in use by RCAF squadrons – Halifax, Hampden, and Wellington – and a fourth would soon be added if No 420 proceeded with its planned re-equipment with Manchesters. Yet because Canada had undertaken to produce Lancaster Xs at Victory Aircraft in Toronto, it also made sense to consider this type for the Canadian bomber group. And, indeed, that was what was decided in May 1942. Although Wellingtons would probably make up the initial equipment of new squadrons, the 'ultimate aim' was to create a Lancaster group flying Canadian-made Mark Xs. (The fact that 405 flew Halifaxes was inconsequential for such long-term planning, while the conversion of 420 to Manchesters was soon halted; it re-equipped with Wellington IIIs beginning in August.)[50]

With this question resolved, other things fell into place. Selecting the Lancaster, generally considered the best of the British bombers, more or less ruled out an association between the Canadian group and No 3 Group (Stirlings) and No 4 Group (Halifaxes). No 5 Group was already converting to Lancasters from Hampdens and had two Canadian squadrons under command, but because of its somewhat special status* since the beginning of the war the possibility of linking the Canadians with it seems never to have been considered. That left No 1 Group, sandwiched between Nos 4 and 5 Groups in Lincolnshire and southern Yorkshire, for which an ultimate heavy bomber type had not yet been selected, but which was currently flying Wellingtons and Halifaxes, and thus could readily accommodate most RCAF squadrons. Largely because it was thought likely that it would eventually be equipped with Lancasters, some RCAF officers overseas had suggested that it might be better for Canada to take over No 1 Group (with all its bases and infrastructure) than to create a new group from scratch – a process which would involve extensive construction of runways and buildings and which might very well delay the group's fitting-out with four-engined machines. Convinced that Canadianization would proceed more quickly in a new formation, Ottawa thought otherwise, but links to No 1 Group were nonetheless forged. In late June instructions were prepared to post all Canadian bomber squadrons to bases in its area until No 6 (RCAF) Bomber Group became operational.[51]

From the standpoint of operational flying, somewhere further south would have been preferable. There was less smoke and industrial haze to contend with in, say, East Anglia, and the distances to be flown to the Ruhr and most other German targets were not so great. But much of the south was reserved for the burgeoning US Army Air Forces and Bomber Command's Pathfinder Force (see below, 612–13), while East Anglia was also home to No 3 Group, whose marginally effective Stirlings needed every possible advantage.[52]

As things turned out, however, No 6 Group was not established on Lancasters, and Canadian squadrons were not moved to the No 1 Group area. Instead, the Halifax was chosen as the Canadians' immediate heavy bomber

*Commanded in turn by Harris, Bottomley, Slessor (the latter two now assistant chiefs of the air staff), and Coryton (a future ACAS) since the beginning of the war, and the first to be equipped with Lancasters, No 5 Group always regarded itself (and was regarded) as something of an élite force.

(with Wellington IIIs and Xs as their interim medium bomber) and, following from that, No 6 Group's territory was carved out of the northern extremity of No 4 Group in the Vale of York. Surrounded by hills that were often shrouded in smog and fog, its dangerously overlapping bases were also the most distant from the majority of German targets. In short, as Sir Arthur Harris admitted much later, the Canadians were 'unfortunately placed geographically.'[53]

The idea of equipping the new group with Halifaxes seems to have occurred to Harris at least as early as 20 June 1942, less than a month after the initial decision to assign Lancasters to it. The move to No 4 Group's area was worked out a month later, and it was only then that the RCAF was made aware of the change.[54] The reasons for the shifts are not entirely clear, and some of the evidence is conflicting, but there is no mistaking Harris's suspicion that 'the Canadians will not produce sufficient Lancasters to equip a Group, or for that matter even to provide OTU backing and equipment for one Squadron' or his contention that, because of Ottawa's decision, the RCAF had a right only to Canadian-built Lancasters.[55]

Sir Arthur's scepticism was not ill-informed. He had been present at the talks held in September 1941 to arrange for the production of Lancasters in Canada and had heard C.D. Howe, Canadian minister of munitions and supply, speak about producing 250 machines in total, at the rate of fifteen a month, beginning 'as soon as possible in 1943' – a schedule which, taking into account wastage and training requirements, would equip only a few squadrons at best. With no British-made Lancasters to spare, except at the expense of RAF squadrons, and the production of the unsatisfactory Stirling being phased out, Harris made what was, for him, the easy decision to equip the Canadians with Halifaxes. Moreover, mid-summer 1942 was a propitious moment for the formation of another Halifax group. Following the transfer of two Whitley squadrons to Coastal Command, No 4 Group's conversion to Halifaxes was nearing completion. In addition, the latter's AOC believed that, because of the experience his crews had gained on the type, the training they could provide would be 'of the highest standard, and … will enable new Halifax squadrons to become operational in much less time than if these were under other control.'[56] It helped, of course, that there was room for another bomber formation in the north, beside No 4 Group, and that the Canadians were pressing for the earliest possible conversion of their group to four-engined machines.

The British expected the RCAF to object to the Halifax, and perhaps to the Wellington as well. They were right. On 6 August Wing Commander H.L. Campbell, director of air staff at Overseas Headquarters, warned Air Marshal H. Edwards, AOC-in-C of the RCAF Overseas, that there was a 'feeling … prevalent amongst a number of the Canadian aircrew' in RAF squadrons that they did not want to come to RCAF squadrons flying obsolescent aircraft like the Wellington. Campbell was also concerned that with four Wellington squadrons and, as yet, only one Halifax unit, the Canadian Group might, in fact, become a Wellington group. He therefore suggested that Edwards press the Air Ministry to reverse its decision. 'In view of the large percentage of our squad-

rons that have operated, and are operating, on obsolescent aircraft I think we are quite justified in holding out very strongly for the equipping of Canadian squadrons with Lancasters, particularly so since the production is good, and they are being built in Canada. Also, in the event that a shortage of aircraft arises when they are in production in Canada, it will be very easy to say that they are of Canadian manufacture, and the allotment of them to Canadian squadrons is only reasonable.'[57]

Air Vice-Marshal L.N. Hollinghurst, director-general of organization at the Air Ministry, was still sensitive, and perhaps even sympathetic, to the Canadian position. Convinced both of the logic and the 'political significance' of giving them the same type that Canadian factories would be turning out, he worried that equipping RCAF squadrons with Halifaxes in the near future because of the temporary shortage of Wellingtons could be seized upon 'as an argument against mounting the Group on Lancasters' later on. Moreover, Hollinghurst was certain that 'we should eventually be forced to give way' and provide Lancasters, and he urged his Air Ministry colleagues not to 'lose both the point and the kudos of having made a graceful gesture' when the time came. Without specifying what type they might fly in the interim, Harris was told simply that 'the Canadian group must, within a reasonable time, re-equip with Lancasters.' Hollinghurst's advice was disregarded, however, as on 26 September the VCAS, Sir Wilfrid Freeman, ruled that the 'Canadians were not to get more Lancasters than they were producing in their own country,' a decision, Portal observed, which met Harris's objections.[58*]

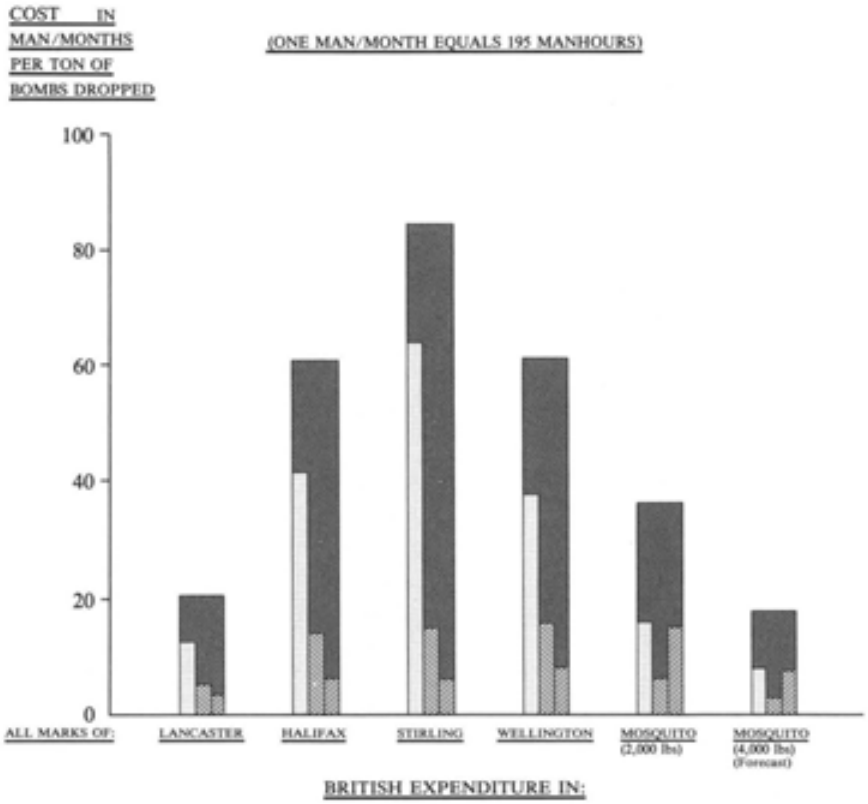
Beset by design problems during development and in its earliest operational marks, underpowered in its later variants, the Halifax never overcame the signal disadvantages of an inadequate operational ceiling and a certain sluggishness in handling which was a handicap in evading night-fighters. No fan of Handley-Page since he had seen his first Hampden, Harris was disgusted by the constant stream of problems the Halifaxes posed, and even as he was asking that No 6 Group fly them he was also insisting that someone 'get to the bottom of Halifax vulnerability.' Better still, he argued, the CAS should find a way to substitute 1300 Lancasters for the 1800 Halifaxes then scheduled to be built. Failing that, he proposed putting all his bad eggs in one basket. The in-line Rolls Royce Merlin XXs used on the Halifax II/V should be transferred to Lancaster production lines, so that factories could build more Lancaster Is and IIIs and abandon the much inferior Lancaster II, powered by Bristol's radial engines. The Hercules thus released could be fitted to Halifaxes as Mark IIIs, which would then be used on easier operations and to meet 'such Naval demands for long range aircraft as may be inflicted upon us.'[59]

That, however, could not be arranged. The Lancaster II and Halifax III remained front-line bombers (both of which were allocated to No 6 Group squadrons), and Harris complained to the Ministry of Aircraft Production (MAP)

* In fact, Nos 408 and 432 squadrons were converted to Lancaster IIs in October 1943, and Nos 424, 427, 429, and 433 Squadrons received Lancaster I/IIIs between January and March 1945 once Lancaster Xs had become available.

RELATIVE EFFICIENCIES OF BOMBER AIRCRAFT

NATIONAL LABOUR EFFORT EXPENDED BY BOMBER COMMAND
TO DROP ONE TON OF BOMBS - ALL TARGETS, 1943.



BASIC DATA:-	WASTAGE RATE	PRODUCTION COST	AV. BOMB LOAD
LANCASTER	3.92%	1,160 M/Months	8,900
HALIFAX	5.75%	1,380	4,700
STIRLING	6.36%	1,940	4,600
WELLINGTON	5.18%	860	2,900
MOSQUITO(2000)	1.90%	450	1,300
MOSQUITO(4000)	1.90%	450	2,600

SOURCE: PRO AIR 14/1875

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that he was saddled with a force of Halifaxes that not only 'stinks' but which was also 'cracking' the morale of his crews. Harris may have been exaggerating, but there was no denying the Halifax's startling and unacceptably high loss rate since it had entered squadron service. In raids on Berlin and on north and central Germany (including the Baltic coast), losses were running in the region of 10 per cent, and stood at 5 per cent on operations against the North Sea ports.[60]

Yet at this stage during the summer of 1942, Ottawa's preference for the Lancaster seems to have had very little, if anything, to do with its unmistakable superiority to the Halifax II. Instead, the question boiled down to supply. Not only was it hoped that conversion to an all-heavy-bomber group would occur sooner if the Lancaster was selected, but (thinking the best of Victory Aircraft) once Lancaster Xs began to roll off the line in Toronto there might be greater security of supply than if the Canadian group had to depend on an allocation of British-made machines.[61]

No matter which heavy bomber was selected for No 6 Group, there would be an unavoidable period when most RCAF squadrons (and certainly all those recently formed) would be flying medium bombers. Conversion of the whole of Bomber Command to four-engined machines was not possible all at once and, where practicable, within each group Harris allocated heavy bombers to squadrons more or less by seniority. Accordingly, although Nos 408 and 419 would switch over to the Halifax II and V over the winter of 1942–3, new squadrons would form on Wellington IIIs. That made some sense, as experienced crews usually did a better job of finding and bombing the target and it would have been a waste to give heavy bombers with their larger payloads to units which, from April 1942, were being formed with as few as five experienced crews, the rest coming directly from their training units.[62]

Having made its first flight in 1936, the Vickers Wellington was now an old design, but one that had been extensively up-graded. Its development is well illustrated by the improvements in performance from the Mark I, which cruised at 165 miles per hour and had a service ceiling of 15,000 feet, through the Mark III, with a cruising speed of 180 miles per hour and a ceiling of 19,500 feet, to the Mark X, which could operate at altitudes of 20,000 feet or more and also cruised at 180 miles per hour, but could reach 240 miles per hour for a short period of time, a tremendous asset when trying to throw off a pursuing night-fighter.[63] Like the Halifax, however, Wellingtons were not always comfortable. 'The Wellington III and X were great aircraft to operate,' Flight Lieutenant C. Hughes, a navigator in No 427 Squadron, recalled, 'having a higher operational ceiling than the Halifax.'

> I think I'm right in saying that a 'Wimpy' X could reach 21,000 feet, whereas the Halifax V tended to 'stick' at 19,000 feet. The trouble (from my personal point of view) with the Wellingtons was the cold and draught. I normally had to stick the heating pipe into my boot to thaw out my feet, and the face microphones became iced up at altitude and only worked after stopping work to break the ice. Draught was always a problem, especially when our Wellingtons were adapted to carry a 4,000

pound 'Cookie' bomb. For this, on our unit, the bomb doors were removed, leaving the bomb partly outside the bomb bay and successfully deflecting a stream of icy air into the cabin.[64]

Moreover, as we have seen, the loss rate for Wellingtons of all types over north-central Germany and the Rhineland was high enough to cause concern. (About 6.6 per cent overall, but much higher on occasion.) An attack on Nuremburg on 28/29 August, undertaken in bright moonlight, cost 14.5 per cent of all sorties, but a staggering 34 per cent of the Wellingtons involved. The Luftwaffe had obviously recovered its balance after Cologne and, extrapolating from a consistently rising overall loss rate (4.1 per cent in June, 4.4 per cent in July, and 6.6 per cent August), the operational research scientists warned that the figure might soon reach 7 per cent. That was disturbing news, to say the least, but Harris had every reason to believe that concentration and careful routeing were still the keys to success. Indeed, as the location of more and more enemy radars, air-defence boxes, and night-fighter beacons and bases were pinpointed, thanks to electronic intelligence and agents on the ground (particularly a group of Belgians, who managed to steal a map of the air-defence organization in that country), the ability to minimize the bomber stream's proximity to known strongpoints increased and High Wycombe wisely took over responsibility for selecting routes to and from the target.[65]

Yet losses continued to rise despite the greater attention given to concentration and route selection, and by fall operational research scientists in both Bomber Command and the Air Ministry were looking for new options to add to Harris's tactical repertoire. Flying low enough to avoid radar detection would, of course, 'embarrass all known forms of fighter control,' but this was hardly practical when there was Flak to contend with. Similarly, although constant, unpredictable course alterations would make it more difficult for the German controllers to follow individual bombers, it was felt that the risk of collision within the bomber stream would also rise, and an even greater burden would be placed on pilots and navigators who had trouble enough finding their targets without the extra work involved in keeping track of a constantly shifting flight path.[66]

The Germans, too, recognized the growing success of their night-fighting operations and much of the discontent with Himmelbett which had followed immediately after the Cologne raid dissipated. Kammhuber's system was not being swamped every night, and the combination of ground control and AI radar was producing enough 'kills' to quiet even the individualists who favoured uncontrolled night fighting. Kammhuber himself boasted that Himmelbett was 'repeatedly successful' given 'particularly good control officers,'[67] an assertion well illustrated by the following account of the 22 June 1943 raid on Krefeld (but equally applicable to the summer before) when Leutnant Heinz-Wolfgang Schaufer was ordered to Box Meise, about fifteen miles northeast of Brussels, at 1 AM. Schaufer circled his beacon for about twenty minutes until he received instructions to intercept a bomber, apparently far off course, approaching from the west.

On the ground, the men of No. 13/211 Signals Company … were already tracking Schaufer's Messerschmitt with one Giant *WÜRZBURG* radar: now the other swung around and began sweeping the night sky, looking for the raider. The hand-over from the *FREYA* early-warning system went without a hitch, and by 1:26 a.m. the flight path followed by the unsuspecting British crew was already appearing as a series of co-ordinates on the fighter controller's grid, and as a red spot of light went across the screen of *MEISE*'s *SEEBURG* table … the fighter control officer … guided Schaufer over the radio-telephone into position for a 'parallel head-on' interception. This form of attack, designed to bring the fighter into contact with its quarry at the greatest possible range from the ground radar, allowed the maximum room for error … Schaufer's orders were to fly straight towards the bomber then, just before the two aircraft crossed, turn through a half circle; the night fighter slid round neatly on to the tail of the bomber – a perfect interception. In the rear of the Messerschmitt Second Lieutenant Baro, the radar operator, observed a small hump of light rise up from the flickering base line of his screen: an enemy aircraft, range 2,700 yards. No need for further instructions from the ground, unless things went wrong. Baro passed Schaufer a running commentary on the bomber's position until 1:30 a.m. when, in Schaufer's words: 'I recognised at 500 yards above and to the right a Short Stirling and succeeded in getting in an attack on the violently weaving enemy aircraft. It caught fire in the fuselage and wings, and carried on still blazing. Then it went into a dive, and crashed two miles north-east of Aerschot.' At first light, the fighter-controller drove out to inspect the bomber's wreckage to verify Schaufer's claim. 'There was a crew of seven,' he reported, 'all of whom were lying dead in the wreckage.'[68]

Given Himmelbett operations like that, extending from Denmark to Switzerland and into the interior of Germany, the only thing preventing decisive success, Kammhuber declared after the war, was 'a lack of night fighter planes and trained night fighter crews.'[69]

In fact, the average number of serviceable night-fighters rose from 154 in January 1942 to 362 in December and the number of available crews nearly doubled from 386 to 741, but there were still flaws in Himmelbett that went beyond the availability of men and materiel. Even with the assistance of Lichtenstein B/C, interceptions could take as long as thirty minutes from the moment a fighter first left its beacon until its return, ample time for many other enemy aircraft to pass through the box. Although it was technically possible to add breadth to the system by placing additional fighters in each box, the benefits would have been offset to some extent by the Würzburg's lack of IFF, which made it difficult for controllers to decipher who was who. Moreover, as High Wycombe soon discovered, the Würzburgs could be fooled if the aircraft they were tracking made drastic changes in course – even to the point of causing them to switch coverage, so that the operator assigned to track the night-fighter actually began to plot the progress of its quarry.[70]

Convinced, however, that it was essential to perfect the means by which a single, ground-controlled fighter could shoot down a single enemy bomber, Kammhuber – known by his detractors as the 'Pope of Night Fighting' because he preached the infallibility of his system – brushed these problems aside. He

also wanted to make the minimum demands on his crews. Night-flying was risky enough and night-fighting sufficiently demanding in terms of the mental concentration involved – patrols often lasted up to three hours – that he did not want his crews to worry about long-distance navigation and landing at unfamiliar stations under adverse conditions. That rarely happened with Himmelbett, of course, as crews usually flew over familiar territory and almost always landed at their home base.[71]

General der Flieger Adolf Galland was nevertheless right when he complained that the encouraging results obtained by Himmelbett in the summer of 1942 lulled both the Luftwaffe as a whole and Kammhuber in particular into a false sense of security. 'Our command,' he explained, 'allowed the enemy to dictate the necessary defensive measures instead of countering actively with original measures planned with foresight.' In November 1942, for example, when he knew he was short of aircraft and might be even shorter in the future, Kammhuber rejected an offer of a purpose-built, wooden night-fighter based on the de Havilland Mosquito because he feared it would not show up well on the Würzburg radars and would hinder Himmelbett ground control.[72]

There was some innovation, however, as the leading night-fighter crews began to teach their colleagues a new and highly destructive technique first observed by Bomber Command crews in the late spring of 1942. Instead of the standard attack from astern, when fire was opened at between two and four hundred yards, they approached the bomber from behind and below, climbed slowly, almost to the point of stalling, and then raked the underside of the bomber as it passed through their gunsight. Since rear gunners were looking back, not down – where their view was, in any event, obstructed by their guns and the turret floor – they were rarely in a position to give any warning, and many machines, no doubt, were lost without trace.[73]

Once Bomber Command discovered that two-thirds of the machines returning to England with fighter damage had been attacked from below, consideration was given to fitting ventral turrets or free-swinging, individually mounted ventral guns, but because that would involve considerable redesign and also threatened to sacrifice bomb load, the decision was not to be taken hurriedly. Meanwhile, working closely with their pilots, rear gunners were expected to hunch forward over their guns, half-standing, and search the sky below while the pilot conducted a series of alternate banking turns, but the physical demands on the gunner made it impracticable for him to do that for any length of time. Losses continued to rise into the fall, and many surprise attacks were still reported as coming from 'underneath and astern.' No 5 Group, recognizing that 'something is wrong,' asked, 'What is it? Is the method of searching what it should be?' Evidently, it was not. No new tactical manoeuvre was adopted, however, even though the normal evasive tactic preferred by Bomber Command at that time – a simple, diving turn (as opposed to the 'corkscrew' that became the standard in 1943) – played into the hands of a fighter approaching from the rear and below.[74]

Another alternative, long supported by Bomber Command but so far resisted by the Air Ministry for fear of compromising Britain's own security, was to

undertake an electronic counter-measures campaign against the enemy's radars and radio communications. The idea, code-named Window, put forward a year earlier of dropping strips of metallic foil cut to a length that would cloud Würzburg screens was still the least complicated solution, but because of its simplicity – it could easily be turned against British radars – it was rejected out of hand. With losses mounting, however, the Air Ministry was finally persuaded that counter-measures had to be introduced, and in October 1942 it gave its blessing to two specific jamming methods: Shiver, which involved modifying the IFF device (already believed, by some, to douse searchlights) so that its transmissions jammed Würzburg; and Mandrel, an airborne and ground-based jammer aimed at Freya.[75]

Shiver went into use almost immediately, and for the first month seemed a great success as the losses of Shiver-equipped aircraft to radar-controlled Flak fell markedly. When it became apparent that this correlation was actually a statistical accident, however – over the longer term there was no appreciable difference in missing rates – and it was also discovered that Shiver was interfering with British radars, the device was abandoned in February 1943. Mandrel was not used until December 1942, when a third technique, Tinsel (the jamming of the fighter control radio band with airborne transmitters) was also introduced. Together they were instant successes as the Germans were forced into the bothersome practice of altering their radio frequencies to avoid jamming. As it turned out, however, it was easier for the enemy to change frequencies than it was to expand Mandrel's coverage or boost its power. Airborne Mandrel was also abandoned for the moment, but not before a number of RCAF squadrons had used it on operations.[76] Tinsel remained in service, and would play a crucial part in the complex tactical manoeuvres attempted later in the war.

Turning back to the summer and to the effectiveness of bombing, the smaller operations mounted after 30 May followed the same general procedures as the 'thousand' raids and demonstrated the same unpredictable patterns and inconsistencies in Gee's effectiveness, both as a navigation aid and as a blind-bombing device. Four raids carried out against Emden between 6 and 23 June showed, for example, that crews using Gee could still be fooled even against a relatively easy-to-find coastal target. On 19/20 June, Osnabrück, sixty miles away, was marked and bombed by almost a quarter of the main force, while, three nights later, decoy fires (clearly identified as such by No 405 Squadron) pulled many crews away from their objective. Only the 6/7 June raid, flown in good weather and featuring extremely good illumination by flares, produced appreciable damage: thirty acres of housing and small businesses were badly burned, fish processing facilities were destroyed, and the railway lines were cut. A 408 Squadron crew reported seeing the fires from sixty miles away.[77]

Four smaller raids on Essen were all failures as crews consistently missed the target area and bombs were dropped all over the Ruhr. On 2/3 June No 405 Squadron received 'no help at all from flares … except perhaps that they

were a general guide to the target area,' and one crew specifically noted them falling well away from the objective. Three nights later crews from No 408 admitted no more than having bombed 'in the Ruhr district,' but they did no worse than the rest of Bomber Command. The attack was widely scattered, and there was very little property damage. On 8/9 June the target was missed again, but this night the German defences played a large part in Bomber Command's failure. Nineteen aircraft of the 170 dispatched were lost (11.2 per cent), and Flak deterred many others from making a disciplined bombing run. Six crews from 405 Squadron reported that, although they managed to reach the target area, 'the terrific opposition, intense S[earch]/L[ight] glare, and ground haze prevented any identification of ground features,' so there was 'very little evidence … of any weight of attack.'[78]

The worst of these raids was probably the last, when the weather was anything but helpful. Only sixteen of 106 crews found and bombed the target on 16/17 June, while forty-five chose to attack Bonn as an alternative. One of the latter was captained by J.D. Pattison of No 419 Squadron. Running into heavy cloud at 6000 feet and experiencing severe icing on his way across the North Sea, he was able to climb no higher than 12,000 feet before crossing the Dutch coast. With his controls very sluggish because of a layer of ice on the wings, he turned back to base, got within twenty miles of England, and found clear air. The ice immediately began to fly off, the aircraft climbed, and Pattison chose to try again. This time he crossed the coast at 14,000 feet, having kept just above the cloud, but, realizing he would be too late for Essen, he made for Bonn instead.[79]

Losses on this abortive attempt were heavy – just under 8 per cent of the aircraft dispatched – and No 419 Squadron had a particularly miserable time. Two aircraft out of thirteen were lost, one returned early without attacking, one crew bombed short 'owing to intensity of defences and consequent necessary evasive action,' and three others had minor Flak damage. Another, piloted by Flight Sergeant M.L. Swanson, was already on fire after being hit by Flak four times when it was attacked by a German fighter. Soon it had lost its hydraulics, was severely holed, and had its landing gear and bomb-bay doors locked in the open position. Nevertheless, with the help of his wireless operator, Flight Sergeant K.E. Crosby, Swanson maintained control while Flight Sergeant P.S.O. Brichta, the navigator, 'immediately attempted to extinguish the flames … in spite of the … possibility that he would fall through the badly burned bottom of the fuselage.' Once the fire was out, Brichta returned to his charts and coolly directed Swanson back to England, where he crash-landed in a wheat field. All three were awarded the Distinguished Flying Medal.[80]

What was especially frustrating in all this was the unmistakable evidence that, despite Gee, Bomber Command still could not destroy targets in the Ruhr, the primary focus of the area offensive to date. When Harris asked the AOC of No 3 Group if he had any suggestions to facilitate operations there, Baldwin admitted he did not. It seemed to him that the enemy's defences would always lead 'the weaker brethren' to release their bombs on the outer perimeter of the

target area and thereby reinforce the view, already prevalent among his crews, that they could not achieve useful results in that part of Germany. It was therefore better, he thought, to spread Bomber Command's effort in the hope that this would force further dispersion of the enemy's defences and 'thus open up areas which at the present moment are so strongly defended as to be expensive when attacked.' Failing that, he could only pass on the suggestion made by one of his station commanders that a specialist target-finding force be created – an idea he had opposed six months earlier.[81]

These were not the answers Harris was looking for. The first flew in the face of all that was known about the strengths and weaknesses of Kammhuber's defensive system, while the latter gave credibility to an idea the AOC-in-C had consistently put down because he feared the effect of 'creaming off' the best crews from existing squadrons to form such an elite force. Under pressure from Portal to reconsider his position so that Gee could be exploited to the fullest before it was jammed – still considered inevitable – Harris concocted two new arguments against the concept of target-finders. The main problem, he declared, was not that crews were unable to locate the target but that they could not see it well enough through the smoke and cloud to be sure of where they were and to drop their bombs accurately. In this respect, a target-finding force would be no better off, and he wondered what difference it would make. Beyond that, the formation of such a force was likely to create political problems when it came to working out how dominion crews should be fitted in. Neither argument cut any ice. Portal and Sinclair both observed that integrating these crews into the target-finding force might well offset 'our present policy of segregating Dominion and foreign personnel within their own homogenous units.'[82]

It did not. When the the matter of dominion participation was raised with Canadian authorities, the proposal to integrate crews completely into RAF squadrons was turned down and it was accepted that room would have to be made for distinctly RCAF flights. The administrative problems that might entail were matters of little consequence to Portal and Sinclair, however. The two had been persuaded that the creation of a target-finding force was essential for Bomber Command to realize its potential and, although Portal did not want to force the idea on his subordinate, in the end Sir Arthur caved in. A Pathfinder Force (as Harris demanded it be called) would be formed and ways would be found to accommodate Canadian interests.

Manned by volunteer crews that had already proved their ability to find and hit their targets, but would undergo further extensive training to become even more proficient in all aspects of navigation and bomb-aiming,* the Pathfinder Force (PFF) was initially set up within No 3 Group. It nevertheless comprised squadrons from all four night-bombing formations and had its own AOC, Group Captain D.C.T. Bennett, a ruthless perfectionist. Eventually, a

* The AOC of the Pathfinders went so far as to enlist the help of eye specialists to develop drops to improve the night vision of bomb-aimers and to produce anti-glare glasses to offset the effect of searchlights.

separate, independent No 8 (Pathfinder) Group was established in January 1943, and in April No 405 Squadron was transferred to it as the No 6 Group affiliate.[83]

Almost two months passed between the decision to form a Pathfinder Force and its first operation. The raids mounted in the interim simply confirmed that Bomber Command could not consistently locate its targets or achieve consistent results even against those in the same geographical area. An effective raid on Bremen (2/3 July) was followed, for example, by one on Wilhelmshaven a week later in which most bombs fell in open country.[84] Moreover, these operations were not economical. The Canadian squadrons were all heavily engaged on 26/27 July, clawing their way to Hamburg through cloud and ice, when the overall loss rate was 7.2 per cent. No 420 Squadron lost two of the fifteen Hampdens sent (and had four early returns), while four crews from No 408 found themselves coned by searchlights or intercepted by night-fighters but were fortunate enough to get away. Pilot Officer David Williams was caught by a large number of lights shortly after completing his bombing run at 8000 feet, and in the glow he saw that he was also in the midst of a balloon barrage.

Immediately heavy *Flak* began bursting near and around the aircraft, one of the shells exploding under the port wing causing the aircraft to turn over on its back and one of the engines cutting momentarily. After some evasive action the aircraft was righted, and escape through the balloon barrage was successfully completed. Taking a northerly direction *en route* home, the W[ireless] O[perator]/A[ir] G[unner] advised the pilot that a single engine, one-tail[fin] aircraft (presumed to be a Me 109) was outlined against the moon flying on their port quarter. The pilot took immediate evasive action to evade the enemy's cone of fire, made a right hand turn and dove for cloud cover which was about 500 feet below.[85]

Lacking Lichtenstein, the Messerschmitt could not follow the bomber in cloud and Williams escaped.

Pilot Officer R.N. Rayne from 420 Squadron was less fortunate, falling victim to a fighter over the enemy coast.

Just as the Nav[igator] said he could see coast, W/Op, Sgt. Axford, told me to turn to s[tarboard] quickly as there was a fighter coming up. Immed[iately] banked over and turned. Just as we were in the middle of the turning a stream of tracer came just over my head right in the centre of the a/c so that our turn took us into it & out of it in a moment. I continued the turn for a while. As I straightened, I felt the a/c shudder and go into a spin to s[tarboard]. I corrected this immed. by throttling down outer engine & nearly went into a spin to port, but corrected this in the same way.

After asking his crew if they were hurt, and finding everyone fine, Rayne suddenly found his Hampden engulfed in fire and ordered the crew to bale out.

I have never been able to remember what happened the next moment; the next thing I realised was that a/c was diving to the ground and that there were flames all round me which burnt my unprotected face. I tried to release my harness but could not find the pin nor see anything. I tried to break out of it, & then felt for the pin again. After several unsuccessful attempts I suddenly found myself loose; I stood up & was sucked out of the diving a/c. Then, as I fell through the air, I could not find the ripcord until I looked down and saw the chromium plate gleaming in the moonlight about 6 inches out from my chest … I pulled it, & the 'chute opened out … I fell for a few seconds and then heard the sea below me; I was just wondering whether I should land in the sea, when I came down on my back with a big thud on the sand … The Germans who captured me told me that the fighter that shot me down made two attacks; I was aware of only one.[86]

Rayne was also told that the rest of his crew was dead.

Losses on 28/29 July totalled thirty aircraft, of which twenty-five were from No 3 Group, 15.2 per cent of its contribution. One of them was John Fulton, the inspirational commanding officer of No 419, whose death cast a pall over the squadron for a considerable time. Indeed one sergeant air-gunner, shot down the next night in a raid on Saarbrücken, later reported that the loss of the CO and the fact that the squadron had flown on operations on five of the last eight nights meant that they were 'anything but enthusiastic' about having to do another one. Worse still, Fulton's successor, Wing Commander A.P. Walsh, a Canadian in the RAF, was killed in action within a month of taking over command.[87]

Four raids on Duisburg were just as futile, and none more so than that mounted in moonless conditions (to make things difficult for the enemy's fighters) on 21/22 July. The marking, done entirely on Gee, was wildly erratic although visibility was not bad. No 405 Squadron reported only some industrial haze while crews from No 419 declared they had 'excellent visibility' and could pinpoint the docks and railway marshalling yards as well as the town itself. Still, many bombs fell in open country, across the Rhine from the city centre. Exactly the same thing happened the night of 6/7 August, when the bombing again fell mainly to the west of the city. Photographs taken after the raid, but looking at the results of all four, indicated there were no large areas of devastation in spite of the scale of attack. The Thyssen steel works, to be sure, gave evidence of having suffered some damage, but on the whole there was not much to show for more than a thousand sorties, and the analysts had to reach for something positive to say: 'The proportion of H[igh] E[xplosive] damage in suburban districts is such that probably many more houses than are actually seen to have been destroyed or damaged have in fact been rendered uninhabitable by blast.'[88]

The loss rate at Duisburg was a manageable 3.4 per cent,[89] but it could easily have been higher had it not been for the flying skills of some pilots and the ability of their machines to take punishment and keep flying. Among the latter was the Hampden flown by Sergeant R.G. Bell of No 408 Squadron. On

the way to the target on 5/6 August, a night-fighter 'suddenly pounced upon our Hampden from out of cloud cover.'

> The attack was so sudden that before the WOP/AGs could notice the enemy aircraft and take necessary action, the enemy fired with all guns at a range of approximately between 50–100 yards ... The first sign of attack was when tracer bullets were fired at the Hampden from dead astern ... The pilot immediately put the Hampden into a deep diving turn to starboard, pulling out at 6,000 ft., and the attacking aircraft was lost from sight and not seen again ... The attack was so fierce that the pilot's impression was that all shells and bullets seemed to hit everywhere.[90]

There were three large holes in the elevators and one in the port fin, a rent where the tail boom and fuselage intersected, and holes in the port aileron and engine nacelle. In addition, the port wing fuel tanks were riddled (fortunately without causing a fire), the upper gunner's turret smashed and his guns put out of action, the hydraulics shot away, and the whole fuselage scored by cannon fire. One shell had struck the main spar just behind the pilot's shoulder. Despite all this, Bell flew on to the target, bombed it, and turned for home. Ten minutes later the port engine gave up and the aircraft fell to 4000 feet. Struggling to keep control, he managed a belly-landing on the sand dunes near RAF Station Lakenheath. He was awarded a Distinguished Flying Medal. The only injuries were those suffered by the mid-upper gunner, Sergeant J.S. Murray, who had pieces of shrapnel, shell splinters, and perspex removed from his head, but who returned to operational duties in January 1943.[91*]

On 9/10 August, at Osnabrück, conditions were very much as they had been at Duisburg on 21/22 July. Visibility was good over this 'vital rail junction' on the Berlin-Holland and Ruhr-Hamburg lines, site of iron foundries and steel rolling mills, and an inland port on the Rhine with links to Bremen and Berlin via the Mittelland canal. Yet although the marking was again scattered – probably because the Germans effectively jammed Gee for the first time – the bombing was reasonably accurate and the damage was severe: 206 houses were destroyed, 4000 buildings were damaged, the docks were hit hard, and sixty-two people were killed.[92]

Unhelpfully, however, the clear skies that made navigation and bomb-aiming easier also served the Germans well. The attack on Düsseldorf on 31 July/1 August, which damaged 15,000 buildings and killed 279, cost twenty-nine aircraft, 4.6 per cent of the attacking force. Similarly, the 28/29 August raid on Saarbrücken, considered an easy target, and where Flak defences had not been built up, claimed 6.2 per cent.[93] For No 408 Squadron in particular the operation was a disaster. Seventeen aircraft were dispatched, and four (23.5 per cent) did not return. Moreover, one of the lost crews included Wing Commander J.D. Twigg, the commanding officer, as well as the squadron's

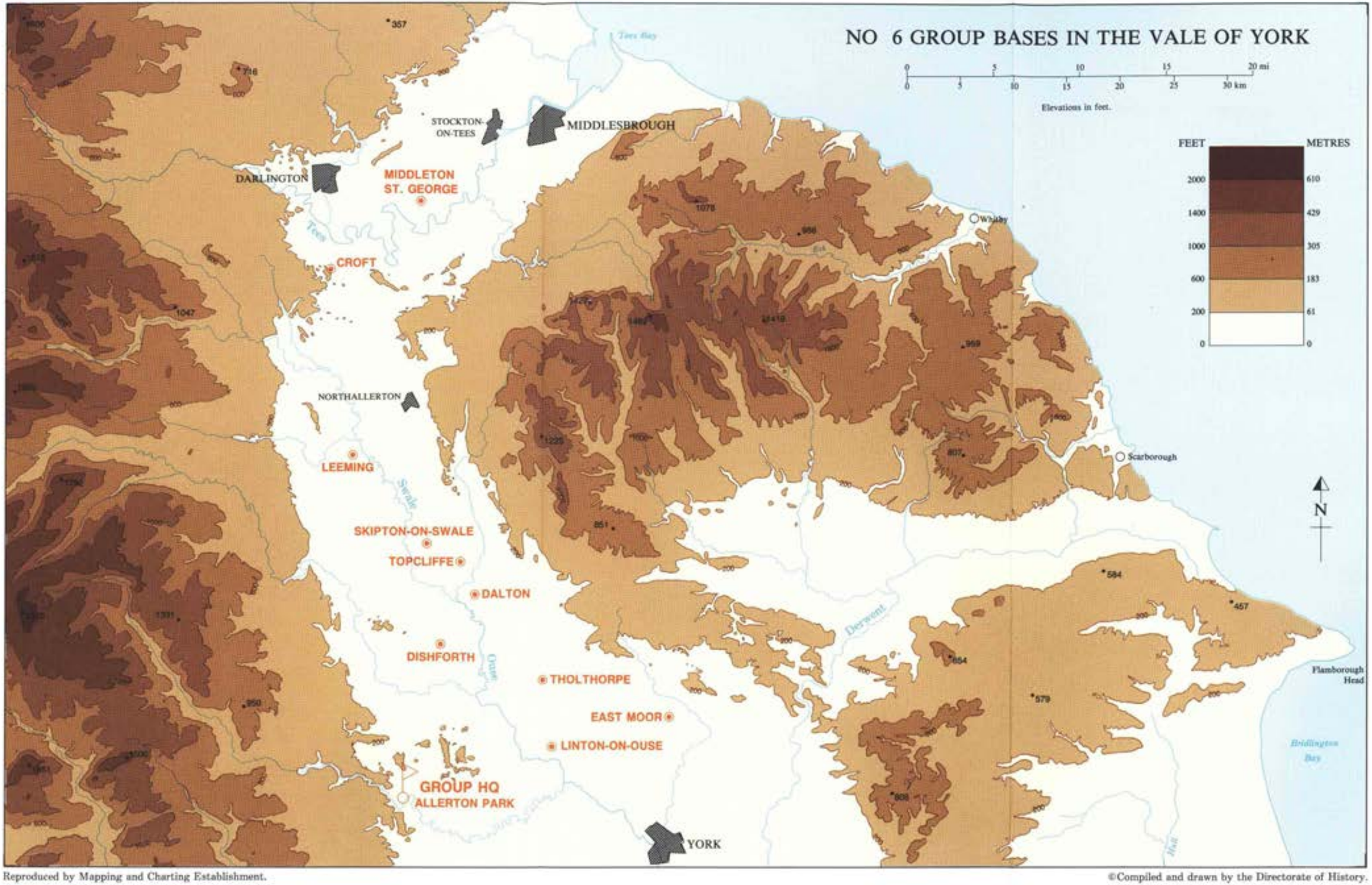
*Murray was shot down over France and captured on his twentieth operation, 14 April 1943. Sergeant Bell and the rest of his crew were accidentally killed in the course of a fighter affiliation exercise on 9 November 1942.

bombing leader, signals officer, and gunnery leader. Leadership by example had its positive aspects, but risking so many key officers in one crew was foolish.[94]

Despite recent losses, the AOC-in-C remained faithful to the principle of concentration, both as a defensive measure and because he believed that one raid by a thousand bombers would accomplish significantly more than ten by one hundred. He also agreed with the AOC of No 4 Group that too many small-to-medium raids in bad weather would cause fatigue to no worthwhile end. Until Bomber Command was much stronger, therefore, he decided on 24 July to restrict its effort to very large raids of seven hundred sorties or more on the three to seven nights a month when there was good weather, and to Gardening and other minor operations when there was not. He anticipated, and would accept, losses averaging about 5 per cent on the larger raids. Appropriately enough, the day before this policy was announced the MAP finally received the absolute priority in allocations of industrial manpower it required to complete the heavy bomber program approved in October 1941 and modified in June.[95]

An overall loss rate of 5 per cent would be approaching the theoretical limit of sustainability later worked out at the Air Ministry but already suspected at the time. 'A strategic bomber force would become relatively ineffective if it suffered operational losses in the region of 7 per cent over a period of three months of intensive operations,' it was calculated, 'and the operational effectiveness may become unacceptably low if losses of 5 per cent were maintained over this period.' With a 7 per cent loss rate, for example, only about one in ten crews could hope to survive an operational tour of thirty missions, while at 5 per cent that proportion would increase to one in five. It was not just the manpower implications of replacing so many dead, wounded, or prisoners of war that had to be taken into account. Bomber crews generally got better with experience, but high casualty rates meant that few would be around long enough to make their experience felt. With 7 per cent losses, crews would stand a 50 per cent chance of surviving only nine trips, while at 5 per cent they would have the same chance of surviving thirteen. In the latter case, on any given day the average experience of Harris's crews would be between thirteen and sixteen missions. If the Gardening and other minor operations the AOC-in-C intended to mount remained low-risk affairs and, when they were taken into account, the overall loss rate stood at 3 per cent, crews would stand a 40 per cent chance of surviving their tour and the average level of experience would rise to as high as twenty trips.[96]

To find seven hundred crews for even as few as three raids a month would require the help of the OTUs, and Harris therefore still ran the risk of mortgaging Bomber Command's future. However, based on evidence provided by Flying Training Command, he was persuaded that any casualties they suffered would be offset by other, perhaps more tangible, benefits. Trainees and instructors who knew they would fly on operations were likely to be keener, he thought, while the experience they gained from major raids would do far more than Gardening to prepare them for their operational tours. In the event, overall losses were higher than anticipated. Indeed, in No 4 Group's Halifax squadrons



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they averaged just over 6 per cent, a rate that forced the AOC-in-C to withdraw these units for a period of three to four weeks of recuperation and further training,* and by the end of the summer the policy of employing OTUs on operations was again under review.[97]

Although Harris was convinced that the new policy of conducting a few very large raids in good weather should see more bombs falling on the target, the AOCs of Nos 3 and 5 Groups were not persuaded. While it was true that it would be easier to identify ground detail, including aiming points, on clear nights, it did not follow that those navigators already suspected of indifference and relying too much on Gee (and too little on their sextants) would necessarily apply themselves more diligently. Nor was much expected of the many pilots who 'had lost their sense of responsibility toward the navigational effort.'[98] For the moment, however, Harris was inclined to put his faith in technology, and he looked forward to the appearance of three new navigation aids, still in the final stages of testing but scheduled to be ready for issue by the year's end. Linked to the bomber's compass and air-speed indicator, the air position indicator (API) displayed an aircraft's true course, latitude, and longitude at any given instant – provided there was no wind or that the wind and its effect were being measured and computed correctly. Given reasonably competent operators, it was estimated that the API should be accurate to within 4 per cent of the distance flown since the last firm fix – twelve miles over three hundred, for example – not sufficient for pin-point bombing, perhaps, but good enough to keep crews from becoming hopelessly lost.[99]

That was the big advantage of Oboe, theoretically so accurate that it held out great promise as a blind-bombing device as well as a navigation aid. Essentially nothing more than a two-way radio system in which a ground station indicated, by transmitting dots or dashes, how far (and to which side) an individual aircraft had strayed from its course, and then signalled the exact moment of bomb-release, Oboe seemed foolproof so long as it was not jammed and so long as the navigator, to put it simply, did what he was told. As was the case with Gee, however, transmission and response were by 'line of sight,' so that the range of Oboe was limited by the curvature of the Earth and the height at which the aircraft could fly. Furthermore, with just a few ground stations being built, Oboe could be used by a limited number of aircraft at any one time and, as a result, Harris decided early on that it would be fitted to Pathfinder aircraft only, specifically to the high-flying Mosquitoes once they became available. Rather than guiding individual main-force crews to the target, then, Oboe's main contribution would be to improve marking.[100]

H2S, in contrast, was a downward-looking radar totally independent of communication with ground stations which could be used by any number of crews carrying the equipment. Presenting its operator with a bleary, but fundamentally accurate, outline of ground features such as rivers, lakes, coastlines,

* Looking ahead, No 6 Group would suffer 7 per cent losses in May and June 1943, and losses close to or above 6 per cent in October and December 1943 and January and February 1944. Its squadrons would not be withdrawn from operations, however.

and built-up areas over which the aircraft was flying, H2S seemed likely to allow navigators to identify isolated population centres from distances of between twelve and eighteen miles, while cities like Essen, part of the Ruhr's urban sprawl, might be distinguished from six miles – reliably enough to provide, at minimum, the data necessary to maintain an accurate API plot. Moreover, it was estimated that 42 per cent of the bombs dropped on a large town using only the H2S image as a guide should fall within a mile of the aiming point – in any and all weather. In short, the equipment could also serve as a blind-bombing device that would be good enough for area raids. Although considerable training would be required of navigators and bomb-aimers (both of whom might be called upon to use it), the potential of H2S was so great that the decision to supply it to all main-force crews was a relatively easy one. Like Oboe, it was expected to be ready for operations in December 1942.[101] Until then, however, improved bombing would depend entirely on the Pathfinder Force.

The first Pathfinder-led raid, against the U-boat factories and other facilities at Flensburg on the Baltic shore of Schleswig-Holstein, took place the night of 18/19 August, just a few hours before a large part of the 2nd Canadian Division touched down on the French coast near Dieppe. As at Dieppe, it was not an auspicious occasion. Although usually easy to find, the lead crews ran into unexpectedly strong head winds that pushed them, and the main force, away from Flensburg into German-occupied Denmark, where most bombing took place. In spite of a bright moon, the Pathfinders again failed to find Frankfurt on 24/25 August because of haze and cloud below, and all that was claimed was that 'at least one aircraft bombed the target.' Sixteen, however, failed to return – 7 per cent of the total sent. The weather was better over Kassel on 27/28 August and some of the Pathfinders managed to lay their flares across the city, but the main force did not find the marking distinctive enough – the Germans had decoys in the vicinity – and the most concentrated bombing took place a mile and a half from the aiming point. However, 10 per cent of the attackers were shot down. Somewhat better results were obtained over the next week, but there was also one abject failure when, on 1/2 September, the Pathfinders missed Saarbrücken entirely, marking Saarlautern instead (and perhaps Saarlouis as well), between ten and thirteen miles away. The main force followed dutifully behind, completely unaware that anything was amiss, No 419 Squadron reporting that there were plenty of good fires to bomb, while crews from No 405 noted that 'no one found any difficulty in finding the target with the aid of markers and PFF incendiaries … seen at and near the aiming point.'[102]

This less-than-sterling performance of the Pathfinders could be attributed to their specific lack of experience in target-marking, but it is also true that recent modifications made to Gee had not satisfactorily countered the enemy's jamming. Indeed, jamming would interfere with target-finding by Gee throughout the fall, especially in attacks on northern cities, and by January 1943 it could no longer be relied upon except as a homing device for crews returning to England after a raid.[103] Yet if the Pathfinders had momentarily lost the secure

navigation aid necessary to supplement their generally superior navigational abilities, they were developing new target-marking techniques (and equipment) to provide the best possible visual display for the main-force crews who came after them.

The 'Red Blob Fire,' a target-indicator (TI) bomb improvised from the standard 250-lb incendiary and designed to burn with a fierce, distinctive brilliance, was introduced in early September.[104] But realizing that he could not rely on a single marker or colour (for fear that the enemy would copy them and set out decoys), Bennett, AOC of the Pathfinder Force, campaigned hard for the development of an array of coloured flares and target indicators. As these began to spill out of the laboratories and pyrotechnic factories, he was able to devise a more sophisticated marking scheme which, with some variations, remained the standard procedure until the end of the war. The Pathfinders were divided into a number of waves, each with specific functions and responsibilities. 'Finders' laid parallel flare paths six to eight miles long leading to the target area; 'illuminators' dropped white flares in close groupings to light up the area over the city; 'primary markers' dropped coloured flares on the aiming point after they had identified it visually; and 'fire raisers' and 'backers-up' dropped their TI 'blobs' on the primary markers to attract the main force.[105]

This procedure promised to be much more reliable than the Shaker technique introduced at Rostock earlier in the year, but it was by no means foolproof. There was still a significant element of judgment required of main force crews.

> Air bombers had their aiming points defined for them by a pattern of coloured markers … [that] … burned for several minutes … Unless otherwise instructed main force air bombers were told to aim their bombs at what they judged to be the mean point of impact of these large patches of light, neglecting any markers which were grossly misplaced. This judgement of the mean point of impact (known as visual centreing) was often extremely difficult owing to weather conditions and operational hazards over heavily defended targets as well as the visually distracting effect of burning incendiaries, fires, searchlights, and flares. In addition the indicator pattern was continually changing since to maintain the marking, further target indicators were dropped at intervals … aimed visually at the estimated centre of the existing pattern.[106]

Nevertheless, the results of bombing continued to be uneven. In major raids against German targets between 16 September and 10 November, for example, the Pathfinders failed to mark the target three times, marked the wrong one once, and enjoyed two unambiguous successes – at Osnabrück on 6/7 October, when No 405 Squadron acknowledged the 'excellent support by PFF flares,' and at Kiel a week later.[107] There were also two partial successes of which one, the Essen raid of 16/17 September, resulted in one of the most productive attacks on this city during the whole war. However, the good results obtained from a very low-level raid (crews bombed from between 1000 and 2000 feet) conducted against Flensburg on 1/2 October were offset by the loss of twelve

of twenty-seven Halifaxes – 44 per cent of those involved. No 405 Squadron lost three of eight crews that night, all experienced.[108]

To no one's surprise, weather was still the critical variable. On good nights the Pathfinders usually had no difficulty finding their objectives, but they often erred when the weather was bad or the winds were noticeably different from those predicted. Overall, the correct targets were found and marked, at least 'partially successfully,' about half the time. Yet even this degree of success meant little if the main force did not drop its bombs where indicated. On the basis of bombing photographs, it was estimated that 60 per cent of the main force was not bombing within three miles of the aiming point, although the bombing concentration was better. When the wrong target was marked, a whole mission could go astray without the main force ever being aware that anything was wrong. When No 405 Squadron applauded the Pathfinders for the flares and fires that gave a good view of the streets and buildings below them on 8/9 September, for example, they were actually over Russelsheim, not Frankfurt, while on 5/6 October they bombed Mechelen, not Aachen. On that occasion, however, navigators throughout Bomber Command complained that severe electrical storms had knocked out their Gee.[109]

By the end of 1942 High Wycombe itself was admitting that no more than a quarter of all bombing sorties were 'doing really useful work.' Normal navigation and 'pilotage' problems were mainly responsible, due in part to inadequate training at OTUs, but it was also 'conclusively apparent that a large number of crews, having undergone all the risks of attaining to the neighbourhood of the objective, are not sufficiently staunch to press home their attacks with determination.' As a result, it was acknowledged – in the strange statistical tabulations favoured at the time – that of all the acreage the command had attempted to attack since December 1941, less than 3 per cent had been destroyed.[110]

Thus there was reason to call the bombing offensive into question, particularly in light of the Allies' desperate need for more tanks, landing craft, and resources for the anti-submarine campaign. Now, however, that the bomber offensive had become part and parcel of the Allied debate on the overall conduct of the war, necessity forged sometimes unexpected alliances among the British service chiefs and between American and British airmen who were already arguing over how the air war should be prosecuted.[111]

These alliances had begun to form over the summer of 1942, when the British chiefs of staff successfully fended off US Admiral Ernest King's suggestion that heavy bombers should be used primarily in anti-submarine operations – and in the process persuaded senior American commanders that Bomber Command's proper role was to attack 'centres of population' in order to do 'moral damage' to German civilians. Meanwhile, an Air Ministry staff officer was explaining to his director of plans that 'industrial centres' should be inserted in official documents in place of 'centres of population' because the latter was 'contrary to the principles of international law – such as they are – and also contrary to the statement made some time ago by the P[rime] M[in-

ister] that we should not direct our bombing to terrorise the civilian population.' It was therefore 'unnecessary and undesirable' to draw attention to the fact that this was precisely what was happening.[112] Though few of the airmen who were risking their own lives night after night thought about it in that way, killing and injuring civilians as much as the destruction of built-up areas was becoming the principal purpose of Bomber Command.

Questions regarding the priorities to be assigned to the bomber forces arose again in the fall, when the British chiefs of staff were trying to convince their American colleagues not only that there should be no cross-Channel invasion in 1943, but also that this postponement should be exploited by intensifying the bomber offensive to the point where, perhaps, no such assault would be required. Their argument was based primarily on Sir Charles Portal's estimate that a combined Anglo-American bomber force four to six thousand strong should be delivering 50,000 tons of bombs a month by the end of 1943, and 90,000 a year later – an effort, he predicted, that would destroy six million homes, render twenty-five million Germans homeless, kill almost a million, and injure a million more. It would also destroy a third of the enemy's industry and, because the economy was already stretched to the limit, it would force the enemy to choose between the collapse of the war potential or that of the internal economy.[113]

Portal's assessment of the fragility of the German economy was wildly wrong. There was still considerable room for expansion, and in fact by the end of 1942 armament production had actually increased 80 per cent over the previous year. Moreover, as it turned out, the CAS did not have all the support he imagined from the other service chiefs. On 24 November he had to issue a revised memorandum in which bombing was spoken of as a softening-up exercise before the invasion of Europe, and in which the ultimate size of the combined bomber force was left open for further negotiation with both the British and American service chiefs and with Churchill and Roosevelt.[114]

Long before these discussions took place, the bombing offensive had begun to change character. The approach of winter always meant the return of bad weather and a curtailment of Bomber Command's activities. Furthermore, to lend support to the British 8th Army's advance across the Western Desert from El Alamein, and to Operation Torch, the Allied landings in Morocco and Tunisia, Sir Arthur Harris was busy attacking the Italian cities of Turin, Milan, and Genoa, his main targets between 22 October and 12 December. Indeed, only three major raids were undertaken against German cities in those six weeks, and all three failed because of cloud, winds, and icing.[115] Finally, the Essen raid of 16/17 September was the last occasion for some time to come on which OTU crews were employed on operations against Germany. Their losses since 30 May had been 6.4 per cent of sorties, and morale was beginning to suffer. 'For weeks there had been an undercurrent of unrest among staff and students,' one Canadian under training observed, 'because none of us agreed with the policy of sending OTU crews over Germany in antiquated aircraft.'

We knew that our CO endorsed our views and that he had protested with no apparent results. Our losses were out of all proportion to our numbers and our contribution to the war effort. One OTU course had lost ten of fourteen crews. Most of our instructors were dead. Monday, 14 September, our OTU was again ordered to contribute to the raiding force. Tension was at the boiling point at Atherstone where the crews were united in their opposition, and their spokesman advised the CO: '*Sir, we are not cowards, but we refuse to go on any more ops in these old kites.*'

The CO, although sympathetic, warned of the terrible consequences of mutiny; and tried to convince them that they were contributing to the war effort; and, in any event, they had no choice in the matter. The crews stood fast in their refusal, so the Air Officer Commanding (AOC) was advised, and he flew immediately to Atherstone. Fortunately, the weather turned bad, and Bomber Command cancelled the night's show ... Tuesday, we were again ordered to contribute, and Atherstone crews agreed to go on condition that their complaints be aired right at Bomber Command Headquarters ... The target was Essen ... The next night no crews were requested from OTUs. It appeared that the mutiny was having the desired results![116]

Quite possibly reacting to such incidents, but also accepting that he could not keep up the pace, particularly if it meant losing experienced instructors, Harris directed that OTU crews be withdrawn from bombing missions until Bomber Command's normal establishment was large enough for it to saturate the enemy's defences again.[117]

The day after the Essen raid, but before the new policy was announced, Wing Commander H.L. Campbell had complained to Air Marshal Edwards about the high losses suffered by crews still under training. The OTU missing rate had risen to 10 per cent over the last three raids, he noted, and it was 'reasonable to suppose that a number of Canadians were in the crews.' Such concern for the well-being of Canadian pilots, navigators, gunners, and bomb-aimers was the job of Overseas Headquarters at any time, and it was one to which Edwards returned a few weeks later, when the idea of using OTU crews on operations was debated again, and after it was reported that three Canadian sergeants had gone absent without leave rather than fly 'clapped out' training aircraft on operations.[118] In mid-September 1942, however, Overseas Headquarters had other reasons for being concerned with operational losses of Canadians at OTUs. In the next six weeks, six new RCAF bomber squadrons would have to be formed if No 6 Group was to become operational, on schedule, on 1 January 1943. If they were to be as Canadian as possible from the outset, a 10 per cent casualty rate among trainees could not be tolerated, particularly among those destined for the newly formed No 425 (French Canadian) Squadron.

17
The Formation of No 6 (RCAF) Group, Fall 1942–Spring 1943

The prewar RCAF had been a unilingual institution. Operating aircraft of mainly British or American design, its manuals were all in English and, as in the more technical branches of the army, its need was only for bilingual French Canadians who would work mostly in English. The outbreak of war and the subsequent expansion of the RCAF did nothing to alter the fact that English was inevitably the language of work. Moreover, the commitments made under the British Commonwealth Air Training Plan (BCATP) to train airmen from all parts of the Empire-Commonwealth, and the fact that Canadian aircrew sent overseas would serve in RAF commands (and, in most cases, in RAF squadrons), undoubtedly reinforced this fundamental truth.

Air Force Headquarters had recognized, however, that the language problem constituted a major barrier to recruiting in Quebec, and early on it had established a language school to teach basic English to French-speaking airmen, opened a Manning Depot in Quebec City which offered courses in science and mathematics, and (under the aegis of Air Commodore H. Edwards, then air member for personnel, and Group Captain J.L.E.A. de Niverville, director of air force manning) created a special section to publicize the achievements of French Canadians in the RCAF in the hope that this would encourage others to join. In addition, French-speaking administrative officers were posted to all schools where French-Canadian trainees were undergoing training, and age restrictions that might impede enlistments were ignored whenever possible. The intake of French Canadians still fell short of expectations.[1]

To some, including Flight Lieutenant J.P. Desloges, a prewar career officer who had been wounded during the Battle of Britain and subsequently sent on a recruiting tour in Quebec, the only solution was to find French-speaking instructors to staff French-Canadian flying training schools and, eventually, to form a number of French-Canadian squadrons – a recommendation he passed to de Niverville in April 1941.[2] As a means of stimulating enlistment, Desloges's plan might well have worked, but there were practical difficulties in the short term. The infrastructure required to accommodate French-language instruction within the BCATP could not be provided quickly, and it would take even longer to form an operational squadron adequately backed up by replacements. Moreover, the scheme did not address the fact that English would still

be the primary language of work, command, and control for any operational unit in the RCAF.

It was for this reason, perhaps, that Air Minister C.G. Power, himself a Quebecker sympathetic to Desloges's point of view, chose not to implement the plan immediately. In late September 1941, with two Quebec by-elections in the offing, however, Power appealed to young French Canadians to join the RCAF with the promise that 'Depuis longtemps, je caresse l'espoir de voir se former outre-mer une escadrille essentiellement candienne-française, et commandée par un chef canadien-français. Dès que nous compterons un nombre suffisant de pilotes, de radio-télégraphistes-mitrailleurs, d'observateurs, de mécaniciens et d'auxilliares de langue française, nous constituerons une telle escadrille … Dans le ciel agité de la vieille Europe, l'escadrille canadienne-française continuera les traditions de vaillance, de force héroique et de fierté nationale qui caractérisent votre race.'[3] Six weeks later, instructions were sent to Overseas Headquarters to begin the process of creating the new squadron. As many as possible of the 183 French-speaking aircrew who had proceeded to England so far were to be posted to the unit, and the commissioning of French Canadians was to be accelerated.[4]

Serving out his last few days as the overseas air officer-in-chief, Air Vice-Marshal L.F. Stevenson agreed that 'forming squadrons identified with racial or other groups' in order to enlist their support for the war effort could have its advantages. But he was not persuaded that significant benefits would accrue in this instance and, indeed, complained that 'this one golden opportunity to weld French and English Canada closer together is being thrown away.' He also feared that 'if the French Canadian squadron meets with hard luck the repercussions may be far reaching.' As the senior RCAF officer overseas, Stevenson certainly had a right to offer his opinion to the government on matters of policy, and if the Air Ministry was likely to object on operational grounds to the formation of 'racial or other' units, it was his clear duty to pass such information to Ottawa. But with Polish, Czechoslovak, Dutch, Norwegian, and Free French squadrons having been accommodated in the RAF for over a year, there was little reason to anticipate opposition to the bilingual squadron the Canadian government so desperately wanted.[5]

It was also Stevenson's job to pass Ottawa's message to the Air Ministry and then oversee the formation of the new unit. In fact, he disregarded his instructions, apparently aiming to slow down the process, and in so doing surely overreached his authority. Fighter Command was asked only to 'make a survey of its French Canadian resources, to see whether the formation of a French Canadian squadron is feasible or desirable.' More to the point, when Stevenson asked the Air Ministry to 'appreciate the catastrophe' if the project failed and to let him know 'if it indicates [the] possibility of failure,' he was almost inviting a negative reply.[6] However, he was not there to receive it. On 23 November Stevenson left for Canada, replaced as the senior RCAF officer overseas because of his perceived hostility to Canadianization.

His successor, Air Marshal H. Edwards, was, by contrast, not only a strong

advocate of Canadianization, but he had also backed the idea of forming a French-Canadian squadron from the beginning and was prepared to bring the project to fruition quickly, as L.S. Breadner and Power wanted.[7] Aware, apparently, only of his predecessor's statement that he had passed on the idea to the British – and not of his negative, semi-official correspondence with Bentley Priory and the director general of organization at the Air Ministry – Edwards was shocked by the response that arrived from the latter at Overseas Headquarters on 13 December. 'Stevenson asked us for our candid comments on the proposal,' reported Air Vice-Marshal L.N. Hollinghurst, and 'frankly we are not too keen on it.'

> Quite apart from the fact that the more 'penny packets' there are, the more complicated the posting, etc., procedure becomes, there are more cogent objections from the operational point of view, particularly if the Squadron is to be a fighter squadron. We understand that French-Canadians are primarily French-speaking individuals and that their English is often not too good. When they are together, they speak French exclusively and tend to forget their English. If the proposed squadron is a fighter squadron, the language difficulty in connection with control is likely to arise.
>
> On the other hand, Stevenson was not very keen on the suggestion that it should be a bomber squadron. He felt that there were psychological objections to this. Also that as the majority of Canadians now in this country were in fighter squadrons, it would probably be easier to find French-Canadian fighter pilots than French-Canadian bomber crews.
>
> We fully appreciate that from the Canadian political point of view, there are advantages in having a French-Canadian squadron. It is a question of evaluating these advantages against the disadvantages. Perhaps you could let me know whether the Canadian view is that this Squadron should be formed despite the objections – also whether you have any real objection to it being a bomber squadron.
>
> Incidentally, it would be as well if we could have a definition of a French-Canadian as we understand that the term is not necessarily restricted to residents in the Province of Quebec.[8]

Edwards was in a quandary. If the French-Canadian squadron was to be formed from crews already overseas, the assistance of the RAF's personnel organization would be crucial, but from Hollinghurst's letter it seemed that help might be given only reluctantly. Moreover, although Ottawa had assumed all along that the squadron would serve in Fighter Command, which seemed quite capable of coping with polyglot crews, the Air Ministry's view that a bomber squadron would be preferable raised many new questions. Since it was proving difficult enough to form all-Canadian bomber crews overseas, given the procedures and resources available to the RAF's personnel branch, was it even feasible to form French-Canadian crews? Unsure of how much had been left to him to decide, Edwards passed these concerns on to Power – including a subtle jab at British English and an unhelpful assessment of Desloges's time in Fighter Command.

If French Canadian Squadron formed and had misfortune to suffer heavy casualties in one attack severe repercussions might occur, French Canadians in Canada believing their men doing all dirty jobs. The difficulty experienced by English speaking RCAF pilots in understanding R/T instructions is very great. French speaking pilots have more difficulty. Squadron Leader Desloges was lost a number of times owing to misunderstanding instructions sent by radio and he speaks excellent English. Similar cases on record. Severe losses encountered by non-English speaking squadrons due to not understanding radio instructions. Fighter Command even put Polish speaking control personnel into sector offices to help situation but was not found practical. Not sufficient well trained fighter pilots of French Canadian extraction to form squadron. In view of these experiences the Air Ministry are not too keen on squadron, now inquiring if we would object to it being bomber squadron.[9]

There was an additional problem. Just as Canadianization had met (and was meeting) with some resistance from RCAF aircrew who were quite content to remain on their RAF squadrons, so a number of French-Canadian pilots objected to the idea of forming a 'separate squadron,' feeling they would be 'segregated and put on spot.' Edwards had little sympathy with their position, however, and recommended that the project go ahead.[10]

Power was not at all happy with the contents of Edwards's message. Not only was he inclined to link the negative British attitude to the frustratingly slow progress of Canadianization in general, but he also did not accept the somewhat lame excuses offered regarding radio procedures, particularly in light of the postings that had recently taken place. 'Would like information … as to reason for placing almost all French Canadian pilots in RAF sqdn[s] instead of RCAF squadrons since it is presumed [their] difficulty of understanding cockney English greater than understanding Canadian English.' The air minister offered no objection to a French-Canadian bomber squadron 'if this can be realized within reasonable time' and if its advantages could be clearly demonstrated. Whatever was decided, the formation of a squadron was to proceed 'as soon as possible.'[11]

By now, Edwards had a better idea of what he was up against in terms of identifying where the strongest opposition to the plan actually lay. Although British authorities asked again on Christmas Eve whether the RCAF still wished to form a French-Canadian squadron and what type was preferred, the Air Ministry at Hollinghurst's prodding had already surveyed the operational commands in Britain and produced a list of 224 individuals 'who claim to be French Canadian.' Among them were thirty-six pilots, a potential cadre; however, representation from other trades and specialties did not provide 'much with which to form a squadron.' In fact, this list was incomplete – Ottawa saw at once that seventy wireless operator/air gunners had been missed – but at least a start had been made, and a positive one at that, by a surprisingly helpful Air Ministry.[12]

The same could not be said of the staff at Overseas Headquarters, some of whom Edwards described as 'slough from Canada'; as the former air member for personnel, he was quite willing to shoulder responsibility for their posting

to London. They, more than anyone else, appeared to be the source of obstruction. Although 'we are going hard as we can on the formation of a French Canadian squadron,' Edwards informed deputy minister S.L. de Carteret on 6 January 1942, 'I meet opposition everywhere. It is apparent that, up to my arrival here, no one liked the idea and everyone found a thousand reasons why it should not be formed. I have to break down all these opinions before I can really get started. Although the policy sent over here was definite and clear, I feel that it was laughed at. In any event, it was passed over to the Air Ministry with a tongue in the cheek, and a good deal of chatter from top to bottom against it, went on.[13] Nevertheless, after gathering his staff together and laying down the law he was confident they now 'could see the light as I wished them to see it.' Among other things, that meant pressing ahead with the new squadron – and deciding as well that it should be formed in Bomber Command both to 'absorb more aircrew and ground crew' and because it could be more easily 'controlled from operational point of view in as much as radio contact is not continuous during operations.' There would be some delay involved in obtaining enough experienced men; but twelve pilots, ten navigators, and thirteen wireless operator/air gunners were available almost immediately, and on this basis Edwards asked that he be allowed to proceed.[14]

Almost three weeks passed before the AOC-in-C received an answer from the minister, and when it came it was really no answer at all. Power, it seemed, did not care what kind of squadron was formed, but was concerned only that it be done quickly.[15] And on 20 January 1942 a signal arrived from Breadner indicating not only that speed was of the essence, but that the French-Canadian content of the new unit could also be diluted, at least in the beginning.

> Ministry has reached conclusion that probably bomber squadron would be most suitable. Only disadvantage is delay in formation. Suggest this might be overcome to some extent by immediate formation of, say, number 425. Let it be known that this will eventually become a French Canadian Squadron. Organize [it] at once under experienced RAF or RCAF English-speaking commander. Attach immediately experienced aircrew referred to in your signal. Comb OTU and holding unit for French Canadians and train as bomber pilots … Bring up to appropriate strength with experienced RCAF bomber pilots observers and gunners. Squadron need *not* necessarily be designated French Canadian immediately or until majority of aircrew are French Canadian … Press on Air Ministry commissioning of bomber pilots mentioned above. There should be no difficulty in finding French Canadian ground crew overseas [but] if so could send some from Canada.[16]

The Air Ministry's reaction to Breadner's telegram was once again helpful. The new unit could be designated 'No 425 (French-Canadian) (Bomber) Squadron, RCAF' immediately, Hollinghurst told Edwards, 'so that it will build up its reputation as a French Canadian squadron.' Meanwhile, a search was on within existing RAF and RCAF units for potential members – those who voluntarily identified themselves as French Canadian – and procedures to extract them from their current posting or redirect them, if necessary, through the

training system so as to end up on the squadron were being worked out. Similarly, French Canadians arriving at the RCAF reception centre at Bournemouth were being earmarked for No 425. A few may even have been formed into crews there and sent on to the appropriate Wellington OTU.[17]

All this took time (particularly now that the RAF had adopted a one-pilot policy for Bomber Command, creating a momentary surplus that was adjusted for by slowing down the training stream) and it was not until 25 June 1942 that the new squadron was formed at Dishforth as part of No 4 Group. Its first commanding officer was Wing Commander J.M.W. St Pierre, who had commanded No 11 Elementary Flying Training School before his arrival in Britain in February, just as the final arrangements to form the squadron were being made. Because of his experience in the prewar auxiliary and the BCATP, St Pierre was given a free hand to find recruits for the squadron, a task he did not find easy at first. As was proved time and again, crews quickly developed loyalties to their squadrons and resented any suggestion they should leave an established home for something new. A number of men posted to No 425 objected.[18] But as time went on, the censors reported, the job of selling the unit became easier.

> Although by no means free of birth-pangs, the formation of 425 Squadron has provoked what appears to be joy unconfined among the French Canadians. Men promised a posting to 425 find the prospect alluring, and letters from men already embodied reveal excellent morale and much enthusiasm. The fact that French Canadians form a special racial group may make it unwise to assume that their experience is a valid reflection of the situation as a whole. There are some adverse comments, one regretting that in a French Canadian Squadron he will forget his English. Many object to posting to 425 merely because they have French names, and some suspect the purpose of the formation of the Squadron to be purely propagandist.[19]

To outside observers, however, there was no doubting the keenness of the crews St Pierre had selected – on his August 1942 visit to the United Kingdom Power concluded that it was 'the most cheerful and keenest Squadron we have met to date' – including the two flight commanders, Squadron Leaders G.A. Roy and J.L. Savard. Sons of prominent Quebec jurists and politicians, both had been instructors in the BCATP and had gained operational experience with No 419 Squadron; both would be awarded the DFC in the summer of 1943; and both would subsequently command their own squadrons.[20]

Flying began in August 1942, and No 425 was declared operational in October. Its first raid was the 5/6 October attack on Aachen, when icing and severe electrical storms played havoc with navigation; its crews suffered along with the rest of Bomber Command. Two returned early and one was involved in a crash at Debden which killed all aboard. The five who reached the target area considered that to be accomplishment enough and made no great claims as to the accuracy of their bombing. The next night Osnabrück was the target, and by the end of the month the squadron had flown six operations, two of them (Krefeld, 23 October, and Emden, 31 October) in daylight. Losses were

very light, just one of forty, while the early return rate, expected to be high in new units, was a commendable 12 per cent.[21]

Although the number of operations doubled in November, many were small affairs involving no more than three machines, and sorties for the month totalled only forty-six. Casualties remained light – two crews lost, both on the Hamburg raid of 9/10 November – but the early return rate climbed to fifteen, or 33 per cent. There were two daylight operations, of which the first (when two machines were sent to bomb Wilhelmshaven at 2000 feet on 6 November) was the more difficult. One crew had no trouble whatsoever with the enemy defences but the other, captained by Pilot Officer A.T. Doucette, was pounced on by three fighters as it approached the objective. Despite considerable damage to the aircraft and severe wounds to wireless operator Sergeant G.J.R. Bruyère, Doucette completed his attack before turning for home. Applauded for their 'indomitable courage and unswerving devotion to duty under extremely difficult conditions,' Doucette was awarded the DFC and Bruyere the DFM. From 10 November 1942 to 14 January 1943 Gardening operations accounted for 73 of the squadron's 118 sorties. Losses were still low, but the early return-abort rate rose to 38 per cent. Weather was always an important factor in causing Gardening missions to be abandoned, as crews were told to come back if they could not pinpoint the target area; but the early return rate on bombing raids was almost as high.[22]

Under other circumstances, No 425 Squadron's performance might have been looked at closely to discover if anything was wrong, but over the winter of 1942/3 higher command had other things on its mind, one being the organization and formation of a Canadian bomber group to be known as No 6 (RCAF) Group. Discussions during and after the Ottawa Air Training Conference of May–June 1942 had determined how many RCAF squadrons would be formed by the end of the year, what aircraft they would probably fly, and where, generally, they would be located. It was also agreed that although Canadianization would be a priority, with the Air Ministry attempting to send the right mix of aircrew trades to operational training units in order to facilitate the formation of RCAF crews there, it would not necessarily be the most important priority – apart from the special case of No 425 Squadron. While Nos 405, 408, 420, 424, and 425 Squadrons all had RCAF commanding officers by the fall of 1942, there were still not enough experienced Canadians to command every squadron. There were certainly too few to command every station and base and fill all the staff appointments at No 6 Group Headquarters when it took shape. One way to increase the RCAF's share of these billets, to reduce its dependency on British officers, and to add to its institutional experience would have been to allow and encourage Canadians serving in the RAF to transfer to the RCAF, but this did not happen – in part, it seems, because Air Force Headquarters did not want to offer them permanent RCAF commissions.[23]

Any lingering misunderstanding on these general questions could have been addressed when Power arrived in the United Kingdom for talks with Air Ministry officials in August 1942. But being more concerned with commis-

sioning policy in general and in finding ways to keep Overseas Headquarters informed of where Canadians were serving, Power dealt with the usually thorny topic of Canadianization only briefly; apart from raising again the long-term goal of equipping the bomber group with Lancasters, he scarcely touched on the Canadianization issue. When he journeyed to High Wycombe to meet Sir Arthur Harris – who, he was warned, might prove somewhat 'sticky' on the question of forming an RCAF group – the outcome was a pleasant surprise. Promising full co-operation, the AOC-in-C left Power with the impression that he 'welcomed the formation of No 6 Group and, subject to operational exigencies, would give his full support to the Canadianization of RCAF Squadrons,' even going so far as to suggest that he might withdraw complete RCAF crews from RAF squadrons as a nucleus around which to build new units.

For their part, the Canadians did not press for any precise definition of what Harris thought might constitute such exigencies, nor did they ask that individual Canadians serving in RAF squadrons be transferred to RCAF units when they were formed, something to which he would certainly have objected. The belief that existing crews should not be broken up was a matter of high principle at High Wycombe. Finally, Power did not flinch when he was told, for the first time, that only seven RCAF squadrons could be created by the end of the year, rather than the ten previously agreed upon.[24]

In short, bringing No 6 Group into existence was, by now, primarily an administrative task involving the RAF's personnel branch and the directorates of supply, organization, and movements, with RCAF Overseas Headquarters acting as the overseer of national interests. Yet the job at hand – marrying up the right people and equipment at the right location – was not easy and things did not always work out as anticipated. While some care was taken to find RCAF crews for the new units from OTUs and other squadrons – 427 Squadron received a number of Wellington crews from No 419 when the latter converted to Halifaxes – their initial Canadianization rates were not satisfactory. In January 1943 only 34 per cent of the aircrew in No 429 Squadron were RCAF, for example, while in No 431 the figure was only 17 per cent, largely because it had received crews from No 24 OTU (recently allocated to 6 Group) before the latter could empty itself of its British, New Zealand, and Australian trainees.[25]

It was not just the number of RCAF crews that mattered, however, but also the number of individuals who happened to be in what was officially designated a 'Canadian' crew. In heavy bombers, for example, exclusively Canadian crews were a rarity because of the belated opening in Canada of facilities to train flight engineers – the first group did not graduate until the summer of 1944. Even among those aircrew categories produced by the BCATP there seems to have been continuing difficulty in managing output and postings so that – allowing for training failures, wastage, and other such factors – the right numbers of pilots, navigators, bomb aimers, air gunners, and wireless operators arrived at OTUs backing RCAF squadrons in the right proportions at the right time. In October 1942 it was estimated that although the BCATP's monthly out-

put could be organized into 101 purely Canadian crews, there would also be a surplus of some two hundred navigators and air-bombers, respectively, who, presumably, would have to be posted somewhere other than No 6 Group.[26] Furthermore, the allocation of particular crews (no matter their composition) to squadrons depended, in part, on how well they had done at their OTU. 'The allotment of crews to Squadrons is further complicated by the fact that all crews are not necessarily recommended for heavy bombers and, therefore, any crews below standard from OTUs which are backing heavy [bomber] squadrons must be transferred to Wellington Squadrons. As the majority of Wellington Squadrons are Canadian, it is inevitable that they must receive the majority of crews who are not recommended for heavy aircraft irrespective of whether they are Canadian, Australian, British, or any other nationality.'[27] Not only would the number of non-RCAF aircrew in No 6 Group be inflated, but, then the group's overall level of competence in flying skills, based on crew performance at OTUs, would be somewhat less than that of Bomber Command as a whole.

Originally, it had been intended that No 6 Group would occupy and control fifteen stations but, because of a lack of materials and the labour force for construction, Bomber Command's own slowed expansion, and a degree of overcrowding in Yorkshire, four of the proposed stations were never built; when the group became operational in January 1943, only seven were ready – Croft, Dalton, Dishforth, East Moor, Leeming, Middleton St George, and Topcliffe.[28]

Which squadrons served where, when, and for how long are questions of more than trivial interest. There were appreciable differences between the prewar stations with their well-constructed and comfortable living, dining, and recreational facilities, and those opened during the last three years. The latter featured Nissen huts, built of curved corregated-steel sheets with brick or wood ends, and often, like Dalton, plagued by a 'lack of heating in living quarters … and also absence of running water' as well as unsatisfactory sewage systems. It is impossible to know precisely how the environment of a particular station affected the officers and men posted to it, but one keen observer certainly noticed such things. Flying Officer F.H.C. Reinke (a journalist commissioned into the RCAF and sent overseas to record his impressions of air force life) had no doubt whatsoever that a squadron's morale depended, at least in part, on where it happened to be. Linton-on-Ouse, a prewar station and home at times to Nos 408 and 426 Squadrons, was aesthetically pleasing despite its 'utilitarian … almost grim' camouflaged headquarters buildings. Wherever possible 'lush grass, shrubs, and countless young trees' and rose beds had been planted 'to soften the general effect.' Messes, bars, and dining rooms were all attractively decorated in warm colours, and there were ample recreational facilities – two softball diamonds, along with a lacrosse field and horseshoe pitching sites. In addition, vegetable gardens were being harvested to supplement normal rations. For those who wished to go off station, there were a dozen or so pubs within easy cycling distance, while the city of York was a bus-ride away.[29]

The same could not be said of Skipton-on-Swale, a satellite station which housed (at various times) Nos 420, 432, 433, and 424 Squadrons. It was 'inconvenient and unattractive,' with only 'ordinary fence-line hedges and a few scattered trees' to relieve the barrenness of row upon row of 'black and dingy brown' Nissen huts. At the time Reinke was there, the airmen's showers were a mile from their billets, the officers' mess was bleak, and the YMCA's Canada House, meant to be a refuge, required airmen to pull old socks over their boots to protect the highly polished wooden floor, a regulation that deterred many from going. The kitchens had no steam tables, so the cooks had to prepare several sittings or serve food that was tepid or cold, and recreational facilities were entirely lacking until a sports officer was appointed in May 1944. A number of pubs were reasonably close by, but breweries would not deliver to the station messes because they were so isolated. Perhaps more important, there was no bus service to Skipton, so servicemen returning from leave or a night on the town in York had to make their own way to the base from the railway station at Topcliffe, one-and-a-half miles distant, or that at Thirsk, just over three miles away.[30]

New stations did not have to be dismal, however, as Reinke discovered when he visited Tholthorpe. At Skipton it seemed that no one had cared about the station's amenities since its opening in the fall of 1942 – the officers' mess had refused the offer of a piano, for example – but at Tholthorpe, which opened in August 1940, lawns had been planted around the Nissen huts, the messes were well decorated (the officers' 'inexpensively but with a skilled eye to effect'), and they had become the hub of station life despite there being pubs nearby. The differences, Reinke thought, were probably attributable to the personalities of the base, station, and squadron commanding officers.[31]

Already physically attractive, Linton-on-Ouse also benefited from the personality of at least one of its commanders. A veteran of anti-submarine operations on Canada's Atlantic coast, Group Captain C.L. Annis's gregariousness and easy ability to mix with all ranks set him apart from some of the other RCAF station commanders – enough to be commented on at the time, it might be added – and ensured the loyalty and cooperation of everyone at Linton. He cajoled and encouraged with tolerance, humour, and understanding; his enthusiasm and zest were infectious; and his empathy for his men was especially appreciated by the non-flying personnel.[32] On one occasion, for example, he warned against going absent without leave in a way that was entirely foreign to the usual application of *King's Regulations*. 'There was too much of it going on,' he announced over the station Tannoys:

> so he was going to get tough, to throw the book at us, that is, unless we had a good alibi. e.g. This airman's wife lived in London and he had a forty-eight hour pass. She would meet him at King's Cross Station. He went out to catch the bus into York but there were so many ahead that the bus was full. As a result, he had to wait another hour. When he got to York, he had to take a later train to London. His wife, tired of waiting, went home. When he got home she was taking a bath and it took hours and hours for his clothes to dry. You have to make allowances if there is a good excuse.

Well, nearly everybody in our room started laughing but it took me awhile to see what was funny.[33]

Officers from Canada's Home War Establishment were found for two of the new RCAF squadrons formed in the fall of 1942. Wing Commander H.M. Carscallen, a prewar regular and graduate of the Royal Military College of Canada, who went to No 424, had commanded Nos 5 and 10 (BR) Squadrons between November 1940 and July 1942, while Wing Commander S.S. Blanchard, who had joined the RCAF in 1931 and led Nos 8 and 116 (BR) Squadrons, took over No 426. Carscallen remained with No 424 until April 1943, when he was succeeded by another Canadian, and subsequently commanded the stations at Leeming and East Moor.[34] When Blanchard was killed in action on 14 February 1943, however, he was replaced by Wing Commander L. Crooks, a British officer who had already won a DSO and a DFC.[35] RAF officers also initially commanded the new squadrons formed in November 1942 but, reflecting 6 Group's increased experience, they were all subsequently replaced by RCAF officers. Slowly but inexorably, Canadians were gaining the operational and administrative experience and expertise that would fit them to command their own squadrons, stations, and bases.

Still, the posting of Carscallen and Blanchard directly from the Home War Establishment, even more than St Pierre's appointment to No 425 Squadron after his brief apprenticeship in 419, raised an interesting question. Was the wartime RCAF a comprehensive entity, in which officers and men (but primarily senior officers) with service only in Canada were competent to fill operational positions overseas despite their lack of experience there? Or were conditions in Europe so different that North American service was largely irrelevant? When it came to filling the 50 officer and 175 other-rank vacancies at No 6 Group headquarters, curiously enough, it was the CAS in Ottawa who wanted all but a few senior appointments filled by personnel already in Britain, and the AOC-in-C Overseas who asked for officers to be sent from Canada because the pool of experienced staff officers and technicians in England was not large enough to stand the strain. Indeed, when Breadner insisted, somewhat unhelpfully, that Edwards fend for himself, the latter warned his superior indignantly that 'there is no purpose in proceeding with [the] organization [of a] Canadian Group as required personnel not available in this country.'[36]

As a former member of the Air Council responsible for personnel matters, Edwards certainly knew most of the senior officers available in Canada and he must have realized that if operational experience overseas became the main criterion, his friends and colleagues still at home might never get to England. It is possible, therefore, to construe his stand as reflecting a desire to further the careers of these friends, but with only three RCAF officers having commanded bomber squadrons so far he could not have made the group headquarters fully Canadian except at the expense of operational units. Given the enthusiasm with which he pursued his mandate to put the RCAF 'on the map,' it is more likely that he saw the essential illogic and hypocrisy of forming a

'Canadian' bomber group headquarters if, in the absence of help from Canada, he had to turn to the RAF to find the expertise required.

Still convinced that those with the appropriate technical, administrative, and operational backgrounds were available overseas, Breadner was not persuaded and again told Edwards that he should staff group headquarters from his own overseas resources. There the matter stood until the CAS went to England in mid-August, met with Edwards, reiterated his view that overseas personnel should be appointed first, and then conceded he would not stand in the way of the odd posting from Canada. As it turned out, two of the most senior appointments at No 6 Group went to officers posted from Canada, one to an overseas RCAF officer, one to a Can/RAF officer, and one to a British specialist. Group Captain C.R. Slemon, posted in from Ottawa where he had been director of air operations, was an unequivocal success as senior air staff officer (SASO).* The senior administrative officer (SAO), Wing Commander C.G. Durham, was a First World War RFC veteran who had been SAO at RCAF Station Digby. The chief training officer, Wing Commander T.C. Weir, was a Canadian in the Royal Air Force, while the chief signals officer, Wing Commander T.W. Hodgson, was British. Slemon's right-hand man as senior operations staff officer (SOSO) was Wing Commander J.E. Fauquier, who had just relinquished command of No 405 Squadron. As Edwards had warned, however, there were not enough RCAF officers available overseas to fill every appointment, and on 1 January 1943 twenty of the forty-seven male officers, and fifty-five of 177 male other ranks, came from the RAF.[37]

There was also one officer from the RCAF (Women's Division). She was the first of several hundred – there were 567 female officers and 372 other ranks at Allerton Park alone on 8 May 1945 – to be employed throughout No 6 Group, initially as clerks, cooks, drivers, telephone operators, and hospital assistants. By April 1943 the regulations had been amended to permit women to serve as wireless operators (ground), parachute riggers, meteorologists, and instrument mechanics and to interpret reconnaissance and bombing photographs. As such, they eventually played a significant and direct role in the operational life of RCAF bases and stations.[38]

One appointment, that of air officer commanding (AOC), had to go to a Canadian and to an officer currently serving at home, since no one overseas had the right combination of operational and administrative experience. Furthermore, in Edwards's view, 'no one with suspected views or otherwise against Canadianization should be sent,' an attempt, perhaps, to ensure that Air Vice-Marshal L.F. Stevenson was not brought back from Western Air Command. Edwards actually had three candidates in mind: Air Vice-Marshal G.E. Brookes, AOC of No 1 Training Command, whom he preferred; Air Commodore C.M. McEwen, currently combatting the German U-boat threat while commanding No 1 Group in Eastern Air Command; and Air Vice-Marshal J.A.

* Slemon subsequently became deputy air officer commanding-in-chief of the RCAF overseas, a postwar CAS, and eventually, in the Cold War era, deputy commander of the North American Air Defence Command.

Sully, the RCAF's air member for personnel. Brookes, who was British-born but had come to Canada with his family in 1910, was chosen.[39]

Then forty-seven years old, Brookes had seen service overseas with the Royal Flying Corps in the First World War, had joined the RCAF at its birth on 1 April 1924, and was thought to be something of a specialist in flying training, a useful talent as the Canadian group worked towards becoming operational. He also had experience at a major operational headquarters, having been SASO in Eastern Air Command as it expanded in 1939–40. A fatherly type who, it was felt, could care for and nurture his formation and get along well with senior British officers in the process, Brookes looked ideal for the job.[40] The real question was whether he had the talent for, and interest in, the operational responsibilities Harris demanded of his group commanders. 'Owing to the weather and other factors, there was seldom more than a day's notice for laying on any ordinary operation and it would have been impossible for the Command to give all the necessarily detailed orders directly to its stations. The Command issued the orders to the Group Headquarters giving the target and the general plan for co-ordinating the whole attack, and the Groups themselves issued detailed orders to the units … The Group Commanders were given absolute freedom within the limits set by the necessity of co-ordinating an attack.'[41]

After Brookes arrived in England on 26 July 1942 one of his first tasks was to find a site for his headquarters, the initial choice at Northallerton having been rejected because it could not be fitted out with the communications systems necessary to run an operational group. On 1 September an agreement was reached with the Air Ministry to requisition Allerton Hall, a sprawling, seventy-five room mansion located near Knaresborough, fourteen miles from No 4 Group's headquarters at York. The resentful owner – 'the worst pessimist I have ever met for a man of forty-seven, no patriotism & full of himself & his troubles,' according to Brookes – raised so many questions and complaints about the inevitable alterations (and where he was to live in the meantime), however, that it was not entirely ready when the group became operational on 1 January 1943. Temporary living quarters for the headquarters staff had to be found in the surrounding villages as well as at Dishforth and Linton, and some were still living and eating at Linton and Dishforth as late as May 1943. No 6 Group Headquarters was officially established on 25 October 1942, but until remodelling at Allerton Hall was complete it also worked out of Linton, just under seven miles distant.[42]

Brookes, meanwhile, attended the daily conferences held at No 4 Group Headquarters, getting a feel for the job, and oversaw the progress of the new squadrons in flying training. Space for basic administrative work finally became available in November, but workmen still swarmed over the office areas while an inadequate water supply – the Harrogate Fire Department had to fill the storage tanks on the grounds – meant that the heating and plumbing systems could not be relied upon.[43] Brookes moved into his own office on 4 December, but since there were no electric lights he could not work into the evening. A week later he saw some improvements, yet much remained to be

done. 'The Hall is beginning to look a bit cleaner at last, & not so much noise & hammering near my office. My washroom is finished by plumber, & most of the offices on second floor [are] now in use, but [telephone] lines only about 70 per cent completed. Had a good look around the building sites & sewer job, using gum boots, & got in again just before dark. Buildings coming along well, sewer job *very slow*.'[44]

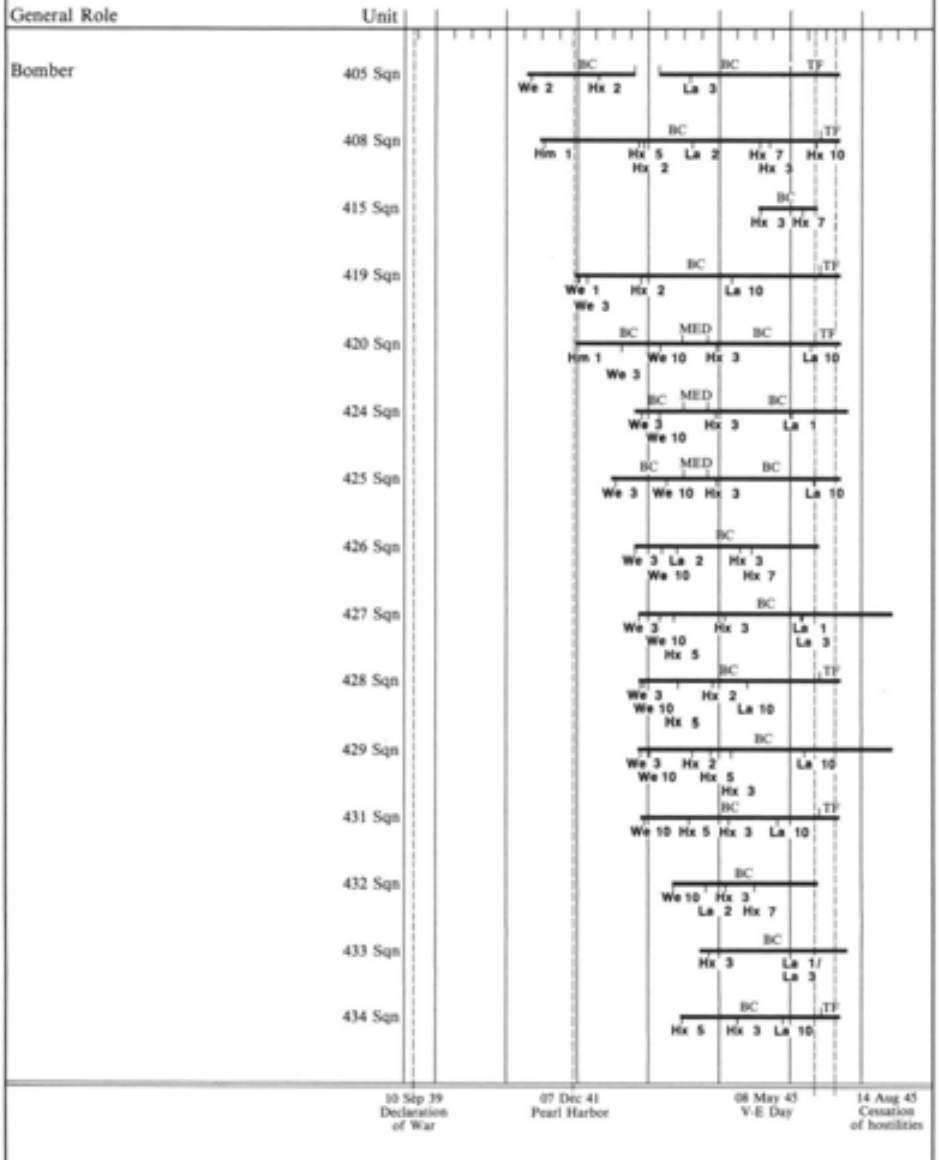
As we have seen, shortages of construction materials and labour threatened the entire airfield construction program that autumn, but it was only in December 1942 that Brookes learned he would definitely lose the proposed bases at Piercebridge, West Tanfield, Easingwold, and Strensall. Some reshuffling of assignments was necessary as a result, and arrangements also had to be made to give some of the satellite fields hard-surfaced runways earlier than had been scheduled, which again required the shifting of squadrons from one station to another as work was begun and completed.[45]

Meanwhile, the AOC continued to read into his new appointment and learn about the conduct and management of bombing operations from observations made in his visits to High Wycombe and to Nos 4 and 5 Groups. Unhappily, the diary Brookes kept of his time overseas was strictly personal. There are few entries of operational concern in its pages, making it impossible to chart his development from a kind of neophyte staff learner in August 1942 to full-fledged group commander five months later. Moreover, what entries there are reflect a singular detachment from the hard realities of the bomber war. He admits to having 'helped in a small way to work out details' for an attack on Nuremburg on 28/29 August 1942, for example, but made only a passing reference to the 34 per cent losses suffered by the Wellington crews involved. 'Our lads had a good crack at them last night,' he wrote, '& also caught a crack themselves.' He would keep that same remote perspective on the operational losses of his own group when the time came, at least in his diary. What Harris thought of the Canadian AOC when he arrived at High Wycombe we do not know, but by early December he was 'alarmed at the prospects' of No 6 Group under Brookes's command.[46]

As the Canadian group was finally declared operational, Brookes nevertheless received a congratulatory telegram from Harris. 'A happy birthday and a prosperous new year to No. 6 RCAF Group. As individuals and as RCAF squadrons you have done fine work already. As the RCAF Group I know that you will maintain and even surpass your own high standards. We are proud to have you with us. Hail Canada! Hail Hitler, with Bombs.'[47] Looking back on the day in the privacy of his own room, the Canadian commander noted simply:

> Usual routine, everything ready for tonight. Raised plenty of fuss at our admin. conference re: tardiness in putting in material for the Ops. Record Book & ripped a full blown raspberry for [my personal staff officer] on same subject. Ops. Room in good shape, clean & maps completed, & all ready to go except that G[eneral] P[ost] O[ffice] [telephone technicians] still fiddling here & there. The morning passed quickly with much talking, phoning etc. & got a little reading done … until 1845 & then collected the gang for dinner. 9 p.m. news & then returned to the office … round the

RCAF OVERSEAS
ORDER OF BATTLE



Aircraft Types

Hm 1	- Handley Page Hampden Mk I	**La 2**	- Avro Lancaster Mk II
Hx 2	- Handley Page Halifax Mk II	**La 3**	- Avro Lancaster Mk III
Hx 3	- Handley Page Halifax Mk III	**La 10**	- Avro Lancaster Mk X
Hx 5	- Handley Page Halifax Mk V	**We 1**	- Vickers Wellington Mk I
Hx 7	- Handley Page Halifax Mk VII	**We 2**	- Vickers Wellington Mk II
Hx 10	- Handley Page Halifax Mk X	**We 3**	- Vickers Wellington Mk III
La 1	- Avro Lancaster Mk I	**We 10**	- Vickers Wellington Mk X

building & then had a small party in my office to see the New Year in; about a dozen of us.[48]

No 6 Group took over control of Middleton St George and Croft at one minute past midnight on 1 January 1943, Leeming and Skipton-on-Swale the next night, and Topcliffe, Dishforth, and Dalton one night later. Its initiation into operations was almost as quiet as the AOC's New Year's party. Fourteen crews were detailed for Gardening on 1/2 January, but bad weather intervened, and the next night only six aircraft were dispatched to lay mines (with thirty-six others from the rest of Bomber Command) off the Biscay coast. Weather was again a hindrance, however, and three of the RCAF crews returned to base with their ordnance still on board.[49]

All six of these machines came from No 427 Squadron which, having been formed as recently as 7 November, had made remarkably quick progress in becoming operational. Some of the credit had to go to its British commanding officer, Wing Commander D.H. Burnside, DFC, who remained with the unit until his tour expired in September 1943. However, its development was also materially assisted by the influx of experienced personnel from No 419 Squadron. Indeed, if No 427 had not made such good progress, Brookes would have had only two squadrons to call upon on 1 January – Nos 420 and 425. The senior squadron in the group, No 405, was on temporary loan to Coastal Command, where it was flying convoy escort and anti-submarine patrols, while the rest were either converting to heavy bombers or not yet trained to operational standards. Slow progress was not always their fault. No 431 – still part of No 4 Group – did not fly its first mission until March, largely because of serviceability problems with its brand-new Wellington Xs. All of them had to have their airscrews repaired or replaced, and when that was corrected the maintenance staff discovered flaws in the fabric skin and turret installations which again put a stop to flying training. Still, by the end of January, every squadron was declared ready for operations.[50]

The customarily poor flying conditions experienced during the winter meant that Bomber Command's overall effort against German targets was limited even as Brookes's group was added to the order of battle. Lorient, the French port on the Bay of Biscay which served as the Kriegsmarine's main U-boat base, was, however, bombed five times between 14 and 31 January. Sir Arthur Harris had never been enthusiastic about attacking Lorient, calling it a 'childish task of bouncing bombs off impenetrable submarine pens.' But the enemy's success in the Battle of the Atlantic – U-boats had sunk almost five million gross tons of merchant shipping in the North Atlantic in 1942, up three million from the year before – was causing enough concern in London to direct Bomber Command away from its long-term objectives in order to help the Admiralty (and to ignore the risk to French civilians, which had heretofore been a major constraint on its operations over France). From 14 January, therefore, Harris was ordered to undertake 'area bombing against the U-boat operational bases on the west coast of France' – Lorient, St Nazaire, Brest, and La Pallice – with a view to 'effectively

devastating the whole area in which are located the submarines, their maintenance facilities, and the services … and other resources upon which their operations depend.' In other words, these towns could be flattened. In keeping with the Air Ministry's belief that the air offensive against the enemy homelands should continue, however, Harris was also authorized to attack Berlin and other 'important objectives' in Germany and Italy whenever the weather was suitable.[51]

The importance of the German U-boats as a target system was reinforced by the strategic bombing directive issued by the combined American and British chiefs of staff following their January 1943 meetings at Casablanca. Harris and General Carl Spaatz, commanding the US Eighth Air Force, were told: 'Your primary object will be the progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened.'

> Within that general concept, your primary objectives, subject to the exigencies of weather and of tactical feasibility, will for the present be in the following order of priority:
> (a) German submarine construction yards
> (b) The German aircraft industry
> (c) Transportation
> (d) Oil plants
> (e) Other targets in enemy war industry
>
> The above order of priority may be varied from time to time according to developments in the strategical situation. Moreover, other objectives of great importance either from the political or military point of view must be attacked. Examples of these are:
> (i) Submarine operating bases on the Biscay coast …
> (ii) Berlin, which should be attacked when conditions are suitable for the attainment of specially valuable results unfavorable to the morale of the enemy or favorable to that of Russia …[52]

No 6 Group was in the thick of the renewed anti-submarine campaign from the beginning. Of 316 sorties detailed in January, 195 were against Lorient and ninety-eight were Gardening missions in the Bay of Biscay and the North Sea. The other twenty-three were daylight Moling operations to the Ruhr, which were to be mounted only under protective cloud cover. The latter cost two crews who, it was felt, had 'disobeyed instructions' and proceeded on to the target when the required cloud was not present. Although minelaying was generally less risky (four crews, or 3.7 per cent, failed to return), individual operations could take a heavy toll, as No 6 Group discovered on 21/22 January, when forty-two machines were sent to the Nectarines sector, off the Frisian Islands. Good clear weather made for easy pin-pointing of the target area, but it also made things easy for the enemy's gunners, who shot down three Wellingtons.[53]

Well defended by Flak and air fighters, Lorient was an increasingly dangerous target and, by the end of the month, six raids on the town had cost eight aircraft, 4.1 per cent of those dispatched. The last of these raids, mounted on 29/30 January and involving sixty-nine crews from the Canadian group, was by far the worst. Weather conditions were terrible, as severe icing, heavy cloud, rain, and electrical storms made for difficult flying; with no Pathfinders to mark the target, bombing was scattered. Twenty-three crews decided to return to base early, while the forty-two that bombed the port reported heavy Flak. Four were missing, accounting for all of Bomber Command's losses that night.[54]

February 1943 was a much busier month for Bomber Command and No 6 Group alike. The latter flew 1005 sorties, 312 in four raids on Lorient, another 193 to Wilhelmshaven, and eighty-four on one raid to St Nazaire. Together these claimed nine crews (1.6 per cent). Gardening occurred on nine nights, and cost seven of 203 sorties (3.4 per cent). There were also three raids against German cities – Cologne twice, Hamburg once – on which the loss rate was 3.5 per cent of just under two hundred sorties. The attack on Hamburg was especially difficult. Only nineteen of the forty-six Canadian crews dispatched actually made it to the target area, the rest returning early because of ice and cloud; but while group headquarters acknowledged that the effort was not 'particularly successful,' it nevertheless hoped that 'if the Pathfinder force dropped flares in the correct position, the attacking aircraft bombed the target with fair concentration.' In fact, the marking was neither concentrated nor sustained and the bombing was well scattered. Perhaps because so many crews had turned back, however, No 6 Group's loss rate was much lower than the 6.1 per cent suffered by Bomber Command as a whole. For once the enemy's fighters were effective despite the bad weather.[55]

Fighters were also being seen more frequently on Gardening operations and were thought to be responsible for at least some of the seven crews lost. Several were encountered on the night of 18/19 February, when clear skies and bright moonlight were ideal for interception, but only one No 419 Squadron Halifax went missing while three enemy fighters were reported damaged or destroyed. The most likely of these claims was that submitted by Sergeant T.V. Sylvester's crew from No 428 Squadron, who were attacked twice, once on the way to the target and once on the way back. It was during the latter engagement that a Ju 88 was reported to have fallen into the sea, on fire, after being hit several times.[56]

But it was Lorient that was again Bomber Command's main preoccupation. No 6 Group was happiest with its performance on 16/17 February, reporting excellent results with many fires in the target area and 'all crews returning in high spirits,' although an analysis of bombing photographs indicated that this was the poorest raid by far, only 37 per cent of crews bombing within three miles of the aiming point. (The best operation had come two weeks earlier, on 4/5 February, when the corresponding figure was 80 per cent.) Nevertheless, by the end of the month the cumulative effect of six weeks of bombing suggested that the campaign against Lorient had been very effective indeed. The

docks and town were almost completely destroyed, and half the suburbs had been razed. Craters were also seen around the submarine pens.[57]

Not for the last time appearances were deceiving. After a series of 1941 attacks the Germans had moved all their essential stores and maintenance and repair facilities into the immensely strong concrete shelters they had built – unhindered, it must be said, by further Bomber Command raids – and removed all non-essential services to surrounding villages, so that although the town of Lorient itself was flattened and a number of French civilians killed, almost nothing was done to the U-boat installations. Lorient was not attacked at all in March – there were two raids on St Nazaire – and in mid-April the emphasis on operations against Brittany by night was suspended. Harassing raids were still to be carried out, largely by 'freshman crews … with a view to their obtaining operational experience,' but the main weight of bombs would be delivered by the Americans by day.[58]

Harris's stubborn insistence on German cities as the bedrock of the night-bomber offensive, and his disdain for such peripheral issues (to him) as the anti-U-boat campaign, turned Bomber Command to a five-month-long campaign against the Ruhr. By the end of July, when the focus would shift again, he had launched 14,177 sorties against the industrial cities of the Ruhr and the Rhineland, on which he lost 673 crews – 4.7 per cent. No 6 Group had contributed 2095 sorties, but lost 161 crews – 7.6 per cent. Moreover, the group's loss rate, consistently among the highest in Bomber Command, rose almost continually: it stood at 2.8 per cent in March, 5.1 per cent in April, 6.8 per cent in May, 7.1 per cent in June, and 4.3 per cent in July.[59]

Although a number of reasons were eventually advanced to explain this situation, it was clear from the beginning that the relative inexperience of RCAF squadrons was among the more significant factors underlying these figures. The roots of the problem were easy enough to discern. The formation of seven new squadrons in the latter part of 1942 had required a large influx of recent OTU graduates into the group as well as groundcrews who had only just completed their training in Canada, and this simply put too much pressure on the personnel system. During January, for example, forty-five errors made by No 6 Group armaments crews had been identified, of which twenty-eight were considered 'avoidable.' In one case, a squadron had not been able to bomb-up all the aircraft detailed for the night's mission because the squadron armament officer had not been able to find the bombs; in another, an armourer removed the guns from a turret while they were still loaded; and in a third, incendiary bombs were loaded with the jettison bars armed, so that as soon as the electrical circuits were closed the bombs fell on the runway.[60]

February's performance was no better. These administrative and technical blunders were readily verifiable: those that affected operational performance over enemy territory were less distinguishable, since the perpetrators were often the victims. And no amount of posting of veterans from established squadrons to these new units could overcome the diluting effect of expansion on the group's overall level of experience. To compound the problem, No 6 Group had only a brief period in which to settle in before a number of squad-

rons began to convert to heavy bombers ahead of schedule for the simple reasons that the Canadians were scheduled to receive the next Halifax Heavy Conversion Unit (HCU) to be formed and because they needed a pool of Halifax squadrons to provide trained crews for their Pathfinder unit.[61]

When No 405 Squadron left the group in April 1943 to become the Canadian component of No 8 (Pathfinder) Group, its place at Leeming was taken by No 427, which exchanged its Wellingtons for Halifax Vs in May, thereby permitting the formation 432 Squadron on the medium bombers that No 427 had given up. After a lengthy conversion program, No 419 Squadron had finally become operational on the Halifax in February, and would soon be joined at Middleton St George by No 428, which switched its Wellington IIIs for Xs that same month and then moved on to Halifax Vs in June. No 429 would convert to Halifax IIs in August, while 431 Squadron, operational on Wellington Xs since January, converted to Halifax Vs in July. No 426 Squadron, meanwhile, gave up its Wellingtons in June and became the first RCAF squadron to receive Lancasters (admittedly Hercules-powered Lancaster IIs, which were inferior to the Merlin-powered I and III) – because, Sir Arthur Harris argued, the Canadians 'have been promised & deserve one Lanc. sqdn.' It was joined at Linton-on-Ouse by No 408 when it converted to the same type in late summer, once again because Harris (proving to be better than his word) believed it right to divide Lancaster II squadrons evenly between Nos 3 and 6 Groups despite the latter's designation as a Halifax formation. In doing so, of course, he was also taking advantage of the Canadian squadrons' experience with Hercules radial engines, with which the Mark II Lancaster was provided.[62]

In No 8 (Pathfinder) Group No 405 Squadron began its conversion to Lancaster Is and IIIs in August. That same month, Victory Aircraft in Toronto turned out its first Lancaster X – the *Ruhr Express* – which was immediately flown to England and presented to the squadron at Gransden Lodge in October, but this had been an outright publicity stunt. The machine was far from operationally ready, only thirteen more Lancaster Xs were built before the end of the year, and the first squadron was not equipped with the type until No 419 Squadron received them in March 1944.[63]

All told, then, between April and August 1943 seven RCAF squadrons began flying new types.[64] So much for the bald allegation, made then and now, that under Harris the Canadians – because they were Canadians – invariably did 'not get good aircraft'[65], and that they 'found themselves last in line … for new aircraft and improved technology,'[66] a charge which even the nationalistic Edwards was moved to describe as 'an absolute lie.'[67] Harris said that seniority was the overriding principle governing the allocation of aircraft to squadrons, but that misrepresents what actually happened as much as the myth that the Canadians were discriminated against because they were Canadians. The desire to maintain commonality of engine type within groups and, where possible, between neighbouring groups played a part, as did the simple matter of availability: a perceived shortage of Merlin engines was responsible for the existence of the Hercules-powered Lancaster II which was given to three No 6 Group squadrons in 1943. In addition, in the case of No 6 Group the Canadian