that the Pathfinder's target-marking techniques worked by day, there were also limits to how well they worked. In particular, the standard pyrotechnics did not show up well by daylight in the smoke and dust kicked up by exploding bombs, so the average aiming error by day was often greater than the corresponding night-time error.³⁵

A return to Germany by day nevertheless could not be avoided, and Bomber Command's first such raid since the experimental (and costly) attack on Augsburg by twelve Lancasters in April 1942 took place on 27 August 1944, when Nos 4 and 8 Groups made for the oil refineries at Homberg.³⁶ No 6 Group joined in ten days later, when 139 crews bombed Emden, trying to knock out both its submarine yards and the surrounding urban area. Escorted by Spitfires from No 11 Group and USAAF Mustangs, all 139 machines bombed and returned to base, although one in six suffered some kind of Flak damage.³⁷ The first crews to reach the target saw the initial markers clearly and, when a few fell short, the corrections made by the backers-up were also readily distinguished. The city was soon 'a mass of flames, with thick black oily smoke rising up to 10,000 feet'; but that created grave problems for those who arrived later and could not see any target indicators through the smoke. Switching the plan of attack, the master bomber directed them to use the column of smoke as their main reference point – a technique which, under the codename of Pickwick, would become a standard procedure by the end of the month.³⁸

The raid was a complete success. 'Quay buildings in the *Alter Binnenhafen* are for the most part destroyed,' and heavy damage was also observed in the city's business and residential areas. However, several RCAF crews 'got no satisfaction out of their Emden attack despite or because of the fact that they

could see what was happening down below. They couldn't help thinking about the people down there. The centre of the town was the aiming point.' This was not the first occasion when 'the centre of the town' had served as Bomber Command's aiming point, nor was it the first time that crews had left their target 'a mass of flames.' But at night, in the dark, there was greater psychological as well as physical distance between them and what lay below; although in the aftermath of war a civilian bombing analyst would contend that the fact crews 'at long last [saw] where their bombs exploded' was, for the majority, a 'morale-raising experience.'³⁹

There was certainly less moral ambiguity involved in bombing oil plants, but demonstrably more physical difficulty in hitting them. Thus Castrop Rauxel, Dortmund, Wanne Eickel, Bottrop, and Sterkrade became No 6 Group's objectives in a campaign which, by early winter, must surely have frustrated the exponents of daytime 'precision' bombing. Despite 'clear weather with good visibility' and reports of 'a highly concentrated attack,' the plant at Castrop Rauxell was only slightly damaged on 11 September; and, while raids on Dortmund and Wanne Eickel the next day were reportedly more successful, there was 'some evidence of indiscriminate bombing' to the south of the latter. In addition, fifty RCAF crews sent to Wanne Eickel – half those committed – actually dropped their bombs on the fringes of Scholven, No 4 Group's aiming point, about six miles away. Contributing to the damage at Scholven as it did, theirs was not an entirely wasted effort. Nevertheless, because of certain superficial similarities between this raid and that at Falaise in August, which had resulted in the bombing of Canadian troops (and led to the adoption of much more rigorous standards to avoid repetition of the mistakes made then), Allerton Hall launched a far-reaching inquiry in which each crew found to have bombed at the wrong target was called to account for its error. Although there were many more mavericks at Scholven than at Falaise, since no Allied troops had been killed the repercussions that followed were far less severe. Rather, the confusion caused by practically coincidental attacks in the same general area (of which No 6 Group crews were ill-informed) seems to have been accepted as a reasonable excuse for what went wrong.⁴⁰

Bad weather near the end of the month was an additional handicap. While cloud at Bottrop and Sterkrade blinded the Flak (which had damaged about half the sorties returning from Castrop), it also produced some very scattered bombing.⁴¹ Not, however, by Flight Lieutenant J.A. Anderson, a pilot on No 419 Squadron who was recommended for the Victoria Cross for his efforts at Bottrop. Anderson was no stranger to adversity. On 28 July, returning from Hamburg on three engines, his crew had beaten off five attacks by an enemy fighter before shooting it down, and he had survived heavy Flak damage five times in August and September (and would do so three more times in October), pressing on to the target in each case and, on one occasion, again thwarting five fighter attacks. But Anderson's most 'outstanding feat,' in the opinion of his commanding officer, 'was performed during a daylight attack on the oil refinery at Bottrop.'

On arriving at the target, it was found that this was obscured by 9/10th cloud cover. The target was sighted through a gap in the clouds too late to afford an accurate bombing run. Anti-aircraft fire was very heavy but, without any hesitation, F/L Anderson decided to do an orbit to ensure an accurate bombing run was made. At the beginning of the orbit, the aircraft was repeatedly hit by shell fragments and both port outer and inner engines were put out of action. The port outer engine was also set on fire, the hydraulic system was rendered unserviceable and the controls were damaged to such an extent that he had to call on the assistance of two members of his crew to pull manually on the rudder controls. With complete disregard of the heavy opposition, and the difficulty in controlling his crippled aircraft, F/L Anderson completed the orbit and made a steady bombing run, enabling his Air Bomber to attack the target very accurately.

Shortly after leaving the target, it was found that the starboard inner engine had also been badly damaged and was giving less than half power. Through superb planning, crew co-operation and flying skill, F/L Anderson successfully flew his crippled aircraft back to this country, with only full power from the starboard outer, half power on the starboard inner engine, and made a masterly landing without causing further damage to his aircraft or crew.⁴²

There would be no Victoria Cross; but on 21 December Anderson was awarded the DSO, often – when awarded an officer of his rank – described as ‘the poor man’s VC.’⁴³

Another DSO went to Flying Officer C.M. Hay, a navigator on No 432 Squadron, for his performance on the same raid.

While over the target the pilot was severely wounded and lost control of the aircraft which went into a dive. Displaying great presence of mind, F/O Hay took over the controls and succeeded in levelling out. Although inexperienced as a pilot and despite the fact that some of the instruments were unserviceable, he flew the aircraft back to an airfield and landed. On touching down the undercarriage collapsed and the aircraft caught fire but the crew got clear uninjured.⁴⁴

Missions to the same target undertaken on 30 September and 6 November in even heavier cloud produced even worse results; while at Homberg on 25 October one participant thought that ‘for all the good we could do ... we should have stayed at home, for the target was totally obscured by cloud.’ No 6 Group’s senior air staff officer, now Air Commodore J.E. Fauquier, DSO, DFC, a former master bomber himself, was distressed by the poor results in the late summer and early fall of 1944. Overall bombing accuracy had ‘deteriorated considerably,’ he observed, ‘in part due to the gross errors incurred by a minority of crews who, through bad navigation, inefficiency, and poor captaincy negligently wasted their bombs.’ Fauquier’s scorn embraced more than the most negligent few. Not only were H2S operators in particular making far too many mistakes, but the H2S serviceability rates left much to be desired. It was also clear that (as in all other groups, it must be added) many crews were loath to make the prescribed bombing run through heavy Flak. In

November, therefore, he decreed that squadron bombing leaders were to test and rate all their crews on a weekly basis, so that those with training errors greater than 280 yards or operational errors more than one thousand yards could be taken off the order of battle temporarily and given further training.⁴⁵

While No 6 Group was fulfilling the mandate of Operation Hurricane, by day and by night, the rest of Bomber Command had been heavily engaged in support of the army. On 7 October Nos 1, 3, 4, and 8 Groups attacked the Rhenish towns of Cleve and Emmerich in order to protect the right flank of Field Marshal Montgomery's 21st Army Group, left dangerously exposed because of the failure of Operation Market Garden. Soon, however, High Wycombe was asked to participate in a land campaign which, before it ended, caused even those airmen who were most sympathetic to the army to wonder whether the soldiers had become so 'drugged with bombs' that they would not put a foot forward without heavy bomber support.⁴⁶

Although the Belgian port of Antwerp, at the head of the Scheldt estuary, had been liberated in early September, its approaches had not yet been cleared; and with Boulogne, Calais, Dunkirk, and Le Havre still in German hands (they would hold Dunkirk until the war ended), Allied supply lines stretched all the way back to Normandy and the Atlantic ports. First Canadian Army, on the left of the allied line, was given the task of clearing the Scheldt and, in accordance with the 25 September bombing directive, High Wycombe committed over two thousand sorties to the task – not, by any means, its full support and, strangely (given the Canadian commitment on the ground) none from No 6 Group. Attempts to knock out bunkers and gun emplacements from the air had not been very successful in Normandy and were no more successful here, but the capture of Walcheren, a low-lying island on the north side of the estuary, was greatly facilitated by the breaching of the perimeter dyke by Harris's heavy bombers.⁴⁷

There was only one call to support Allied ground forces in November, a request from the US Ninth Army, preparing for its advance on Cologne. While American heavy bombers dropped fragmentation bombs on forward German positions, on 16 November Bomber Command obliterated the three fortified towns of Düren, Jülich, and Heinsburg lying just behind the enemy front. No 6 Group contributed 204 crews to the attack on Jülich and, in bright daylight with good visibility, they saw both their target indicators and 'a line of smoke pots indicating the front line position of our front line troops.' While twenty-three machines were holed by Flak, there were 'no ... fighters, no combats, no claims' and no losses. But, as had been the case when Caen had been bombed,

* Fauquier's language and actions were tough: although the record is not complete, one crew that missed Wanne Eickel on 12 October seems to have lost credit for the sortie towards its operational tour. On 28 December 1944, however, believing that No 6 Group was now in good shape and having volunteered for the job, he reverted in rank to group captain to take over command of No 617 Squadron RAF – the Dambusters – whose precision bombing of specific objectives undoubtedly gave him more satisfaction.

the soldiers could not take full advantage of the bombing because their start line was too far back.⁴⁸

In the meantime, on 1 November yet another revised bombing directive had been sent to Sir Arthur Harris and General Spaatz which effectively called a halt to Operation Hurricane. Although 'the maximum possible disorganization of the enemy's transportation system ... particularly in the Ruhr,' remained an objective, it was clearly subordinated to the oil campaign. While direct support of land operations remained a 'continuing commitment,' tank production, the Luftwaffe, and the German aircraft industry were abandoned altogether as target systems, partly because of the results of previous attacks and partly because of the changed military situation; the war in Europe was winding down, and since no one expected to be fighting great air or tank battles in a year's time, there was no need to worry about the future output of aeroplanes or armoured fighting vehicles.⁴⁹

Perhaps the most significant change so far as Bomber Command was concerned, however, was that relating to the conduct of area raids. Still authorized whenever weather or the tactical situation precluded precise attacks, they were now to be 'directed so as to contribute to the maximum destruction of the petroleum industry' or the dislocation of other specific objectives.⁵⁰ Shades of Casablanca and Pointblank, which had also attempted, without much success, to wean High Wycombe away from mere city-busting.

Harris's reaction to the new directive and other unsolicited advice was immediate. On 26 October Sir Arthur Tedder, Eisenhower's deputy and the senior airman at Supreme Headquarters, Allied Expeditionary Force (SHAEF), had circulated his proposals for the future conduct of the bomber offensive, emphasizing the significance of the transportation plan, and on 1 November Sir Charles Portal had questioned Sir Arthur closely about the selection of Cologne as the objective the previous night when more important transportation targets had been ignored. 'Here we go round the Mulberry bush,'⁵¹ Harris observed to his deputy, Sir Robert Saundby, firing off a lengthy critique to the CAS. Since, by his calculations and standards, Bomber Command had already 'virtually destroyed 45 out of the leading 60 German cities,' was adding another two or three to the tally each month, and had never let the army down when it asked for support – and so long as area bombing was doing more to underwrite victory than any offensive directed against 'panacea' targets – it only seemed reasonable to persevere with a campaign begun, at Portal's behest, on 14 February 1942. 'The destruction of Magdeburg, Halle, Leipzig, Dresden, Chemnitz, Breslau, Nuremberg, Munich, Coblenz, Karlsruhe, and the completion of Berlin and Hanover are required to finish the plan. That it can be completed without depriving the Army of the support it requires is obvious from our experience since June, and its completion will do more towards accelerating the defeat of Germany than anything the armies have yet done – or will do.'⁵²

As for oil plants, he continued on 6 November, many of them had already been attacked and he was keeping a close watch for any 'signs of manufactur-

ing activity.' Where there were none, it was his view that the facility need not be bombed again until it 'showed signs of coming to life.' If, however, the intention was to go on 'flogging' such 'temporarily dead horses until they are utterly destroyed,' he was profoundly concerned about the 'vista of additional losses and loss of effort in every other direction.'⁵³

Bombast beyond doubt, but also a passionate defence of area bombing (and a commander's need for operational freedom) in typical Harris style that had rarely failed to move the CAS in the past. Times had changed, however. In a prolonged exchange of demi-official letters, Sir Charles Portal announced his conversion to the oil campaign 'at the risk of your dubbing me "another panacea merchant,"' and despite the danger that losses might rise when Bomber Command concentrated on just a few targets: for oil was now the 'knife edge' on which 'the whole war situation is poised.' The usefulness of area bombing had come to an end. If 'complete victory' could be anticipated 'in the next few months,' a campaign of attrition aimed at achieving results over the long haul was obviously irrelevant, and because of that he would no longer accept at face value Harris's excuses for attacking targets falling outside the terms of the new directive.⁵⁴

So bitter and deep was the break between them, in fact, that on 18 January 1945 Sir Arthur raised the possibility of his resigning — something Portal would not accept for military or political reasons. Eventually the CAS more or less broke off the exchange with the observation that the two 'must now agree to differ' and let history judge who had been right. Since he would not flatly order the AOC-in-C to attack particular objectives, regretted that Sir Arthur did 'not believe' in oil, and yet understood that it was 'no use my craving for what is evidently unattainable,' Portal accepted Harris's assurances 'that you will continue to do your utmost to ensure the successful execution of the [authorized] policy.'⁵⁵

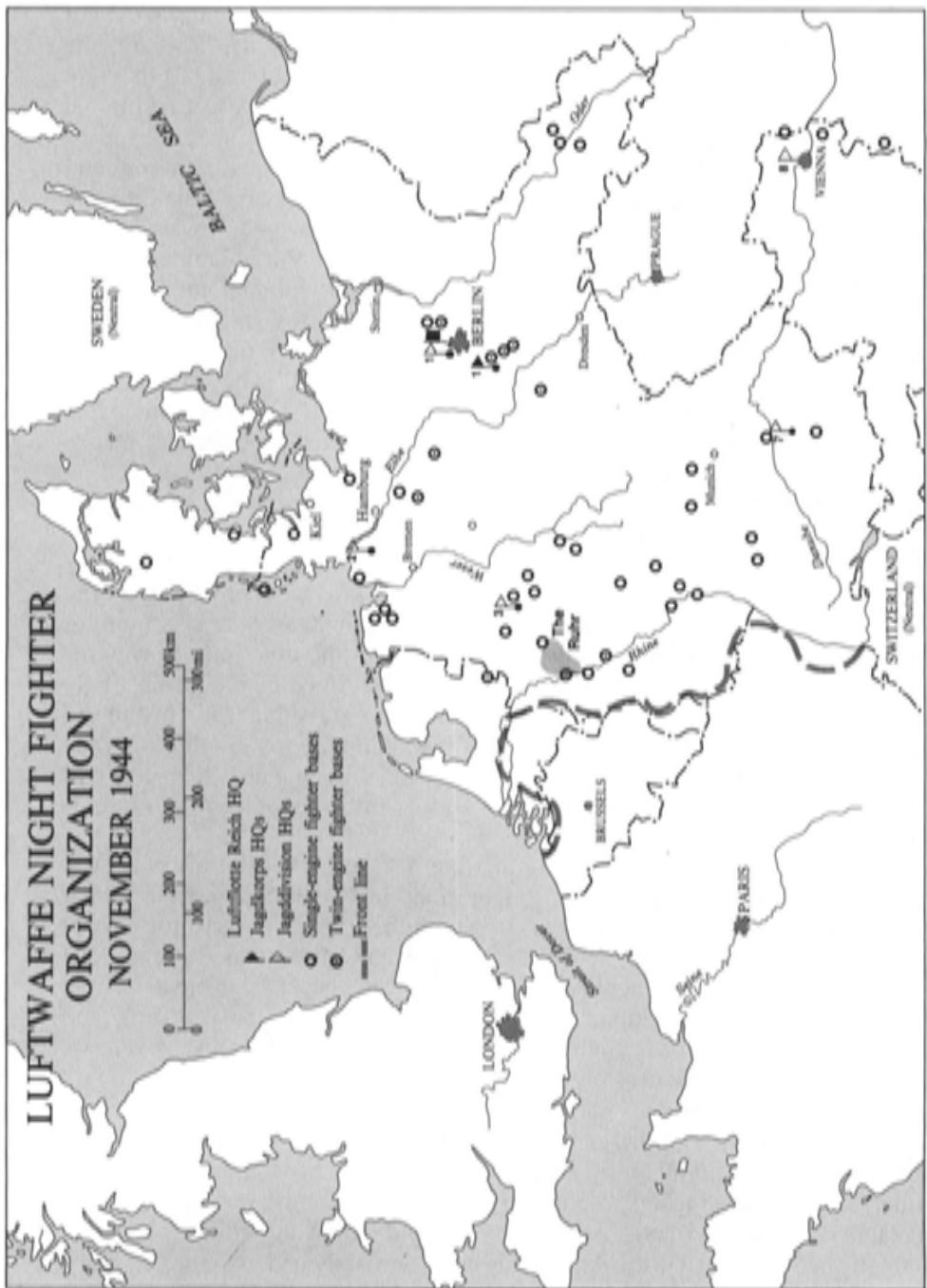
It would be an exaggeration to say that the AOC-in-C ever did his utmost to knock out the German oil industry. Operations in November and December featured an eclectic mix of objectives in which the proportion of sorties given over to the destruction of the enemy's synthetic oil plants was less than one in four. Pure area raids — against Munich, Münster, Neus, Duisburg, Hagen, Essen, Ludwigshafen, Witten, and Ulm — totalled about 40 per cent, and attacks on transportation targets accounted for most of the rest. Even so, Bomber Command's greatest successes during this period came against the oil plants of western Germany — Gelsenkirchen, Wanne-Eickel, Castrop-Rauxell, Harburg, Dortmund, Homberg, Bottrop, Sterkrade, and Osterfeld — and they came as much by night as by day. Indeed, by late November the western refineries had been so heavily damaged that High Wycombe was asked to take on plants in central Germany, particularly those at Leuna and Pöllitz, which had originally been assigned to the Americans but where they had not enjoyed much

* 'The Chief of the Air Staff has no personal or individual right to issue instructions to Commands,' it had been ruled in 1935; rather, 'when the CAS issues instructions he does so on behalf of the Air Council.' PRO Air 8/258

LUFTWAFFE NIGHT FIGHTER
ORGANIZATION
NOVEMBER 1944

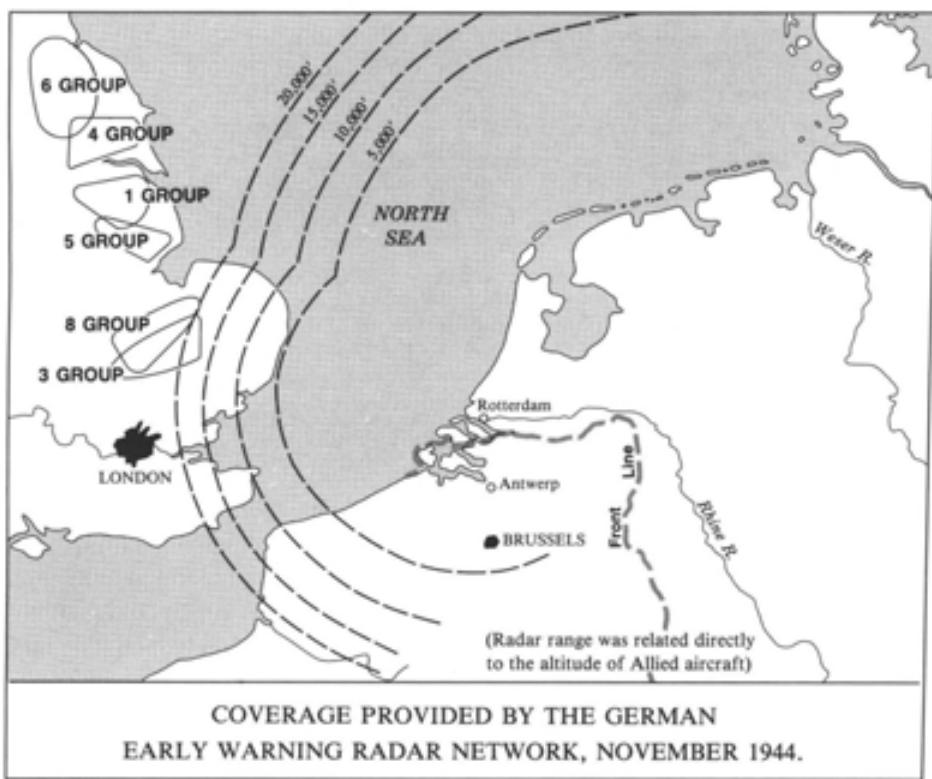
0 100 200 300 400 500 km
0 100 200 300 400 500 mi

- Luftflotte Reich HQ
- Jagdkorps HQs
- Jagddivision HQs
- Single-engine fighter bases
- Twin-engine fighter bases
- Front line



Reproduced by Mapping and Charting Establishment.

© Compiled and drawn by the Directorate of History.



Reproduced by Mapping and Charting Establishment.

© Compiled and drawn by the Directorate of History.

success. Their bombs, as Albert Speer, the German minister of war production, subsequently explained, had less effect than the larger and heavier ordnance carried by Bomber Command. Harris complained, fearing heavy losses, but by the end of December he was complying with the request – and again very effectively. Production from the five major synthetic plants fell from 46,750 tons in January 1945 to 11,260 in March and 730 in April.⁵⁶

Overall losses remained low in November and December despite mounting so many attacks against targets the Germans wanted desperately to defend. At High Wycombe the enemy's performance suggested it was suffering from 'muddled thinking' exacerbated, from time to time, by a touch of panic.⁵⁷ There were, nevertheless, a few disturbing signs. At Osnabrück on 6/7 December, three crews from No 426 Squadron reported being attacked by, and shooting down, 'a bright ball of light' – one of the new Messerschmitt 163 rocket fighters.⁵⁸ Furthermore, there had already been many reports of jet-engined Me 262s operating at night. John McQuiston, a pilot in No 415 Squadron, had seen his first at Düsseldorf in November. 'It travelled at terrific speed,' he recalled, 'and I caught a brief impression of bulbous, underslung engines.' Not knowing about jets, he 'wondered if my eyes or nerves were playing tricks. Nothing flew that fast.'⁵⁹

No 6 Group was involved against all the target systems attacked in November and December. Of its 3300 sorties, just under two-thirds were mounted

against area targets, oil and transportation accounting for about 450 each and army support for another 250. Sixty-nine involved Gardening, and 150 were sent to attack the German airfield at Düsseldorf on Christmas Eve. The overall loss rate of 1.8 per cent was marginally higher than Bomber Command's, but Canadian casualties were also concentrated in early November. Flak was mainly a daytime concern. Of the 154 aircraft damaged in November, 137 by Flak, seventy-one had been hit in 620 daylight sorties, and sixty-six in 1384 night sorties.⁶⁰

Attacks on oil targets like Castrop-Rauxell were meant to immobilize the Wehrmacht, but in mid-December, having husbanded his resources carefully, Hitler gambled on one last great throw of the dice – his counter-attack into the Ardennes code-named *Wacht am Rhein* and subsequently known to the allies as the 'Battle of the Bulge.' Weather was the great equalizer, and surprise enabled it to attain a brief momentum. For well over a week, leaden, drizzly skies kept the Allied air forces away from the battlefield proper, and it was only on 19 December that the G-H-equipped Lancasters of No 3 Group were called upon to bomb railway marshalling yards behind the German front line. Two nights later, Nos 4, 6, and 8 Groups attacked similar objectives around Cologne, causing 'severe damage' to the facilities at Nippes. Cologne and Trier were attacked again over the next few nights, while the Americans continued to attack bridges and marshalling yards behind the front. Despite his on-going quarrel with Sir Charles Portal, Harris did the same without any special pleading by the CAS. Once the weather had cleared, Bomber Command, together with the Eighth Air Force and the Allied tactical air forces, did much to help seal off von Rundstedt's spearheads. Most of his troops and equipment had to detrain on the east bank of the Rhine, very little transport of any kind could move by day, and before the end of the year *Wacht am Rhein* simply petered out.⁶¹

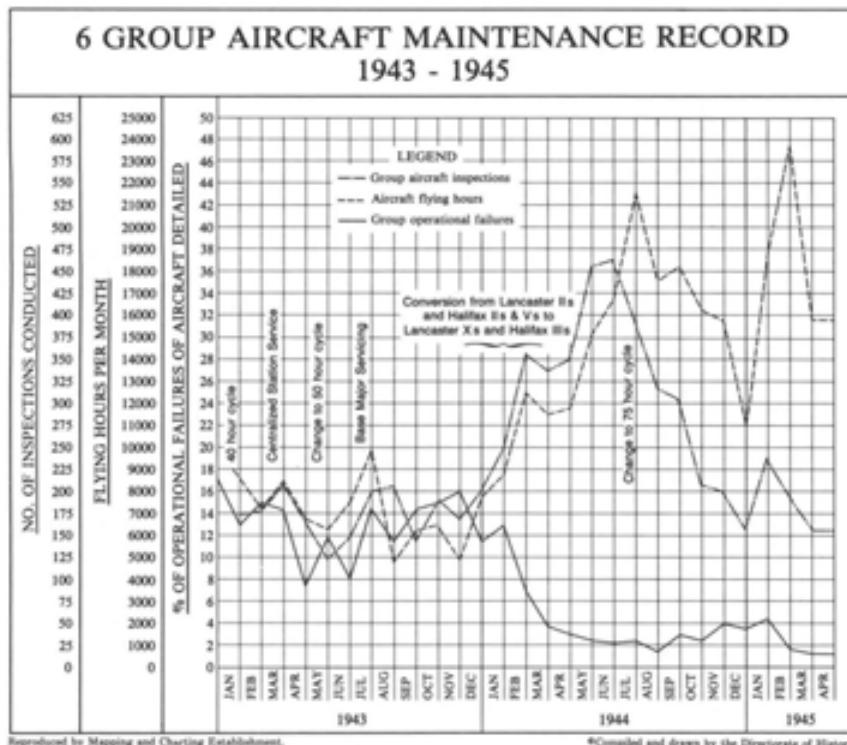
Still, the oil offensive had clearly not rendered the Wehrmacht completely immobile, a fact Sir Arthur Harris did not fail to emphasize.⁶² 'You will recall the last meeting at 21 Army Group headquarters prior to D-Day,' he reminded Portal on 28 December.

I warned them then that if we laid off bombing German war industry for five months she would recover all that was necessary to her war production. We did not lay off, entirely, for five months. But the aggregate of our diversions, on the railway plan, on helping the Armies, and now on oil, very far exceeds the five months' estimate.

We need look no further for the cause of what has happened in the last fortnight.

With a vista opening in front of us of bombing nothing but tactical and oil targets – which means a final stopper on bombing Germany, in the way that had given her her "worst headache" – we are finally discarding the substance for the shadow. And an M[inistry of] E[conomic] W[arfare] shadow at that.⁶³

Of course, Harris's half-empty cup was also half full. While he was undoubtedly correct in thinking it was impossible to knock out all the roads, rail



ways, bridges, and canals over which the Germans had moved to the Ardennes, or to deny them all their fuel, once they had used up the limited resources hoarded to support the offensive their oil cupboard was essentially bare. Nor is his contention that area attacks would have done more to thwart the enemy easily supported by the evidence.⁶⁴

A year earlier, on 1 January 1944, when No 6 Group had celebrated its first birthday in the midst of the battle of Berlin, it will be recalled that it had just been getting over its growing pains: loss and early return rates had been high while serviceability was low, and both navigation and bomb-aiming left much to be desired. Two squadrons, Nos 420 and 434, were commanded by RAF officers, and there were still as many as 20 per cent non-Canadian groundcrew on some squadrons. Probably most disturbing, however, were the indications that, given a choice, RCAF bomber crews graduating from OTUs would have preferred to be posted somewhere else. Much had changed over the past twelve months. Canadianization was, by and large, an accomplished fact, and serviceability and casualty rates had improved to the point where they were among the best in Bomber Command. Even so, the Canadians were not completely satisfied, and at Eastmoor, which enjoyed 'an enviable record for non-starters,' additional steps were being taken to deal with the 'snags, boggings, and other hitches' that led crews to abort their missions. Among these were the detailing

of 'trouble-shooters' to patrol dispersal areas before each operation, providing a caravan of specialists from each trade to do last-minute repairs, and ground staff to signal whether bomb doors, flaps, and rear entrance hatches were in the correct position for takeoff.⁶⁵

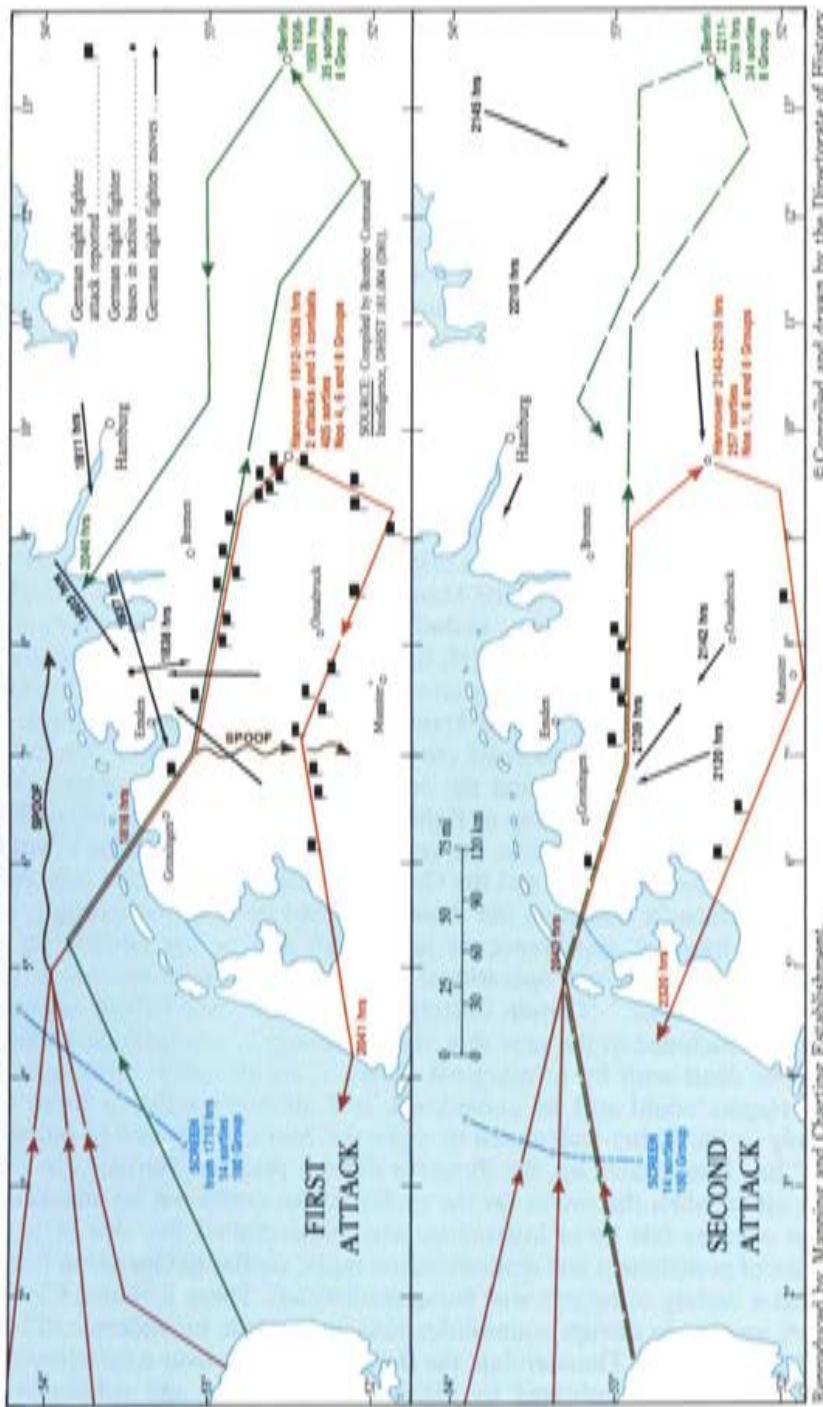
Perhaps because of measures like that, No 6 Group's image and reputation had changed – so much, in fact, that OTU graduates were now eager to be posted to it.⁶⁶ Yet Fauquier's successor as SASO, Air Commodore R.E. McBurney, remained concerned about the frequency of bombing and navigation errors and he was even more upset by the number of so-called manipulation errors – failures to use electronic aids correctly – which, together with the 'lack of offensive spirit' exhibited by a minority of crews, were causing an unacceptably high early return rate. He recommended that repeat offenders be dealt with quickly and firmly, adding that disciplinary action might be necessary. Although the idea of punishing crews by refusing to credit them with completion of an operational sortie when they were far off track did not win widespread approval among the squadron commanding officers, there was rarely any disagreement with the kind of treatment meted out to one navigator who, having knowingly bombed Hamburg fifteen minutes early on 31 March 1945, was removed from operations and sent to the retraining centre at Sheffield for three weeks.⁶⁷

There were cycles in No 6 Group's history that were beyond anyone's control, however, and one of these – a marked falling off in the number of experienced crews available – was bothering Allerton Hall late in 1944. Once again, the loss rate was responsible, but in exactly the opposite way to 1943. With the tremendous decline in casualties after June 1944 and the sharp increase in the number of sorties flown, significantly more crews were completing their operational tours in substantially less time. Veterans were usually replaced by novices fresh from their Heavy Conversion Unit and, when such screenings came in bunches, as happened in late 1944, the overall level of expertise was bound to fall. It was not only that navigation and bomb-aiming suffered as a result – reason enough for Air Vice-Marshal McEwen's concern – but also, as we have seen, that artlessness in dealing with enemy fighters cost lives. Accordingly, there would be no let-up in the strict training regimen he had introduced nine months before.⁶⁸

The cycle was about to turn in another way as well. Over the fall and winter of 1944 No 6 Group lost five or more crews on a single night just three times. Indeed, the low casualty rates had led General der Flieger Adolf Galland (about to be dismissed from his appointment as inspector of fighter forces) to complain on 5 January 1945 that 'today the night fighter achieves nothing'.⁶⁹ In the last four months of the war, however, when the Nachtjagdgeschwader were desperate for fuel, losing experienced crews, and facing still more powerful jamming, Bomber Command's loss rate at night actually rose a little. No 6 Group, for example, lost five or more crews in a single night six times.⁷⁰

Largely because of the weather – the repetition, while tedious, is necessary – major night operations in January were clustered into short periods of intense

NIGHT OPERATIONS - 5/6 JANUARY 1945 - HANNOVER



卷之三

卷之三

activity during the first and third weeks. Total losses were quite manageable, about 1.7 per cent of sorties, but a few old-style area raids provoked old-style responses. Thirty-one crews failed to return from Hanover on 5/6 January, 4.7 per cent of the total, of which ten were from No 6 Group and three from No 425 Squadron, flying Halifax IIs. At least one of the latter fell to *Schräge Musik*, to which there was still no effective counter if the enemy's approach was made correctly. 'The whole trip went very smoothly,' Sergeant E.J. Faulkner, a flight engineer on No 425 Squadron, recalled. 'We were in sight of the target and preparing for the bombing run. Suddenly we were perforated with cannon shells from below.' With their machine out of control and on fire, the crew bailed out. Five were taken prisoner, but two of the gunners were killed. Eleven nights later, seventeen Halifax crews were lost at Magdeburg and a further ten Halifaxs at Zeitz, both deep penetrations. No 6 Group was fortunate at Zeitz, as only one crew failed to return, but seven of the 136 sent to Magdeburg (5.1 per cent) did not come back, including four from No 420 Squadron.⁷¹

The enemy had ample warning of the Hanover operation. Since cloud prevented the low-level approach originally planned (and some bomber crews flew past the outer fringes of the Mandrel screen), ground radars picked up the stream in good time. Fighters, including a number of jets, were scrambled 'in unusual strength.' Luftflotte Reich had good warning of the Magdeburg raid as well, and 'fighters ... were active from the coastline through the target to the Dutch coast.' Luck played some part in the Germans' success, as the Gruppen detailed to defend Zeitz crossed the path of those bombers bound for Magdeburg and, having found the enemy, stayed put; but fortune often cuts both ways and a second group of fighters, originally directed to Magdeburg but subsequently diverted to Zeitz, arrived there too late to intervene in strength.⁷²

Although the Luftwaffe and the German aircraft industry had been removed from November's directive, the Americans had become increasingly worried about the frequent appearance of jet aircraft and on 19 January jet fighter production, training, and operational establishments again became a 'primary objective for attack.' 'Certain objectives in the enemy's U-boat organisation' were also included in the new directive, although it was anticipated that these could be dealt with by a 'marginal effort ... incidental to other operations.' Area targets could still be considered, and although a list of these (almost entirely in the Ruhr) 'calculated to make the best contribution to our strategic aims' had been drawn up, the directive did not preclude Harris from selecting other cities when the towns on the preferred list could not be attacked.⁷³

Yet even as this latest instruction was being drafted the idea of launching a series of punishment and demonstration raids, similar to Operation Hurricane, against a variety of targets was being resurrected. These included Clarion, the American plan to disrupt communications and morale by widespread bombing and fighter attacks; Thunderclap, the British plan to deliver a catastrophic blow on Berlin, first adumbrated by Harris in June 1944 and subsequently put forward by Portal and Buxton in August 1944; and Bugle, a continuation of the concentrated offensive against the Ruhr meant to prepare the way for the

British, Canadian, and American crossings of the Rhine. With an eye to assisting the Russian winter offensive just under way, Bufton was inclined to substitute Breslau and Munich for the German capital in Thunderclap. For his part, Harris, who had already compiled his own list of cities needing to be finished off, added Chemnitz, Dresden, and Leipzig, as they would 'equally share with Berlin the task of housing German evacuees from the East.' Like Bufton, Portal now questioned whether decisive results would result from attacking Berlin, but neither he nor the Air Staff had any qualms about Thunderclap's purpose. Since it was to have 'primarily ... morale and psychological effect' it must not be dissipated by concurrent attempts to knock out 'tank production ... jet engine factories etc.' The prime minister was thinking along roughly the same lines, asking 'whether Berlin, and no doubt other large cities in East Germany should not now be considered especially attractive targets?'⁷⁴

The next day Harris was given the task of bombing these centres, subject only to the 'overriding claims of oil, U-boats, and rocket and jet engines.' In due course, Halle, Plauen, Dessau, Potsdam, Erfurt, and Magdeburg were also added to the Thunderclap list. Thus was set in motion the chain of events that would produce Bomber Command's most controversial operation of the war, the attack on Dresden of 13/14 February 1945. It had the wholehearted support of everyone who mattered in the chain of command and, as we have seen, the city had been singled out for attack by Harris and others long before there was any consultation with the Red Army. Indeed, when (during the Yalta conference) the Soviets were asked whether the bombing of east German cities would assist them, only Berlin and Leipzig fitted the bill. Dresden, Vienna, and Zagreb were mentioned only as reference points along a general bombline east of which the Western Allies should not bomb.⁷⁵

Until the weather in the east was right, a few oil and transportation targets of 'overriding priority' were attacked, along with one city that did not fall comfortably into either category. Wiesbaden, a community of some 160,000 people known primarily for its spas and having no war industry of significant magnitude, had seen only a few light raids up until this point in the war.⁷⁶ On 2/3 February, however, 495 sorties were dispatched on an operation which, from the briefings given to those involved, could only be described as a kind of general – even visceral – punishment. 'From the Ruhr to the Swiss frontier,' crews were told, 'there is no sizeable town ... which has not suffered serious damage at the hands of the Allied air forces with the single exception of Wiesbaden. In view of the acute shortage of accommodation in Germany, the value to the enemy of the expensive barracks and ... hotels ... of the pre-war spa ... is considerable and it is also a well situated centre for front line troops to rest and refit. It is proposed to let Wiesbaden share the fate of most other German towns and by destroying it to eliminate one of the last few remaining places where the German army can be assured of sound shelter from the rigors of winter.'⁷⁷

Despite cloud cover the town was hit hard, with some five hundred killed and thirty thousand left homeless. Still, it was not an entirely satisfactory operation from High Wycombe's point of view. Failing to compensate for the

lighter-than-forecast tail winds, Nos 1 and 3 Groups bombed late. Nos 5 and 6, by comparison, went so far as to alter their routes while the attack was in progress, and both arrived over the target on time. Indeed, so seriously were the Canadians taking the problems of navigation and timing errors that one crew faced the possibility of disciplinary action for bombing six minutes late, until they convinced the authorities that the fault lay in their aircraft, not themselves.⁷⁸

Oil and transportation targets were attacked again over the next two nights and then, on 7/8 February, Bomber Command set out to prepare the way for First Canadian Army's campaign to take the Rhineland. 'The bomber role is to destroy the two small towns of Cleve and Goch, killing troops stationed there, hamper movements and deny ... enemy reinforcements entry into the battle area.' The army was prepared to accept some cratering as an inevitable by-product of heavy-bomber support, but there was more of it than bargained for at Cleve. At Goch, meanwhile, smoke and dust – not weather – forced a premature conclusion to the bombing, so that only forty-eight of the two hundred RCAF crews taking part actually dropped their ordnance. The damage was less than anticipated, particularly where the enemy's bunkers and pill-boxes – the prime objects of the attack – were concerned. 'The RAF had not succeeded in smashing these fortifications,' one soldier has recalled. 'Only the shops, houses, church spires, and factory chimneys had been reduced to rubble – providing additional protection to the defender.'⁷⁹

Refineries in Pölitz, Wanne Eickel, and Krefeld were attacked next, crews being informed that 'the battle for oil is reaching a climax.' Then, after a four-day break because of weather (that forced cancellation of operations to Bremen and Dortmund), on 13/14 February 796 crews (including ten from No 405 Squadron and sixty-seven Lancasters from No 6 Group) took off for Dresden; another 368 (including 115 from No 6 Group, all Halifaxes) were sent to the synthetic oil plant at Böhlen, near Leipzig, both to continue the oil offensive and to confuse and divert the defenders of Dresden.⁸⁰

'That the bombing of Dresden was a great tragedy none can deny,' Harris's deputy admitted after the war. 'That it was really a military necessity ... few will believe. It was one of those terrible things that sometimes happen in wartime, brought about by an unfortunate combination of circumstances.' There were, as we have seen, no industrial objectives of immediate importance in Dresden – an abrasives plant and Zeiss lens factories were probably the most significant – but the aiming point, a large sports stadium, was chosen because it could be seen easily, not in order to lead the bomber stream to either of those installations. Similarly the railway yards, given as the objective to some squadrons and also easily seen, did not serve as an aiming point until the last few waves flew over the city.⁸¹

The possibility of raising a firestorm had been incorporated in the operational plan from the beginning; carrying a bombload largely made up of incendiaries, the main force (guided by the flames from No 5 Group's preparatory attack) was able to do just that. The glow was perfectly visible to those

returning from Böhnen, over a hundred miles to the northwest. The old city centre was 'almost completely wiped out,' and at least 25,000 were killed and an additional 35,000 missing.⁸² As at Hamburg, German eye-witnesses had lurid tales to tell.

In 1948 Margret Freyer, a twenty-four-year-old with an undoubted will to live at the time, recalled her experience on the edge of the fire storm.

I stumbled on towards where it was dark. Suddenly, I saw people again, right in front of me. They scream and gesticulate with their hands, and then – to my utter horror and amazement – I see how one after the other they simply seem to let themselves drop to the ground. I had a feeling they were being shot, but my mind could not understand what was happening. Today I know that these unfortunate people were the victims of lack of oxygen. They fainted and then burnt to cinders. I fall then, stumbling over a fallen woman, and as I lie right next to her I see how her clothes are burning away. Insane fear grips me and from then on I repeat one simple sentence to myself continuously: 'I don't want to burn to death – no, no burning – I don't want to burn!' ...

I try once more to get on my feet, but I can only manage to crawl forward on all fours. I can still feel my body, I know I'm still alive. Suddenly, I'm standing up, but there's something wrong, everything seems so far away and I can't hear or see properly any more. As I found out later, like all the others, I was suffering from lack of oxygen. I must have stumbled forward roughly ten paces when I all at once inhaled fresh air. There's a breeze! I take another breath, inhale deeply, and my senses clear. In front of me is a broken tree. As I rush towards it, I know that I have been saved but am unaware that the park is the Bürgerwiese.

Twenty-four hours later, I asked for a mirror and did not recognise myself any more. My face was a mass of blisters and so were my hands. My eyes were narrow slits and puffed up, my whole body was covered in little black, pitted marks ... Possibly the fire-sparks ate their way through my clothing.⁸³

Mounting only twenty-nine sorties, the Luftwaffe was scarcely to be seen, and only six bombers were lost to enemy action, less than 1 per cent of those dispatched.

In a continuation of Thunderclap, Bomber Command made for Chemnitz, about thirty-five miles to the southeast, the following night. 'The centre of Germany's hosiery and underwear manufacture,' the city also contained some automobile, motor cycle, and machine tool factories, and while 'not on one of the main ... through routes,' it was 'an important centre for the railway system of ... Saxony.' The Americans had bombed the town four times – twice in 1944 and twice (as part of Thunderclap) in February 1945 – including that very afternoon when, concentrating on the southern suburbs, they had damaged a number of industrial plants. Bomber Command's night attack was less successful. Bombing through cloud, the 688 crews (including 64 Halifaxes and 51 Lancasters from No 6 Group) struggled to hit the railway yards whose destruction, they had been told, would be 'of great assistance to good old Stalin and his marshal Zhukov, who are only a hundred miles away.' Despite

the scatter, some damage was done. 'The firm of Auger and Sohn, manufacturing ammunition boxes, was completely destroyed ... the bandage manufacturers Max Arnold suffered medium to heavy damage [and] drinking water was cut off.' The Luftwaffe's response was better than at Dresden despite extensive jamming and spoofing, and thirteen machines were lost, 2.6 per cent, of which three were from No 6 Group.⁸⁴

For the next few weeks the Canadians were operating all over Germany, taking on oil, railway, and Thunderclap targets as well as returning to the Ruhr, in the process of being sealed off by the American armies. Perhaps the most successful area raid in the region occurred on 23/24 February at Pforzheim, a jewellery and clock-making town on the Karlsruhe-Stuttgart main line.⁸⁵ The marking, done from about 8000 feet, was accurate, and the 258 crews from No 1 Group and fifty from No 6 produced 'destruction on a scale [and] as complete as at any target ever attacked. There was hardly a single building left intact throughout the whole area, and apart from the tremendous gutting by fires many ... buildings were levelled to the ground. Damage to railway facilities was also heavy, the goods yard was completely burnt out, rolling stock destroyed, two of the river bridges had collapsed and the road over the rail bridge ... was ... hit and rendered unserviceable.'⁸⁶ Seven thousand were reported killed, and 45,000 left homeless.⁸⁷ Although supported by Mandrel, Window, and raids on Darmstadt, Würms, Berlin, Frankfurt, Essen, and Oslo, the attackers nevertheless lost twelve crews, eleven from No 1 Group.⁸⁸

That was one of the features of operations in February and March 1945, as each bomber group tended to suffer higher than average casualties in turn. No 5 lost fourteen crews in bright moon light at Karlsruhe on 2/3 February (5.6 per cent) and thirteen (7.9 per cent) near Gravenhorst three weeks later. Nos 1 and 8 Groups, meanwhile, had eight crews fail to return from an attack on Bottrop on 3/4 February.⁸⁹ For No 6 Group there were four bad raids. On 21/22 February (a night when the German night-fighter ace Major Heinz-Wolfgang Schnaufer recorded nine kills) the Canadians lost six of 111 sorties sent to Würms (three of them from No 432 Squadron) because the enemy received 'unusually early warning by some means unknown' to High Wycombe at the time. Even single-engined fighters were in action over Holland.⁹⁰ Much the same thing happened on 7/8 March, when five of 182 Canadian crews went missing at Dessau and Hemmingstedt.

Eight more were lost before noon at Hamburg on 31 March, when thirty Me 262s ripped into the Canadian gaggle. 'I felt as if we were standing still,' recalled Flying Officer D. Saunders; 'the gaggle closed in and were wing tip to wing tip ... creating the closest formation of bombers I have ever seen.'⁹¹ But the worst night, by far, was 5/6 March, when 185 machines from No 6 Group formed about a quarter of the bomber stream sent to Chemnitz to finish the job begun three weeks before. 'The take-off took place in full daylight,' Flight Lieutenant J. McQuiston remembered, and '... our crew had about thirty minutes to kill before it would be time to set course.'

The sky was covered with broken cloud, about 4/10th. I decided to use my spare time to fly around seeking clear patches to climb through, as we ascended to our briefed altitude of five thousand feet. No point in risking a mid-air collision in a cloud, if a little patience could void the possibility ...

As I circled the general base area, I observed an explosion off to my left. I informed Gerry of the location and gave my opinion that it was an aircraft exploding on the ground. He booked it in the flight log.

'There's another one,' Steve exclaimed, ... 'farther south and later' ...

'There's another one,' Jimmy chimed in ...

By this time we had reached our intended altitude and were above all cloud cover. As I looked over my left shoulder, I saw a Lancaster wallow through the cloud and then plunge back in. Moments later the flash of an explosion was clearly seen through the cloud ...

'Keep a sharp watch for intruders,' I ordered.

... Before we had even set course, we saw no less than seven explosions that looked, for all the world, like aircraft exploding as they hit the ground.⁹²

McQuiston's crew carried on to the target, but because of bad weather on their return they had to divert to Tangmere, a fighter base, and so did not discover the cause of these explosions until the next day. They had had good reason to worry about intruders as, two nights earlier, the Luftwaffe had finally mounted Operation Gisela, sending 142 Ju 88s over England to pick off aircraft of Nos 4 and 5 Groups as they returned from Kamen and the Dortmund-Ems canal. The night-fighters had attacked forty-three bombers, shooting down twenty-two and damaging eight more. Many crews had been taken completely by surprise and, with their landing lights on, were easy pickings.⁹³ On 5/6 March, however, the cause of the crashes on No 6 Group's airfields was not enemy fighters. Rather, 'in the final analysis, icing was determined to be the cause. A small unexpected triangle of icing cloud had crossed our base at take-off, and we had borne the brunt, losing six of the seven. All the losses were from Linton and Tholthorpe, and Eastmoor was spared, for the moment. The defenses over Chemnitz had been scattered, but on the first leg home, fighters were active. In all we lost ten per cent of our attacking force – an unusually high rate, and twelve of the losses were from our base.'⁹⁴ The final tally: nine machines had crashed on takeoff, killing forty-five; another six were missing over the target, which meant forty-two officers and men failed to return; and a further three crashed on landing, leaving seventeen dead.⁹⁵

With the growing chaos and breaking down of order and restraint, this was a particularly unhealthy time to parachute into Germany. Between 1 February and 30 April 1945 as many as seven RCAF airmen may have been murdered, including Flying Officer T.D. Scott of No 432 Squadron, shot down after the 15/16 March raid on Hagen and executed by the Gestapo the next day. Two more were shot after baling out near Opladen on 30 March.⁹⁶ However, there were still numbers of evaders and escapers loose in both Germany and those

parts of Holland and Denmark occupied by the Wehrmacht – among them Sergeant J.L.N. Warren from No 434 Squadron, whose odyssey was dramatic enough to deserve a Hollywood treatment.

Shot down over Cologne in November 1943, Warren had given himself up at that time because of the wounds and bruises suffered when his machine crashed, and he was subsequently imprisoned at Stalag IVB at Mühlberg. He made his first escape attempt on 17 March, 'joining a party of French prisoners going out for supplies.'

When the party reached the stores he broke away and went to a cemetery where, by pre-arrangement, he was to have met a Canadian airman who had previously escaped. On arrival, Sergeant Warren learnt that the other airman had been recaptured and the guards had been reinforced [and as] he had neither food nor maps, Sergeant Warren decided to return to the camp and await a more favourable opportunity. He regained the camp undetected.

On 1st May, 1944, Sergeant Warren made a further attempt using the same method as before. He met an RAF officer and both successfully evaded the search parties and guards for five days. Four other escapers soon joined them and all managed to get a train carrying rolls of paper to Holland. On arrival ... the party split up, and Sergeant Warren and one companion travelled north until they made contact with the Dutch underground movement at Borne. They stayed for five weeks and then moved on to Nijverdal, owing to the activities of the Germans.

Warren moved about Holland until November, spending six weeks 'hiding in a cave under a pigsty in company with two Poles and a Dutchman,' but they were eventually taken when the Germans made a surprise search of the Gorssel area. Despite showing his captors his identity discs, Warren was 'treated as a "terrorist" and severely manhandled during his interrogation, after which he was put in a cell measuring 12ft x 6ft with thirteen others ... Later he was taken to an empty house for interrogation and further brutal treatment was carried out,' no doubt as the Germans tried to learn more about his escape route. Then, on 1 February 1945, Warren and ninety-three others were put into two box-cars and sent to Germany.

During the journey, some of the party pried open a window... and made an attempt to escape but the guards saw them and opened fire. Sergeant Warren succeeded in getting away and evading capture by walking all night through water waist-high. The next evening he made contact with an underground organization, and was taken to Lobith [on the Dutch/German frontier.] The next night an attempt to cross the Rhine was made but those who tried had to return ... owing to strong enemy opposition. The party was then taken to a farm by a Dutch nurse and given shelter. On the 22nd February 1945 the Germans ordered all farms to be evacuated, so Sgt Warren and some others posed as members of the farmer's family and moved with them. Later he posed as a Dutch policeman in order to prevent being taken again. He continued to evade capture until liberated by British Forces in April 1945.⁹⁷