His reward for completing this amazing odyssey was a British Empire Medal.

High Wycombe, meanwhile, was taken aback by the apparent resurgence of the enemy's air-defence organization in February and March 1945. Despite sophisticated jamming, and intricate diversions and spoofs, Luftflotte Reich was obtaining early warning of many raids, plotting main forces accurately enough, and, by reading Gee, Oboe, G–H, and H2S, among other things (too many crews were still failing to maintain H2S silence en route), the German controllers were often identifying targets before the bombs began to fall.[98] When the supply of fuel and weather permitted the night-fighters to fly, moreover, Benito, Uhu, Bernhardine, and their use of multiple radio frequencies gave them generally reliable communications with the ground, while in Wasserman, Elefant, Neptun, Berlin, Flensburg, Naxos, and modified Freyas and SN2 they had radars, homing devices, and sensors which penetrated and negated many of Bomber Command's electronic counter-measures. In No 6 Group, for example, the number of aircraft found to be damaged by enemy action upon their return to base rose from 3.2 per cent in January to 5.9 per cent in March, with Flak and fighters both enjoying increased success.[99]

The extent to which the electronic war was reaching equilibrium only became clear after the war, however, when Operation Post Mortem tested a portion of the enemy's raid reporting and control system that had been captured intact in Denmark and northern Germany. Using cooperative Luftwaffe prisoners of war, and involving a series of increasingly complex combinations of jamming and spoofs, Post Mortem demonstrated that much of No 100 Group's effort in the last months of the war had had only marginal impact.

Mandrel was probably the greatest disappointment. Relied on as the foundation on which other jamming tactics were based, not only was its screening effect imperfect, but (as had happened with Window) the Germans had eventually developed a knack for using the size and shape of the Mandrel screen to help give them a fix on the location of the bomber stream. Moreover, the Post Mortem experiments may have underestimated German capabilities. Although they had not taken Mosquito operations into account – which were intimidating, even to veterans like Heinz-Wolfgang Schnaufer, much to the surprise of the Mosquito crews themselves – neither had they included the intelligence-gathering of the Horchdienst. Furthermore, although the captured controllers were willing enough, having spent the last few months of the war in a relative backwater, they were not the most experienced operators in Luftflotte Reich and probably not the most effective. But German search and destroy capability was hardly crucial when the Nachtjagdgeschwader had no fuel – and no aviation gas at all was produced in March.[100]

On 16 April a final directive to Harris and Spaatz was drafted which reflected the imminence of victory. Because of the 'extent to which the destruction and dislocation of the enemy's industrial and economic systems had already been achieved,' the priority now was to 'give direct assistance to the land campaign.' Strategic operations would in general be limited to attacks on oil supplies, such as they were, and to lines of communications, although 'pol-

icing attacks' against the Luftwaffe would be made as necessary, as would the previously approved 'marginal effort' against U-boats.[101]

An escape clause existed which could have allowed for the continuation of area raids, but such raids were fast becoming a political problem. On 17 February 1945 a war correspondent at Eisenhower's headquarters had put out a story explaining that the 'Allied air chiefs' had finally decided 'to adopt deliberate terror bombing of German population centres as a ruthless expedient to hastening Hitler's doom.' Given the purpose of Thunderclap, this was basically honest reporting, but it caused considerable difficulty in both London and Washington.[102] Privately, on 28 March, Winston Churchill used similar language to decry Thunderclap, of which he had recently and wholeheartedly approved. 'It seems to me,' he told his chiefs of staff, 'that the moment has come when the question of bombing of German cities simply for the sake of increasing the terror, although under other pretexts, should be reviewed.'

> Otherwise, we shall come into control of an utterly ruined land … The destruction of Dresden remains a serious query against the conduct of Allied bombing. I am of the opinion that military objectives must henceforward be more strictly studied in our own interests rather than that of the enemy.
>
> The Foreign Secretary has spoken to me on this subject, and I feel the need for more precise concentration upon military objectives, such as oil and communications behind the immediate battle-zone, rather than on mere acts of terror and wanton destruction, however impressive.[103]

That comment came just six days after a daylight raid that perfectly illustrated his new-found anxiety. 'Our target today is Hildesheim,' Nos 427 and 429 Squadrons had been told. 'The town centre is largely built of half timbered houses and has preserved its mediaeval character. This should make a good fire.' Although there were rail lines in the vicinity, along with a farm implement factory and sugar refinery, the aiming point was 'in the centre of the built-up area.' Including the Pathfinders from No 405, just over one hundred crews from RCAF squadrons took part, and the master bomber for the raid, also from No 405 Squadron, reported that their bombing formed [a] nice horseshoe around a[iming] p[oint],' with only '5 lots of bombs seen, wild.' 'About half the town area was destroyed,' according to German police records, including the town hall and the cathedral; 1600 were killed, and 40,000 left homeless.[104]

Nevertheless, neither Portal nor Harris reacted well to Churchill's minute, and the prime minister was persuaded to withdraw the original and replace it with a less abrasive substitute on 1 April.

> It seems to me that the moment has come when the question of the so called 'area bombing' of German cities should be reviewed from the point of view of our own interests. If we come into control of an entirely ruined land, there will be a great shortage of accommodation for ourselves and our Allies: and we shall be unable to get housing materials out of Germany for our own needs because some temporary provision would have to be made for the Germans themselves. We must see to it that our

attacks do not do more harm to ourselves in the long run than they do to the enemy's immediate war effort. Pray let me have your views.[105]

The CAS took up some of these arguments but carefully defended the principle, as well as the continued practice, of area bombing. 'In spite of recent advances in our ability to make precise attacks at night, the operational considerations which have in the past necessitated area attacks still exist. Nevertheless, it is recognised that at this advanced stage of the war no great or immediate additional advantage can be expected from the attack of the remaining industrial centres of Germany, because it is improbable that the full effects of further area attacks upon the enemy's war industries will have time to mature before hostilities cease. Moreover, the number of targets suitable for area bombing is now much reduced.'[106]

No 6 Group's last offensive operation came on 25 April against coastal batteries on Wangerooge, in the Frisian Islands. At this late date it should have been easy, but seven of the 482 crews dispatched were lost, five of them Canadian, the latter all through a chain-reaction of collisions caused when one Lancaster, catching the slipstream of another, rammed into a third. Forty-one airmen died, twenty-eight of them Canadian.[107]

After that came better things, however. The Dutch people had suffered terribly during the war, but never more so than over the winter of 1944–5 when their food ran out. Working in great secrecy, Allied authorities entered into discussions with Arthur Seyss-Inquart, the German governor of the Netherlands, which opened the way for the supply of food by air to the three million inhabitants of that part of western Holland which had not yet been cleared of German troops. Operation Manna, assigned to Nos 1, 3, and 8 Groups, began on 29 April 1945 and in ten days over 7000 tons of food were delivered. No 405 Squadron marked the drop zones at The Hague from 30 April to 5 May, and then at Rotterdam on 7 May.[108]

On 8 May, the day the war in Europe ended, all of Bomber Command including No 6 Group began flying liberated prisoners of war back to England (Operation Exodus), the Canadians accounting for 4329 of the nearly 75,000 airlifted home.[109] With Exodus over, No 6 Group began to disappear. Eight RCAF squadrons – Nos 405, 408, 419, 420, 425, 428, 431, and 434 – had been selected to participate in the war against Japan as part of Tiger Force, and on 31 May they began to fly their Canadian-built Lancaster Xs back to Canada. The others were disbanded in England between 15 May 1945 and June 1946.

On 8 May 1945 Canadians knew a good deal about what Bomber Command had been doing to Germany for the past five years. Along with stories filed by journalists who accompanied the Allied armies into western Germany, there were photographs and newsreel films that bore witness to almost unbelievable devastation. From what could be seen, they seemed to prove every claim Sir Arthur Harris had ever made for the bombing offensive. 'City after city has been systematically shattered,' General Eisenhower had declared earlier that spring, and the German war economy had all but ceased to function.[110]

Taking its cue from Eisenhower's remarks, Toronto's *Globe and Mail* rendered its verdict on the strategic air offensive on 23 March 1945. Not doubting for one moment that bombing had ruined the German economy, the *Globe* nevertheless did not view 'the real victory of Allied air power' in that light. Rather its 'great achievement' was likely 'a thing of the mind – a lesson so terrible as never to be forgotten.' 'This time,' the *Globe* observed, comparing the situation in Europe to that which existed at the end of the First World War, 'Germany is being conquered and occupied, rubble-heap by rubble-heap. But this time the German people will not need the presence of Allied armies to persuade them that they lost this war. The storm which is sweeping them from the air ... is convincing them that they have suffered the most terrible defeat ever inflicted on a people in all history.' Perhaps, the editorial continued, the Germans would learn from their defeat, and discover a new way of life which would allow them to exist 'constructively and compatibly alongside the neighbors they have made [into] enemies.'[111]

If that were the case, then the long casualty lists the *Globe* had published over the last five years would have some meaning. Bomber Command had mounted 364,514 operational sorties during the course of the war, of which 8,325, 2.3 per cent, failed to return. Well over a thousand more were lost in crashes. No 6 Group flew 40,822 of these sorties, of which 814, 1.9 per cent, failed to return, while more than a hundred crashed in England.[112] In his memoirs (but not his official report), Sir Arthur Harris stated that 125,000 aircrew flew at least one operational or training sortie in Bomber Command.[113] How and where he obtained this figure has never been explained – what kind of Second World War personnel records system would be geared to extracting that sort of information? – but so far as can be determined there is no alternative to his estimate and it will therefore have to serve as our best guess – however erroneous – as to the total cumulative aircrew strength of Bomber Command.

Casualties, of course, are easier to account for – systems *are* geared to record that kind of information – and 47,268 were killed in action or died as prisoners of war, and 8195 in flying or ground accidents. A further 9838 became prisoners of war; 4200 were wounded on operations but returned to base; and 4203 were injured in flying or ground accidents. If Harris was right, then 44 per cent of those who flew with Bomber Command died on operations or during training, while total casualties (including prisoners) amounted to 58.9 per cent. Total RCAF fatal battle casualties during the Second World War numbered 13,498, of which 9919, almost three-quarters, came in Bomber Command. No 6 Group lost 4272 dead – the vast majority, but not all of them, being Canadian – almost a third of the Canadian total.[114]

Given Germany's unconditional surrender, and what seemed to be the part played by strategic bombing in achieving it, the effort put forward by Harris's crews appeared to have been an unqualified success. But the cracks in Bomber Command's success story began to appear within a month of VE Day. 'There is no question that Berlin is a ruin and that many other German cities have been reduced to rubble,' journalist J.V. McAree reported on 6 June.

... but German war industry has in general survived. That is one of the surprising discoveries made by correspondents since they have been free to roam about the country ...

... by far the greater part of German industry remains untouched by the war ... Alfred Krupp von Bohlen und Halbach [scion of the great munitions conglomerate at the heart of Germany's war production], who, we are sorry to see, is at large and capable of issuing statements, issued one to the effect that the vast German industrial plant is ready to resume production of locomotives, rail track, bridges, girders and steel almost immediately. The only thing lacking is water, for without water to be turned into steam, coal itself is valueless as power ...

... While the war raged we heard about the destructive bombing of Germany, but we heard little about Germany's amazing ability to restore what was bombed. For example, the Leuna oil plant had to be destroyed three times ...

The Schweinfurt ball-bearing industry seemed to have been destroyed, but it was only dispersed and was turning out its vital product almost normally when the war ended. Dispersal also saved the German *Luftwaffe* so that when the war ended Germany had more completed planes than before the invasion ... it is plain that the Germans could make them faster than the Allies could destroy them ...[115]

Krupp was exaggerating, but the doubts he raised about the bomber offensive's impact on the economy were not far off the mark, as both the American and British postwar bombing surveys discovered when they carried out more thorough investigations in the months that followed. Incomprehensible as it seemed to those who had seen the rubble in the Ruhr, the Rhineland, Hamburg, and Berlin, production in the Third Reich had actually increased significantly between 1942 and the summer of 1944; and although the flow of raw materials to factories had ebbed in the last two months of 1944, because of stockpiling it was only in February and March 1945 that the output of tanks, ships, aircraft, and ammunition showed signs of collapse. By then, however, the Russians were advancing on Berlin, the Western Allies were closing the ring around the Ruhr, and the Third Reich's defeat was already certain. The German economy, it turned out, had been far more elastic than any of the Allies had realized in September 1939, both in terms of the size of the workforce and what it was being employed to produce.[116]

Indeed, despite the imperfect nature of the evidence, both survey teams arrived at remarkably similar conclusions about the effectiveness of Allied bombing, and particularly of area bombing. While not denying the acres of devastation (Sir Arthur Harris's favourite measure of success) in the cities shattered by air attack, the British report explained that area raids 'could not have been responsible for more than a very small part of the fall which ... actually occurred in German production by the spring of 1945 and ... in terms of bombing effort, they were actually a very costly way of achieving the results they did achieve.' The Americans meanwhile noted that 'attacks against city areas ... did not have a decisive effect upon the ability of the German nation to produce war material ... due primarily to the fact that the direct loss

imposed was of a kind which could be absorbed by sectors of the German economy not essential to war production.'[117]

The resilience of the German people was another surprise. Perhaps 600,000 – mostly older men, women, and children – had died as a direct result of bombing; many more were mutilated and wounded; and as many as seven million may have been left homeless. No one denied that morale had been affected by the frequent air raids or that they had caused temporary bouts of depression and pessimism, but it was clear that bombing was less important than other military developments in producing any sense of defeatism among the population at large. That was true even in the thirty-seven towns and cities which had had more than half their built-up area destroyed by bombing. Hamburg, never a Nazi hotbed in the first place, may have been hit hard in July 1943, but the spirit of its people was not destroyed. Nor, as Albert Speer testified, had their 'will to work' been broken.[118] Berlin, too, had survived the twenty-week battle fought over the winter of 1943–4.

It was not just area bombing that proved to be something of a disappointment, however. Attacks on most of the panacea targets, about which Sir Arthur Harris had complained so vigorously, by and large failed to produce decisive results. The campaign against the ball-bearing industry, for example, had proved unavailing because (as Harris had predicted) the Germans not only had access to Swedish output in the early years of the war, but also had built up their own large stocks and plant was difficult to destroy. The predominantly American attack on the German aircraft industry that began in February 1944 was unquestionably productive, largely because the Luftwaffe was forced to do battle with the former's Mustang escort fighters, but output nevertheless rose consistently until September, and even in December 1944 more machines were produced than the previous January.[119]

While a significant number of submarines were destroyed in German shipyards, assaults on U-boat pens were less successful, as these facilities were too well hardened to be damaged by anything other than very heavy bombs like the British 22,000-pounder, only available from early 1945. Gardening, another naval priority, paid better dividends, accounting for 717 ships sunk and 565 damaged while seriously impeding the training of submarine crews in the Baltic. It is worth remembering that in late 1943 and then again during the first months of 1944, RCAF Wellington and Halifax II/V squadrons came to be regarded as Gardening specialists and that No 6 Group pioneered the techniques of high-altitude aerial minelaying.[120]

In the final analysis, oil (and its related rubber, chemical, and explosives industries) was probably the most important of all target systems, and once the Russians had captured the Romanian oilfields Germany's synthetic refineries were the most profitable of the 'panacea' targets singled out for attention. Eventually, German tanks and aircraft sat idle for lack of fuel. Still, the oil campaign began too late to immobilize the Wehrmacht in 1944.

Although the Combined Bomber Offensive against Germany did not begin to meet its objectives – the progressive, if not sudden, decline in enemy war pro-

duction and, later, civilian morale – until the last months of 1944, four full years after it began in earnest, it is also true that, bit by bit, bombing at least played some part in slowing the rate of expansion in the German war economy and so contributed to the Allies' already significant materiel superiority. Precisely by how much, however, is difficult to determine.

Of much greater significance, particularly as the concluding topic in this section, was the extent to which the bomber offensive against Germany constituted a 'Second Front' long before the Allied invasion of Northwest Europe, and even when only Bomber Command was heavily involved in it. In terms of manpower alone, the Germans used between 500,000 to 800,000 workers to repair bomb damage and organize the dispersal of vital industries, labourers who could otherwise have been involved in the direct production of war materiel, while the Flak arm required some 900,000 men in 1943 and was still 656,000 strong in April 1945 – many of whom might otherwise have played a significant part in the ground war.[121]

The enemy was also forced to allocate considerable equipment to air defence. In March 1942, as the German army was fighting critical battles in Russia and Bomber Command had not yet launched its first 'thousand' raid or its initial battle of the Ruhr, there were already 3970 heavy Flak guns deployed around German cities which could have been made into mobile artillery or bolstered anti-tank defences in the east. By September 1944 that number had grown to 10,225. Indeed, according to Albert Speer, of the 19,713 88-millimetre and 128-milimetre dual-purpose Flak/anti-tank artillery pieces produced between 1942 and 1944, only 3172 could be allocated to the army for use in the anti-armour role because of the pressure of air attack. Similarly, the threat posed by Bomber Command's night raids meant that the German night-fighter force accounted for a consistently increasing percentage of Luftwaffe front-line strength – more than 20 per cent of the total by December 1944. Several hundred of those on strength in late 1943 and 1944 were machines which could have been used to great advantage in other roles on other fronts.[122]

PART FIVE

Air Transport

A Douglas Dakota of No 435 Squadron returns from the squadron's first operational sortie, a supply-dropping mission to Pinlebu, Burma, on 20 December 1944. (PL 60123)

Canadian Dakotas unload their cargoes at a forward landing field in Burma. (PL 60109)

Troops from one of the two African divisions that fought in Burma board an RCAF Dakota in January 1945. (PL 60111)

Guarded by a solitary Hurricane fighter (top, centre), parachutes and supplies lie on the drop zone after a successful resupply mission. (PL 27008)

RCAF aircrew snatch a hurried meal of K-rations before taking off on another trip in early 1945. (PL 60258)

Living under canvas in the Burmese jungle, 1945. (PL 60257)

Dakotas of the airborne portion of the Allied crossing of the Rhine, which included aircraft of No 437 Squadron, over Caulille, Belgium, in March 1945. (PMR 74-324)

Belgian prisoners of war board a Dakota of No 437 Squadron for repatriation in May 1945. (PL 44178)

'Kickers' heave cargo out of a Dakota over Tiddim, Burma, in May 1945. (PL 60727)

Canadian aircrew unload squadron rations from a No 437 Squadron Dakota soon after that unit's arrival at its new base in Nivelles, Belguim, on 7 May 1945. (PL 44171)

Introduction

The Royal Canadian Air Force regularly carried men, materiel, and mail as it fulfilled its responsibilities connected with civil government air operations between the two world wars. As in most other air forces at the time, however – including the RAF – Canada's 'bush pilots in uniform' rarely thought about the potential of tactical air lift or using air transport to supply armies in the field, and no transport squadrons were mobilized in September 1939. Indeed, as late as 1 January 1943 there were only two true Royal Air Force transport squadrons based in England, and seven in the Middle East. When a separate Transport Command was established two months later it was regarded primarily as a successor to Ferry Command, and its main task was to deliver North American-built aircraft from the factory to active theatres of war.

The planners for Operation Overlord recognized the requirement for a sizeable air transport organization both to tow gliders and carry parachute troops to Normandy and to secure the flanks in the early hours of D-Day. Subsequently, air freighters would be needed to fill urgent requests for weapons, food, fuel, and medical supplies as well as to evacuate the seriously wounded. There might also be – and, in the event, was – a need to provide air transport for further airborne operations.

In Southeast Asia, meanwhile, once the Japanese offensive in northern Burma and eastern India had been stopped at Kohima and Imphal in March and April 1944, Lieutenant General William Slim's Fourteenth Army would have to rely on air supply if it had any hope of retaking Rangoon by an overland advance before the onset of the 1945 monsoon: the forbidding terrain and lack of good roads precluded logistical support on any other basis.

With Transport Command growing and (because of the casualty rates) Ottawa being unwilling to form any more bomber squadrons in order to complete Canada's Article XV allocation of thirty-five squadrons overseas, the RCAF offered to create three transport squadrons in June 1944 – one in England and two in Southeast Asia – an offer the Air Ministry readily accepted. All three would be equipped with American-built Douglas C-47 Dakotas, a design well suited to the task.

Formed at Blakehill Farm in September 1944, No 437 Squadron's first task was to tow British airborne troops in Horsa gliders to Arnhem where, in

Operation Market Garden, they were to capture and hold bridges over the Rhine. Despite heroic – and generally successful – efforts by Transport Command (including No 437 Squadron) to reinforce and resupply the airborne army, Market Garden failed.

No 437 Squadron was then engaged in routine carriage of freight between England and the Continent until mid-December 1944, when the Germans launched their offensive in the Ardennes. Transport Command was called upon to undertake emergency airlifts, and when the weather permitted No 437 transported part of an American division to the front. In March 1945 the squadron helped to lift British airborne forces across the Rhine as part of Operation Varsity. Once the war was over, it carried liberated prisoners of war from small landing fields in Germany to the larger airports where bombers were waiting to carry them back to England; and, between June 1945 and its disbanding in July 1946, the squadron carried men and freight all over Europe, from Oslo in the north to Naples in the south and Vienna in the east.

Although air transport was never critical to the success of the Allied armies in Europe, in Burma it alone made possible General Slim's advance from Imphal to Mandalay, and then to Rangoon in early May 1945. Nos 436 and 437 Squadrons were formed in India in September 1944 and mounted their first operation two months later, adding substantially to the air-lift resources available to Slim. They flew over the most difficult country and through the worst weather encountered by any airmen during the war – through mountain valleys and monsoon rains, often to poorly marked landing- and drop-zones under enemy fire – with few of the ground facilities available to their colleagues in Europe. Despite moving forward by stages into Assam and to islands off the Burmese coast, they were so far from their drop zones (and the need for their help was so great) that month after month they operated well beyond the maximum flying hours suggested for their machines.

Nos 435 and 436 Squadrons remained in Burma until September 1945. They then moved to England where they, too, flew transport missions to the Continent until they were disbanded in the late spring of 1946.

24
Airlift in Europe and Southeast Asia, 1944–5

Just after one o'clock on the morning of 6 June 1944 a café proprietor in the small Normandy town of Bénouville, two miles inland from the English Channel, was awakened by his wife, who had heard the sound of 'wood breaking.' Looking out the window towards the nearby bridge over the Caen canal, Georges Grondée observed a German sentry standing, apparently transfixed, by what he saw: '*Parachutistes*!'[1]

Reasonably enough, Grondée thought that a crew from one of the bombers in action that night had been forced to bale out and was about to be captured, but the sound of spreading small-arms fire soon dispelled that notion. What his wife had heard was the sound of Horsa gliders touching down near the bridge, and the parachutists were, in fact, soldiers of the British 6th Airborne Division sent to take and hold 'Pegasus Bridge' and thus protect the left flank of the D-Day landings. Four miles to the east, the 1st Canadian Parachute Battalion would soon be completing its task, the destruction of the bridges over the River Dives at Varaville and Robehomme. Fifty miles to the west, at the base of the Cherbourg peninsula, the American 82nd and 101st Airborne Divisions were dropping near St Mère Eglise and Carentan. In the largest airborne operation to date, three divisions of Allied glider and parachute troops had been carried to France by an aerial armada of about one thousand aircraft to cover the flanks of the amphibious assault phase of Operation Overlord.[2]

Five British, American, and Canadian divisions would land on the Normandy coast later that morning. At least five times that number were to be ashore within three months, and more than half as many again in the fall, by which time Allied planners hoped that the decisive battle for Germany proper would have begun. To secure these objectives – and avoid being hurled back into the sea – it was essential that the Allies build up the strength of their armies on the Continent faster than the Wehrmacht could reinforce its formations in France.

That would be accomplished, in part, through an intensive bombing campaign – the Transportation Plan – designed to deny the enemy the use of the lines of communication running between France and Germany (see chapter 22). The larger problem, however, was to ensure a steady build-up of supplies and follow-on forces in France. Clearly, as General Dwight Eisenhower's armies

grew from five to over forty divisions, most of the men and materiel required to sustain his operations on the Continent would have to be shipped to France (and, later, Belgium) by sea, and then trucked to the front. However, the Overlord logistical plan also recognized that urgent requests for weapons, ammunition, food, fuel, and medical supplies (especially blood and blood by-products), as well as the requirement to evacuate the seriously wounded to England, would be better met by air.

Air supply had its beginnings in the First World War, mainly on the periphery and almost entirely on an ad hoc basis. In mid-April 1916 in Mesopotamia, for example, a composite force built around No 30 Squadron, Royal Flying Corps, but also including seaplanes of the Royal Naval Air Service, had been called upon to drop food and ammunition to the 14,000 men who had been cut off by the Turkish army at Kut-el-Amara, a town on the Euphrates halfway between Baghdad and Basra. The beleaguered garrison needed a minimum of five thousand pounds of supplies a day, but despite removing the machine-guns and bomb racks from their machines to increase payload (until German fighters put in an appearance) and strapping bags of food to the fuselage, wings, and chassis struts of their aircraft, the airmen were rarely able to deliver more than three thousand. Facing starvation, the garrison capitulated before the month was out. Two years later, and also on the periphery, No 14 Squadron acted as a 'rudimentary transport squadron carrying personnel and supplies forward' as the campaign in Palestine drew to a close. While secure land links were easier to maintain in France and Flanders, a number of Royal Air Force squadrons were employed there to drop food and ammunition by parachute as the fighting became more mobile during the summer of 1918.[3]

Although military air transport was a common enough activity between the wars, and the Soviets, in particular, had tested the concepts of airborne operations on a large scale, the idea of supplying ground forces by air while they were in contact with (or near) the enemy seems to have attracted less attention. This was true even in British India, where scattered army units trying to keep the peace in the mountainous terrain of the northwest frontier could usefully have been supplied by air. But when, in the early 1930s, a junior officer on the Indian Army staff, Captain W.J. Slim – the future field marshal who would revolutionize the Burma campaign of 1944–5 by the way in which he supplied his army by air – asked the RAF to consider how air supply could 'free … a [ground] force from the need to move along valley bottoms, tied to its supply train,' his proposal for joint service discussions was angrily declined.[4]

Whether such anger abated after the Second World War began is a moot question. Because of the need to give priority to bomber and fighter production, no new transport aircraft were provided to the Royal Air Force between 1938 and early 1943,* and of the two true transport squadrons based in Eng-

* Indeed, in October 1940 the British government decided to rely on US production, the Americans initially offering between 7 and 11 per cent of their output of air freighters. Once the United States was in the war, however, the Ministry of Aircraft Production realized that the American forces would have first call and introducted a small transport program of its own.

land on 1 January 1943 (there were seven in the Middle East) one, No 271, had to rely on obsolescent Handley-Page Harrows for routine carriage of freight and personnel. (It was still equipped with a few Harrows in 1945, a number of which were destroyed during the Luftwaffe's New Year's Day attack on Allied air fields in Belgium.) The other, No 511, was flying converted Consolidated Liberator bombers and Armstrong-Whitworth Albermarles in mid-1943. Under the circumstances, the RAF had little to offer the army in the way of tactical airlift and supply, and that did not change when a separate Transport Command was established in March 1943. The new organization was regarded primarily as a successor to Ferry Command, and its principal responsibility was the delivery of North American-built aircraft from the factory to active theatres of war.[5]

It became clear that more needed to be done as soon as the planning for Overlord began, and to that end six new transport squadrons were established in Britain between April 1943 and June 1944, equipped mainly with the American-designed and -built Douglas DC-3 Dakota but with some Avro Yorks and Vickers Warwicks as well. New airfields had to be built to accommodate them, and since the squadrons' initial task would be to deliver glider and parachute battalions on D-Day, they were located in southwestern England, close to the Allied airborne armies.[6]

Although three of the thirty-five Article XV squadrons agreed upon at the Ottawa Air Training conference of May 1942 still remained to be formed, the RCAF did not contribute to this expansion of Transport Command. When, however, in May 1944 the Air Ministry urged Canada to complete its Article XV program through the creation of three more bomber squadrons for No 6 Group – and air minister C.G. Power agreed – the air officer commanding-in-chief of the RCAF Overseas quickly advised Ottawa to reverse its decision. 'Casualties are highest in bombing operations,' Air Marshal L.S. Breadner explained; and although Canada had waged a long and difficult political campaign to secure the formation of No 6 Group, he now thought that fifteen heavy-bomber squadrons were enough. Instead, he recommended the formation of one light-bomber and two transport squadrons. Power deferred to the AOC-in-C, and arrangements were begun to form these units.[7]

As it turned out, however, the RAF's light-bomber program was already complete and Breadner therefore asked that another transport unit be substituted. This was quickly approved in Ottawa and, following discussions with the Air Ministry, it was decided that two of the new squadrons would be formed in India (where there was a desperate need for air lift) and the third in England, as part of No 46 Group in Transport Command. Nine weeks later, on 14 September 1944, advance parties from No 437 Squadron moved to Blakehill Farm, a Nissen-hutted station completed in March 1944 and located near Swindon, about 120 miles due west of London. Because of a recent reorganization within Transport Command which had reduced squadron establishments, thirteen RCAF crews already serving in No 46 Group were available for posting. Without raising the thorny issue of breaking up existing crews, anathema throughout the RAF, all were sent to No 437, where they seem to have

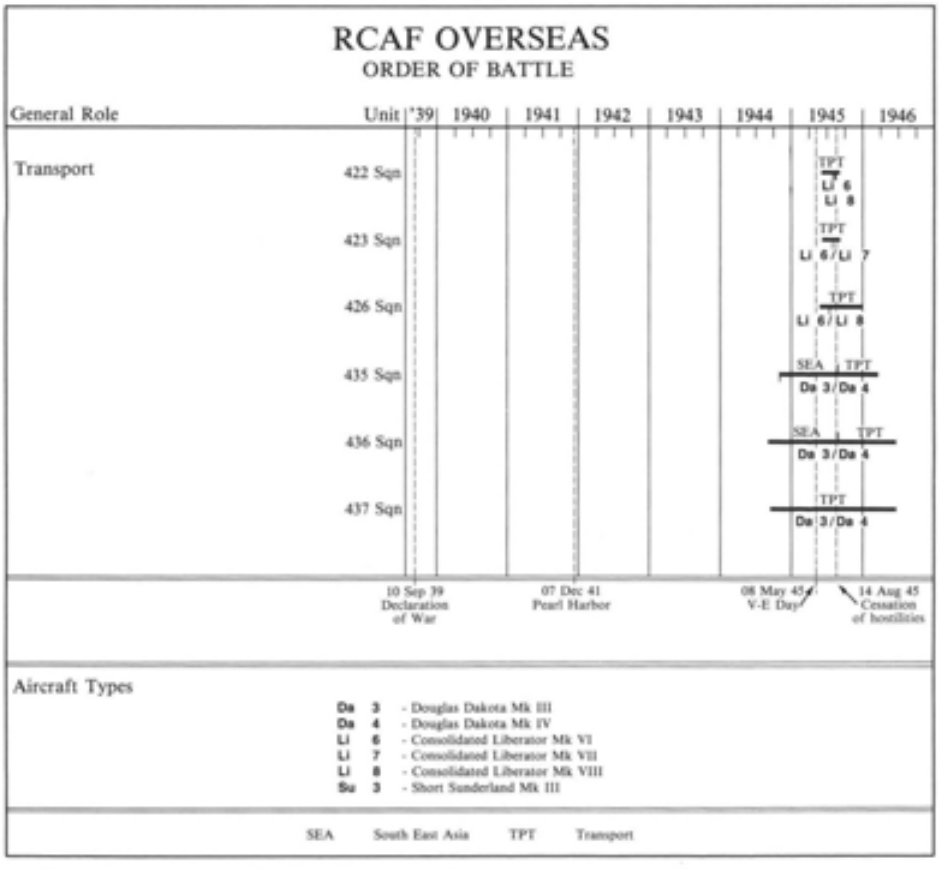
maintained their separate national identity. Although sharing Blakehill Farm with an RAF squadron, one observer noted in March 1945, the Canadians kept to themselves. 'There was the usual cleavage between the RAF and RCAF common to most stations where the S[tation] H[ead]Q[uarters] and one squadron were RAF and [the other] RCAF. There was little mingling in the mess, almost none between the SHQ and the squadron, apparently to their mutual satisfaction.'[8]

The squadron's first commanding officer was also a Canadian, albeit one of the legion of Canadians who had joined the RAF before the war, but he had already applied to transfer to the RCAF. Certainly, no one could question his experience. Wing Commander J.A. Sproule had completed a tour with Bomber Command, served as a navigation instructor with the BCATP in Canada, and then returned to England to join No 24 (Transport) Squadron, which operated 'anywhere between Iceland and China.'[9] Promoted to command No 48 Squadron (one of 437's sister units in No 46 Group), he had towed gliders to the D-Day beachheads and then, in early August, dropped ammunition to the hard-pressed Polish troops holding the mouth of the Falaise 'pocket.'

> KG 421, flown by Wing Commander Sproule, left Down Ampney at 0530 and met very bad weather conditions. With cloud base at 300 ft, Sproule flew low finding his D[rop] Z[one] lit by fires. Enemy gunners found the slow Dakota an easy target and had soon damaged its wings and engines. More enemy fire poured through the windows, hitting the navigator in the shoulder and cutting the second pilot's face. The captain had splinter wounds. First aid was given to the navigator by the wireless operator as the course was set for B14 [Amblie, France]. With the rudder useless the crew tried to maintain course with engine power as the despatcher threw out disposable items … Then another burst of *Flak* hit the batteries. The oil temperature fell, the controls were heating and, although the engines were at maximum revs, the A[ir] S[peed] I[ndicator] showed only 110 mph. Then, the inevitable. The aircraft smashed into the top of a tree. Wing Commander Sproule ordered crash stations before managing a skilful landing on a hilltop west of Jurques.[10]

Awarded the DFC, Sproule had to be hospitalized because of the wounds to his leg, and it was after his release that he took over 437 Squadron.[11]

His new command was also equipped with Dakotas. Compared with the bombers of all types that had heretofore been pressed into service to tow gliders and transport men and equipment, the DC-3s were versatile, efficient, and economical; and despite a few disadvantages (such as a side door too high for easy loading and unloading), they were more than merely adequate for their role. 'A gentler aircraft … has never been made. It is as reliable as a steamship, responds to the slightest pressure on the control column, and even without using the automatic pilot it can be trimmed to such steadiness you can relax almost to sleep.' Dakotas were extremely strong, and, because of their exceptional stability, well suited to airdropping since cargo could easily be shifted and off-loaded in flight.[12]



Of course, as workhorses rather than thoroughbreds, the unarmed and unarmoured Dakotas were slow, and this left them highly vulnerable to both Flak and fighters. Their normal cruising speed of about 160 miles per hour was reduced by one-third when they were towing gliders; and as the glider that No 437 Squadron pilots usually towed – the Horsa – stalled at about ninety miles per hour in level flight, there was little margin for error or mishap. 'The work was as hazardous as any in the air during operations since the Daks tugging their gliders were like sitting ducks for ack-ack batteries, travelling at 110 miles an hour in a straight line from which they could not deviate.' The Horsa itself was 'a biggish aircraft' (in fact, it was approximately the same size as the Dakota and, when fully loaded, not much lighter) and it was 'not an easy aircraft to fly.' On takeoff the glider 'had to be airborne before the tugging plane, a point which required experienced co-operation between the [two] pilots … This was effected via the intercom, the wires of which ran through the silk or nylon towrope.'[13]

The first nine crews to join Sproule at Blakehill Farm arrived just in time to participate in Operation Market Garden, Field Marshal Sir Bernard Montgomery's attempt to secure an early crossing of the Rhine in order to allow the British Second Army to 'penetrate the Ruhr and the northern plains to Berlin.'

It was planned in two parts. In the first, Market, airborne forces were to seize the bridges over the Maas, Waal, and Rhine rivers at Grave, Nijmegen, and Arnhem to prepare the way for Second Army, and it was this action in which No 437 Squadron took part on the morning of 17 September. Wing Commander Sproule and his nine crews, plus two others seconded to him, towed twelve Horsa III gliders containing 146 soldiers of the 1st British Airborne Division together with sixteen bicycles, ten motorcycles, five jeeps, four 'blitz' buggies (jeeps mounting a .50 calibre machine-gun), six trailers, two hand carts, and three wireless sets to the Arnhem area. Happily, they caught the enemy by surprise. 'Our force went in practically unopposed. The Luftwaffe put up no interceptors and except for a few bursts of L[ight] F[lak] from the vicinity of L[anding] Z[one] and at the Dutch coast there was no deterrent offered by the enemy.' All twelve crews released their gliders over the landing zone, which was, unfortunately, too far from the division's prime objective – the Arnhem bridge over the Rhine. The British 'had selected drop and landing zones six to eight miles to the west of Arnhem bridge,' apparently because 'the RAF was reluctant to fly close to the heavy ack-ack near the bridge; thus they would not make a drop there. Furthermore, they wanted to avoid flying over Deelen Airfield several miles north of Arnhem, which was also surrounded by heavy ack-ack.'[14]

There was no longer any prospect of surprise the next day, and opposition stiffened. Although enemy fighter forces again failed to appear, Flak was heavy along the route to the landing zone and the machine flown by Flying Officer J.A. Delahunt 'sustained many perforations due to small arms and L/F fire. One shell burst in a/c just behind long-range tanks,' but all the gliders were released satisfactorily and were seen landing in the allotted zone, and no aircraft were lost.[15]

The Germans were stronger than anticipated on the ground, however, and for the next few days practically all of Transport Command was hauling gliders and supplies to airborne troops fighting to survive until the arrival of XXX (British) Corps which, on 21 September, was still ten miles away. That was the day the Luftwaffe finally became active in the battle area and, having no escorts to protect them, a number of Dakotas fell to Messerschmitts and Focke Wulfs before reaching the drop zone. Those who had run that gauntlet successfully faced devastating fire from the enemy's light Flak as they crossed the drop zone at less than a thousand feet. One young soldier who saw 'another fleet of supply planes [come] over to drop urgently needed ammo and food,' recorded his impressions of what transpired:

> The cold-blooded pluck and heroism of the pilots was quite incredible. They came in in their lumbering … machines at fifteen hundred feet searching for our position … The German gunners were firing at point-blank range, and the supply planes were more or less sitting targets … How those pilots could have gone into it with their eyes open is beyond my imagination … They came along in their unarmed, slow twin-engined Dakotas as regular as clockwork. The greatest tragedy of all, I think, is that hardly any of these supplies reached us.[16]

Five of ten crews sent by No 437 Squadron failed to return, among them that let by Flying Officer G.P. Hagerman, who had tried valiantly to ensure that his supply panniers did land in the right place, making two runs over the drop zone 'despite intense and concentrated *Flak*.' After leaving the target area, however, 'his Dakota was attacked by six enemy aircraft, receiving such extensive damage that the crew had to bail out. Hagerman coolly and courageously remained at the controls until, sure that his companions had left, he jumped,' landing safely behind Allied lines. He was awarded the DFC.[17]

In a bizarre blend of operations and administration, the flights to Arnhem coincided with the formal handover of quarters and offices to the Canadians at Blakehill Farm, and when they were not being shot at by enemy Flak or fighters the aircrew had to take up their share of the domestic chores involved in settling in. On 19 September, for example, those who were not flying 'were busy laying Lino[leum] in the Flight offices.' However, the battle for the Rhine crossing was never far away. Sixteen crews were called upon on 23 September, and the fourteen who made it to the objective (one aborted before takeoff, while another was shot down) delivered 195 panniers despite the inexperience of their dispatchers, 'many of whom were on the job for the first time.'[18]

The dispatchers – or loadmasters – were army engineers whose job it was to ensure secure storage of the supplies and then to push them out over the target on a signal from the pilot. A normal lift consisted of sixteen panniers – heavy wicker baskets carrying an average load of 350 pounds – which 'might consist of almost anything under combat conditions.'

> The panniers were pushed to the door of the aircraft on roller conveyors, the release cord of their parachutes being fastened to a sliding ring on a wire running the length of the cargo compartment. When the aircraft was over the target area (usually 1,000 yards square, with a fifteen-foot white wooden X in the middle) at about 750 feet, the captain turned on the red light over the rear door as a signal to the army despatchers to get ready to discharge the load. A green light flashed on when they were to let the load go. This could be accomplished in as little as twelve seconds. The discharging of airborne cargo could be considerably speeded up if the pilot lifted the nose of the aircraft, thus helping the panniers [to] slide to the rear door, so long as he did not raise it enough to slide them past the door and up the slope to the rear bulkhead![19]

Such precision was not always possible, however, as at least two crews discovered on the 23rd despite the unambiguous marking of the drop zone. A shell exploded under the tail of one Dakota, causing it to dive steeply after only two panniers had been dropped and upsetting the rest of the load so much that the dispatcher was forced to jettison six panniers 'well within our lines' so that he could rearrange the remainder. Another pilot was compelled to take violent evasive action to avoid being hit by the load dropped from an aircraft directly ahead. This caused nine panniers to slip off their rollers, and these had to be brought back to base.[20]

The last bridge to Arnhem proved to be a bridge too far for XXX Corps, and the link-up between ground and airborne forces never took place. Most of the soldiers were killed or taken prisoner. Those few who could do so evaded the enemy by night and slipped away across the Rhine, back to Allied lines. But that was not the end of No 437 Squadron's operations in the area. On the 27th it ferried personnel and equipment of three Hawker Tempest squadrons to the Continent; the next day it evacuated some of the airborne troops who had evaded capture; and on the 29th it carried 330 reinforcements for the Guards Armoured Division.[21]

Having to pause, now, in order to tidy up the rear areas and subsequently rocked by a German counter-offensive in the Ardennes, the Allies were in no position to mount another airborne assault until Operation Varsity in March 1945, when Montgomery's armies finally crossed the Rhine. In the interim, No 437 Squadron – by now four-fifths Canadian in air- and groundcrew – was given rather more routine and less hazardous transport missions hauling freight to, and casualties from, the Continent. The list of crews working on a given day would be posted in the late afternoon of the preceding day. Takeoffs were usually scheduled for early morning, typically 0700 hours, with briefings an hour before in the operations room. There, a huge map of Northwest Europe covered one wall, while blackboards displayed information on the current state of each aircraft, its captain, the load it was assigned, its destination, and schedule. Transport briefings did not usually take long, since crews soon became familiar with most of the destinations and routes they were likely to be assigned. If they were going to a new airfield they would ask about its surface. If it was close to German lines they would want to know about Flak positions. They would listen especially carefully to the meteorologist's forecast, as the weather was always unpredictable.

English winter mornings were often foggy and, if they were unable to take off immediately after the briefing, crews would pass the time playing cards, reading, writing letters, or playing table tennis until the weather cleared sufficiently for them to be on their way. Their Dakotas could safely carry a load of 5000 pounds. They rarely went to the Continent with less, and they always departed fully topped up with fuel so as not to deplete the limited continental stocks. They would usually fly at an altitude of between 1500 and 2000 feet. Landing at their destinations called for caution and vigilance, for wartime airfields had little resemblance to those of today, and crews could rarely be certain how well runways had been repaired, or how badly they had deteriorated, since their last visit. In any event, landings were almost certain to be rough, especially if 'PSP' – pierced steel planking – had been used to lay the runway. Such surfaces were usually uneven and often warped, with the result that 'even the most careful captain sometimes found [that] his aircraft bounced twenty-five feet on the touchdown forcing a go-around for a smoother landing.'[22]

Every effort was made to avoid flying back empty. Often it would be necessary to go to another airfield to pick up the return load, and then deliver it to another base in England before returning to Blakehill Farm; sometimes

that load would consist of casualties – the Dakotas could accommodate a nurse and eighteen stretcher cases, stacked three deep. The cargo they carried was, more often than not, described as 'mixed' or 'various.' In October, for example, besides blood and plasma, they carried 'newspapers, mail, documents, maps, money, rocket projectors, ammunition, phosphorous bombs, clothing, wireless and photographic equipment, machinery, tank tracks, wheels, tractor treads, drop tanks for aircraft, casualties, German prisoners of war, captured enemy bombs and equipment, and even bedsteads!'[23]

On occasion, however, there was an element of 'cloak and dagger' in their work. The entry in the Squadron's Operations Record Book for 1 October 1944 is cryptic but intriguing: 'the load back [from Brussels] consisted of "Special Fluid" which was brought back under armed guard. The fluid was river water, which, it was believed could give the Allies some insight into the progress the Germans were making into atomic research. If they were using the Rhine river or any of its tributaries to cool an atomic reactor, an analysis of water samples might show traces of radioactivity.'[24] There was, of course, no such trace.

Although 'routine,' these operations were often conducted at a hectic pace and involved considerable stress.

> Crews flew long hours and ground personnel performed servicing miracles. In the month of September 1944, they flew 58,153 ton/miles and carried 392 casualties together with 783 other passengers for a total of 337,386 passenger/miles.
>
> During October, their first full calendar month of operations, despite constantly changing groundcrew, serviceability was maintained at eighty-one percent, 171,232 ton/miles were flown, 2,316 passengers were carried on 500,690 passenger miles, and 645 casualties were returned to the UK. Serviceability in November went up to eighty-three percent, 52.1 tons of freight, 1,946 passengers and 577 casualties being transported for totals of 166,575 ton/miles and 707,340 passenger/miles.[25]

The routine ferrying of supplies to France and Belgium was upset in mid-December 1944 when the Germans launched their desperate counter-offensive in the Ardennes – later known as the Battle of the Bulge – slicing through the thinly held American front line, hoping to split the allied Armies and drive through to re-take Antwerp. Transport Command was called upon to join American squadrons in flying emergency missions delivering reinforcements, fuel, ammunition, and other supplies to the front. One of No 437 Squadron's tasks was to assist in moving an American division to the Continent as quickly as possible, but the heavy fog that descended on Blakehill Farm prevented their leaving until 26 December, when seven crews were able to deliver 137 American soldiers to Denain Prouvy in France.[26]

Other crews, meanwhile, continued to haul any and all loads allocated to them. On 24 December, for example, three machines carried 15,104 pounds of Christmas pudding to Antwerp – perhaps not as frivolous as it sounds given the importance of maintaining morale among front-line troops during the battle – while two more delivered 5040 pounds of pudding and a number of musical

instruments to Melsbroek. Then, as the German attack petered out, it was back to routine – but not always uneventful – duty. On New Year's Eve, Flying Officer V.J. Dale was 'shot up by enemy aircraft' while delivering 4800 pounds of 'army freight' to Antwerp. There were no casualties, although the aircraft sustained some damage.[27]

In early February the squadron carried troops to the Continent – 218 on the 9th, 211 the next day, 199 the day after that, and 445 on the 13th – after which steel matting for forward airfields became its stock in trade.[28] Subsequently, on 21 March twenty-six crews flew to Birch, in Essex, to prepare for Operation Varsity, and three days later twenty-four of them towed Horsas to Wesel.

> Their total load consisted of 230 personnel of 1st Ulster Rifles, 13 jeeps and trailers, 2 jeep trailers, 6 jeeps and six pounder guns. 2 handcarts and ammunition, 4 bicycles and two motor-cycles. All aircraft reached the L[anding] Z[one]...and through very thick haze all made successful releases of gliders. Crews on return reported moderate medium and heavy flak over the LZ and Deersfordter-Wald but it was mostly inaccurate. Four aircraft were very slightly damaged. No aircraft were lost ... and all crews returned safe with no casualties.
>
> The weather over the whole route was excellent except for dust and smoke at the LZ ... Operation Varsity took place in the area across the Rhine north of Wesel.[29]

On completion of the lift, the Canadians landed at Nivelles, in Belgium, and stood by for possible resupply flights in support of the units they had helped carry to battle. But the combined ground and air attack had been so successful that further air transport was not required, and on 26 March the crews returned to Blakehill Farm.[30]

The largest single air transport operation of the war took place between 29 April and 7 May – not by Transport Command, however, but rather by elements of the United States and British strategic bombing forces. The objective of Operation Manna was to provide food for the near-starving population of a large part of western Holland still occupied by the Germans and which the Allies, seeking to end the war quickly by moving directly into Germany, intended to bypass. Their own meagre resources ravaged by departing Germans before the enclave was sealed off, the three-million inhabitants were paying a harsh price for Allied successes all around them, although it was probably going too far to suggest – as the International Red Cross did – that the Germans, and 'especially Field Marshal von Rundstedt himself,' were 'planning to starve the Dutch people to death.'[31]

Even prior to the crossing of the Rhine, General Eisenhower had recommended to the Combined Chiefs of Staff that air transport would be the best way to deliver food, at least in the early stages of the relief operation. At first it was envisaged that transport aircraft would play a major role, but the air staff at Supreme Headquarters Allied Expeditionary Force (SHAEF) subsequently concluded that, because transport aircraft were in such demand (and, as the European war wound down, there was less for the heavy bombers to do), the

supply drops would be carried out exclusively by RAF Bomber Command and the US Eighth Air Force.

In late April a truce was arranged between the Allies and the German occupation forces, who, with the end of the war in sight, no doubt found it expedient to cooperate. The formal agreement regarding food delivery, which designated ten drop zones and provided for truck convoys to be admitted into German-occupied territory for further distribution, was not signed until 2 May, but by then relief missions had already begun.[32] The first drops were made on 29 April, at the village of Waardenburg on the river Waal, three miles behind the German front line. 'The riverbank bristled with German anti-aircraft guns and the village was occupied by a detachment of paratroopers,' one of its inhabitants recalled. 'The day was sunny and clear.'

> Around ten o'clock in the morning there was a steady drone of many approaching bombers. When we looked up to the sky, we observed squadron after squadron of Lancasters and Liberators. They flew so low that the pilots were clearly visible. It was a unique moment. For five years, Allied planes had been watched with both hope and fear. This time they carried no bombs. But perhaps the most remarkable fact was that the German guns, which used to greet even single fighter or observation planes with their shells, remained silent. The gunners stood at their usual positions, but their orders were not to fire. Most of them were pale and nervous, and one of them raised his fist to the sky and shouted: 'Those damned things up there.'[33]

No 6 Group played no part. The Canadian contribution to Manna was limited to the marking carried out by the Lancasters of No 405 Squadron, serving with No 8 (Pathfinder) Group on 30 April and on 1, 2, 4, and 5 May at The Hague, and on the 7th at Rotterdam.

Although there was no enemy opposition – indeed, the extent of German cooperation must have seemed strange to bomber crews fresh from recent raids on Berchtesgaden and Wangerrooge – the marking was on occasion inexplicably bad. On 30 April, for example, one No 405 Squadron crew reported: 'Dropped TIs at 1650.2 hrs. Rain and snow squalls. Visibility very bad at times. Marking was scattered, approximately 400 yards overshoot.' The next day the markers also fell 400 to 500 yards beyond the white cross laid out on a race-course as their target, with one aircraft reporting a 'load of groceries dropped on markers.' And on the 4th, of three aircraft detailed, one dropped its markers 'near the Gas Works, approximately five miles south of the Dropping Zone, after the 'bomb doors were opened due to possible electric failure; another brought its markers back to base after they had hung up; and the third dropped its markers from 350 feet into a small wood, overshooting the white cross by approximately 450 yards. Several bundles of supplies were seen falling onto the race-track. On the 5th, three Canadian crews dropped their markers 450 yards past the target and observed other target indicators burning a thousand yards east of it and still others half a mile to the north. Indeed, it was only on the 7th, at Rotterdam, that things went exactly according to plan. In good weather and clear visibility, eight crews dropped their

indicators from 350 feet 'just overshooting the White Cross … Early supplies seen dropping were well placed in the field around the White Cross.' That marked the end of Manna.[34]

By then British and American heavy bombers were engaged in another task very different from the one they had been designed and produced to perform. By late April, hundreds of prisoners of war (POWs) freed by the Allied advance had arrived at Brussels and a plan for their evacuation by air, prepared by SHAEF in March, was put into effect. This time the Dakotas of Transport Command, including those of No 437 Squadron, would also be heavily involved. However, air evacuation of POWs was just one of a number of 'non-operational' tasks to be carried out by Transport Command during Operation Eclipse, the 'military continuation of OVERLORD from the moment of … surrender until control in Germany is taken over from the Supreme Commander by the Tripartite Government or by separate United States and British Commanders.' Others included moving scientists and intelligence officers and their equipment to those places in Germany where their particular skills were needed; supplying scheduled and emergency requirements to ground and air forces advancing into Germany; providing an air courier service; delivering emergency supplies of food and medicine to POWs; and 'any other Air Lift' tasks not previously envisaged and arising out of Eclipse conditions.[35]

To carry out these various missions, SHAEF planners intended to employ as many heavy bomber and transport aircraft as could be provided by the US Strategic Air Forces, RAF Bomber Command, and the Combined Air Transport Operations Room at SHAEF, which coordinated transport operations. In round figures they anticipated that, subject to operational requirements, there could be as many as 1800 B-17 and B-24 aircraft, 1000 Lancasters and Halifaxes, and 1400 transport aircraft available.[36] Because of all these commitments, SHAEF intended that air evacuation 'should supplement rather than supplant other methods of moving POWs out of GERMANY.' Even so, it was an enormous undertaking. There were over a million former prisoners of war to be repatriated from POW camps that were scattered throughout the Reich, often in thinly populated areas many miles from the nearest airfield. Moreover, with the recent Russian advances, large numbers of POWs were being moved westward by the Germans along with even larger numbers of foreign workers, displaced persons, and refugees making their own way to the west.

All this suggested the need for a heavy commitment of transport aircraft. In the early stages of Eclipse, however, there would be limited fuel stocks at forward airfields, and until they could be built up SHAEF planned to employ heavy bombers for the task because they could fly from England deep into Germany and return with a load of POWs without refuelling. But heavy bombers required hard runways of not less than 5000 feet for takeoffs and landings, and most of the airfields in Germany that were receiving POWs simply did not meet this requirement. As a result, Dakotas were required to transport the former prisoners from the smaller airfields to the larger ones from which the heavy bombers could operate.[37]

Bomber Command flew its first POWs back to England on 26 April, when forty-four Lancasters were dispatched for that purpose. The evacuation of POWs then became a regular commitment until 1 June, by which time the Lancasters and Halifaxes of Bomber Command (including No 6 (RCAF) Group) had carried some 75,000 men back to England.[38] In the meantime, the equally sterling efforts of Transport Command's Dakota crews had gone relatively unnoticed. Yet, they, too, had been transporting POWs to England, or from one European airfield to another, in impressive numbers, demonstrating in the process the great versatility of the Dakota. On 13 May, for example, four crews from No 437 Squadron delivered 20,000 pounds of fuel to the German town of Rheine and then returned to England with a total of forty-seven ex-POWs picked up on the way back at Limbourg, Aachen, and Brussels.[39]

> In the middle of the month eighteen of [No 437's] Daks set an amazing record. In two days (April 17th and 18th) these aircraft transported 205,000 pounds of petrol and M.T [Motor Transport] fuel, 80,000 pounds of ammunition, 681 liberated prisoners of war, seventy-six casualties and two passengers in the most incredible flying time of 310 hours and twenty-five minutes. This was accomplished between 0900 hours one day and slightly after midnight the following day. One crew…in thirty seven hours and thirty minutes elapsed time spent exactly twenty-one hours in the air on twelve shifts.[40]

On 7 May 1945 No 437 Squadron moved from Blakehill Farm to Nivelles in Belgium. Although its arrival there coincided with the end of the war in Europe, the squadron's work was not over. 'From dawn to near midnight became a common schedule, doing two lifts a day between Brussels and up near Hamburg, with long pauses at each stop. The urgent task at hand was hauling out ex-POWs and taking in supplies of all kinds, from twenty-five pounder ammo, to petrol and blood plasma. The strain was wearing, especially on one crew which did 163 hours flying in one month … only to read in the London papers how "RAF Lancasters" had flown home so many thousands of ex-POWs. That, they proclaimed loudly, was too much!'[41] By the middle of June, the Squadron (now flying out of Melsbroek) had transported nearly 20,000 Allied POWs, either from Europe to England or, more often, from one location in Europe to another, as well as substantial numbers of displaced Allied civilians. They had also carried high-ranking enemy officers and prominent German scientists to Britain. During July the squadron helped to prepare for the 'Big Three' conference in Berlin by ferrying stores to Germany and then carrying a considerable number of VIPs, including British foreign secretary Anthony Eden and General Sir Miles Dempsey, until recently the commander of Second British Army and soon to be the commander of Allied Land Forces in Southeast Asia.[42]

On 17 July No 437 Squadron extended its reach to Oslo, Norway, where a small detachment maintained a regular schedule between that city, Stavanger, and Bardufoss for several months. On 1 August another detachment was established at Odiham, in Hampshire, to operate between that place and Athens, Rome, Naples, Vienna, Marseilles, Oslo, Copenhagen, and Paris. In

September Wing Commander Sproule was replaced by Wing Commander A.R. Holmes and the main body of the squadron moved from Melsbroek to nearby Evère, where it stayed until the middle of November. It then returned to England – to Odiham – whence it continued to operate until the spring of 1946. Operations ceased at the end of May. Two weeks later fifteen of the squadron's Dakotas left Odiham to fly back to Canada where, in July 1946, the unit was disbanded.[43]

Apart, perhaps, from its involvement in the airborne operations conducted on D-Day, the contribution of Transport Command was never critical in determining the outcome of the campaign in Northwest Europe: Market Garden failed because XXX Corps could not advance quickly enough from Nijmegen to Arnhem; the German offensive in the Ardennes was pinched out primarily by American ground forces; and Varsity, the February 1945 Rhine crossing, went so smoothly that its airborne component was almost incidental to its success. For the most part, moreover, overland logistical support to the Allied formations at the front was never an unsurmountable problem.

That was not the case in Southeast Asia where, after their brilliant early victories, the Japanese outreached themselves logistically despite their spartan requirements – which were impossibly meagre by European standards. Advancing over the uncompromisingly tough terrain of central and northern Burma (where all-weather roads and railways were inadequate, or did not exist at all) in order to cut Allied supply lines to southern China, the Japanese Fifteenth Army by June 1944 was disintegrating from hunger and disease following its repulses in battle at Kohima and Imphal.

The Anglo-Indian Fourteenth Army of Lieutenant General William Slim could now take the offensive, but what the Japanese had tried and failed to do, the Allied chiefs of staff were reluctant to attempt. 'The problem of maintenance along an ever lengthening and tenuous line of communications render a campaign based on [an] overland advance unrealistic,' the joint staff planners had cautioned in October 1943, while 'logistical considerations alone preclude the possibility of advancing very far into central Burma' from Bengal. If Slim was to seize the moment and drive his weakened opponent back on Rangoon, he could only do so with air supply on a massive scale – particularly if the fighting continued into the 1945 monsoon season, which would begin in May.[44]

Fourteenth Army, however, could not count on all the Allied transport aircraft in the India-Burma theatre. Although Prime Minister Churchill desperately wanted a victory there to restore imperial prestige (and to ensure that British possessions in Asia were liberated by British troops), the Americans were involved in Burma primarily to reopen the supply road to Chiang Kai-shek's Kuomintang armies in China. The proposed campaign to liberate southern Burma, while not to be denied, was of only subsidiary interest to them. Take all of Burma at the earliest possible date, the combined chiefs of staff directed Lord Louis Mountbatten, the Allied supreme commander in Southeast Asia, but not to the point of prejudicing the security of existing air supply routes to China including the all-important air staging post at Myitkyina, just

under two hundred miles north and east of Imphal.* Most of the 700 transport aircraft in the theatre, then, were employed exclusively in supplying the Chinese, flying over the Himalayan 'hump.'[45]

Indeed, Slim could not even count on all 252 transport aircraft made available to him for the defence of Kohima and Imphal in the spring of 1944. Of these, fully ninety (from one RAF and six USAAF squadrons) had been provided on loan from the Middle East and were withdrawn in early June, so that by mid-month, despite the arrival of three new American combat cargo groups and one US transport squadron, only 191 remained on call to Fourteenth Army – a number that would fall to 166 in August. Accordingly, Air Marshal Breadner's offer to form two RCAF transport squadrons in Southeast Asia Command (SEAC) was understandably welcome – so much so that in August the air commander, Sir Richard Peirse, observed that 'operations this coming winter [would] depend entirely on prompt arrival of 435 and 436 RCAF squadrons and their being operationally ready during October and December respectively.'[46]

In fact, British hopes had almost been dashed earlier in the summer when a Canadian air liaison mission to India, headed by Air Vice-Marshal L.F. Stevenson, had argued that because of climatic conditions and the difficulty of dealing with the Indian government, the RCAF should reconsider its intention to commit squadrons to Southeast Asia. For his part, air minister Power was insisting that if the two squadrons were dispatched, they should operate as a Canadian wing, perhaps at an RCAF station.[47]

A compromise was soon arrived at, however, which resolved both these problems. When the Air Ministry indicated that the Canadian squadrons could be withdrawn from the theatre when the war in Europe ended, even if the war against Japan continued (thereby obviating Stevenson's concerns about a long-term commitment), the Canadian minister agreed that it would be impractical to establish a separate RCAF command structure on such a short-term and temporary basis. At the same time, Power insisted that Canadians fill vacancies on the Transport Command staffs in Southeast Asia. 'Unless we obtain experience in this manner,' he argued, 'the Air Ministry may raise objection to the operation of RCAF group later.' By May 1945 twenty-three Canadian officers were serving in No 229 (Transport) Group headquarters.[48]

Because of the urgent need, the formation of 435 and 436 Squadrons proceeded more rapidly than that of No 437. Seventy-six complete crews (out of a total establishment of eighty) were shipped from Canada to Chaklala, near Rawalpindi, in northwest India, by the end of September, to begin their transport conversion there. The groundcrews, numbering almost six hundred, sailed to Britain from Canada on 30 August and were then flown to India in late September and early October. Once training was complete, it was hoped that both squadrons would be operational at RAF station Gujrat, near Lahore, by 1 November. The commanding officers both had considerable experience. Wing Commander T.P. Harnett had left the non-permanent RCAF to join the RAF in

* The combined chiefs reiterated this message at the Octagon Conference, held at Quebec City in September 1944, and again at Argonaut, held at Malta in February 1945.

November 1938 and had served with the night-fighters of No 219 Squadron during the Battle of Britain before a posting to Coastal Command. He transferred to the RCAF in November 1944. Wing Commander R.A. Gordon was a veteran of convoy escort, anti-submarine, and anti-shipping operations in the Home War Establishment.[49]

It took longer than anticipated for the two units to work themselves into shape. Part of the problem was purely administrative. For some reason No 233 Group, responsible for administration at Gujrat, was not told of its pending arrival there until 20 September, and no provision had been made for it at the unoccupied and sadly neglected station. The buildings, largely brick and mud and only two years old, had suffered greatly during the previous monsoon and were teeming with white ants and scorpions. Not surprisingly, disease (including malaria, hepatitis, dysentery, and sandfly fever) was also a problem, especially among men unaccustomed to the Indian climate (and water), yet the medical facilities and stores were so deficient that members of the Canadian air liaison mission left their own supplies behind when they departed after a visit on 25 October.[50]

In addition, the Dakotas assigned to the two squadrons required substantial modification, including the installation of non-skid floors and American-pattern parachute racks. But the slow arrival of conversion kits and US tools – virtually none of the facilities or equipment for aircraft maintenance were available in the first few weeks – the late arrival of the required technical officers, and the fact that Gujrat, built as a fighter base, did not have the appropriate hangars and dispersal points, hampered efforts to put things right. Even so, using the British station at Lahore as its fuel and servicing base, No 435 Squadron managed to carry out its first formation flying before the end of October. Not, it must be added, without risk. 'At Gujrat,' the squadron diary observed, 'our flying control consists of the adjutant sitting hopefully in a 3 ton truck with a 15 cwt [light truck] used as a mock-up crash tender. But, alas, we have no crash equipment or fire equipment to put on it.'[51]

Anxious to 'enhance [the RCAF's] reputation' in Southeast Asia, Wing Commander D.C.S. MacDonald, DFC, the RCAF liaison officer* at No 229 Group who was also acting station commander at Gujrat, brought 'heavy pressure to bear' to have the two squadrons declared operational at the earliest possible date, and in the first two weeks of November they completed 1500 hours of flying training. Previously, during their three-week conversion course at Chaklala, they had concentrated on supply dropping and on training their wireless operator/air gunners as jumpmasters and dispatchers. Now, during squadron training at Gujrat, they emphasized formation flying, cross-country

* RCAF liaison officers served on the staffs of most RAF home commands and of some overseas groups and wings. Their job was to strengthen the Canadian (and RCAF) presence in the administrative echelons in these theatres and to ensure, so far as possible, that RCAF policies regarding postings, promotions, and pay were adhered to in the case of the many RCAF personnel serving in RAF units. They also took care of 'good and welfare' problems such as the delivery of mail. There were, in addition, RCAF District Headquarters at seven locations in Britain as well as in the Middle East and Southeast Asia.

navigation, glider-towing, and troop and supply dropping; and on 17 November seven aircraft of No 436 Squadron, flying in a formation led by Wing Commander Gordon, para-dropped full loads of twenty soldiers and their equipment, as well as six 300-pound containers which had been slung under the belly of the aircraft.[52]

That was a considerable achievement for a group of aircrew who, in contravention of normal practice, had not been employed on 'airline and ferry work for a period of climatization and experience in local conditions before reporting to a front-line Transport Squadron.' Before the end of the month, the two units had accomplished even more. Initially through 'scrounging,' but then as spares began to arrive, they were able to complete the modifications and maintenance required on their machines and put all they had into the air at once: twenty for No 435 and fifteen for No 436. This despite the fact that there were no hangars or any form of maintenance shelters at Gujrat.[53]

Thirty-five Dakotas represented a considerable increase in airlift capacity for Southeast Asia Command where, on 23 November, excluding its two Canadian units, there were still only one Hudson/Warwick and five other Dakota squadrons from Commonwealth air forces. Each Dakota could carry a 7000-pound cabin payload, and in Southeast Asia these ranged from mules to howitzers, jeeps to medical stores or fuel, bagged rice to boxed ammunition. Carrying gasoline was particularly hazardous over the mountains of India and Burma, as the vapour in the 55-gallon drums expanded at altitude and occasionally cracked them, resulting in a scramble to find the leaking container and heave it out the cargo door. Meanwhile, the Dakota's exceptional stability, which allowed crews to shift and off-load cargo while in flight without upsetting its balance, was a particularly valuable characteristic in Burma, where most dropping was done at low speeds and altitudes.[54]

Early in December 1944, having driven the battered enemy from Imphal, the capital of the Indian province of Manipur, Fourteenth Army crossed the Chindwin and prepared to move on Mandalay. Sir William Slim (he was knighted on 15 December 1944) and Lord Louis Mountbatten were determined to take Rangoon, the Burmese capital which lay some 350 miles to the southeast, before the monsoon began because they doubted whether the army could be kept adequately supplied by land or air from northern Burma once the rains began. But when three American transport squadrons were diverted to China to meet a Japanese offensive there, Slim began to despair that his overland approach would not succeed in time: 'a firm allotment of air lift,' one of the foundations 'on which all our plans had been made, was swept away.' Partly for this reason, Mountbatten continued pressing for approval of an amphibious assault against Rangoon.[55]

It was at this vital juncture that Nos 435 and 436 Squadrons became operational, initially helping to move the groundcrew and equipment of RAF fighter squadrons forward to Imphal. Then, on 15 December, No 435 Squadron was ordered to Tulihal, in the Imphal valley (with No 436 assisting in its move) to support Slim's advance on Shwebo, a railway junction twenty miles north of Mandalay. The Canadians arrived at Tulihal on 19 December to find that once

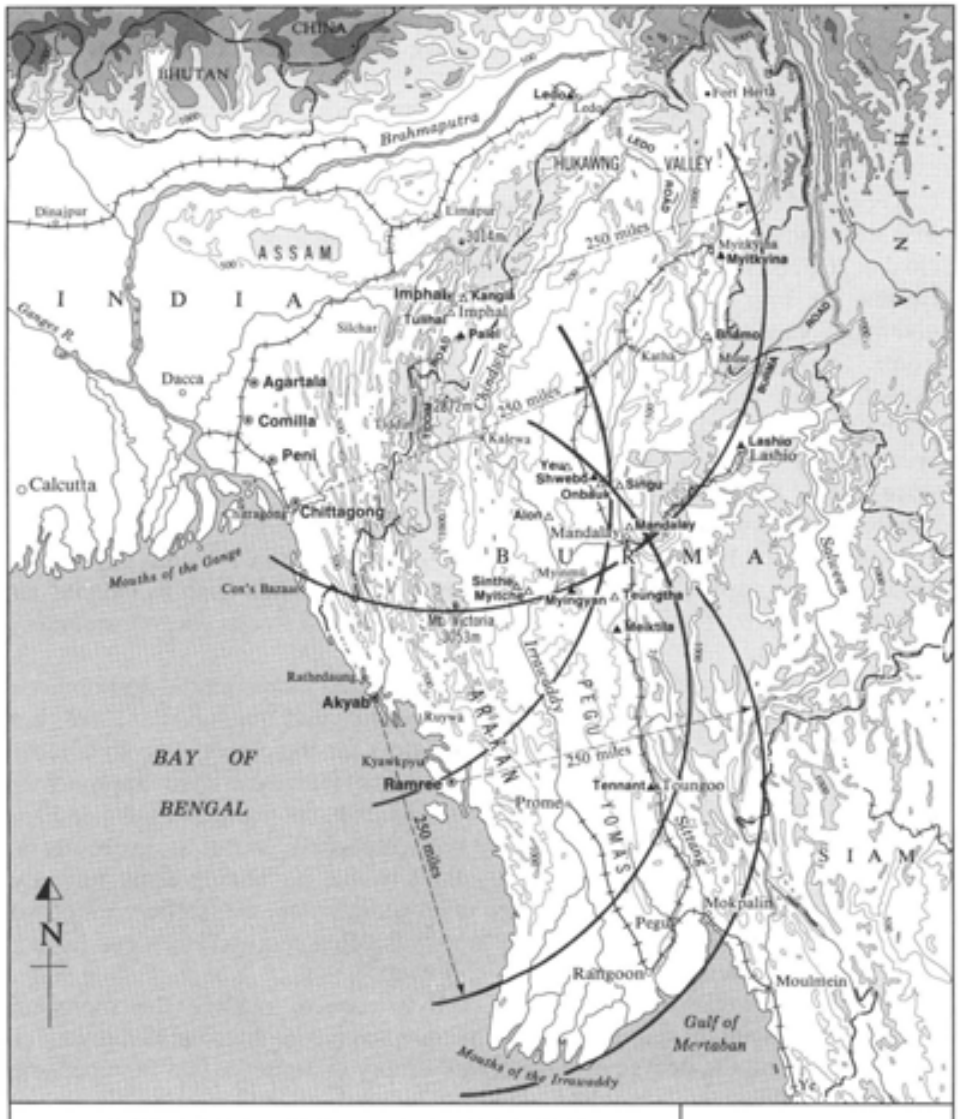
again virtually no preparations had been made for them. While reporting to a joint Anglo-American Combat Cargo Task Force for operations, for administrative and logistical support they came under three widely scattered RAF groups – No 229 at Delhi, No 221 at Imphal, and No 224 at Chitagong – and that, naturally enough, produced chaos. Although the situation gradually improved, the tangle was undone only in April 1945, with the formation of No 232 Group at Comilla, which took over responsibility for all such support.[56]

At Tulahil, in late December, the squadron was eating hard rations and living and sleeping in the open. 'The mechanics had to use flashlights and coins to remove cowlings and with make-shift tools accomplished the impossible.'[57] There were no first-aid or jungle survival kits and, since there were no refuelling trucks, all gasoline had to be pumped by hand. Nevertheless, on 19 December, the day he arrived, Wing Commander Harnett was informed that a maximum effort would be required the next day. Borrowing the necessary equipment (the neighbouring USAAF squadrons were particularly helpful), on 20 December nine aircraft were able to mount fifteen sorties in support of the Fourteenth Army.[58] Five days later, fifteen crews flew thirty-one sorties.[59] The Dakotas had an economical range of 250 miles. (Greater ranges reduced both the payload and the number of sorties that they could carry out in one day.)

The administrative arrangements for No 436 Squadron's arrival in the Imphal valley, at Kangla on 6 January 1945, were scarcely better than they had been for No 435's at Tulihal. A water shortage was partly solved by flying in a 200-gallon tank from 435 Squadron's thin resources, but there was insufficient permanent accommodation and there were not enough tents. The squadron motor transport had to be collected at Comilla, north of Chittagong in India, and driven in – a punishing two-week task for drivers and vehicles. Although the bulk of the squadron only arrived on the 14th, it began operations the next day, when seven aircraft flew seventeen sorties landing, para- and free-dropping supplies at Shwebo.[60]

The arrival of the Canadian squadrons at Imphal (together with the unexpectedly quick return from China of two of the American squadrons in February) meant that Slim would have 'sufficient carrying capacity to meet all requirements' – providing that the aircraft could operate within their economical range of 250 miles – to start his overland advance on Rangoon. Nevertheless, it was soon found that the sustained flying rate for each machine had to be raised from 100 hours a month to 125 hours, and the intensive rate to 185 hours. In the event, most squadrons flew at or over the intensive rates for months at a time despite the obvious risks and the additional burden on the maintenance staff in ensuring that the overworked Dakotas remained safe to fly.[61]

The crews, too, were under stress. For one thing, rumours were rife in No 435 Squadron that Breadner now thought that the formation of the two transport squadrons in India had been a mistake; and his unexplained failure to visit the unit on 8 January 1945 during his tour of India simply aggravated the situation. The stories were not entirely unfounded, as on 27 January the government would again attempt to withdraw the squadrons from Burma. It only reluctant-



435 AND 436 SQUADRONS OPERATIONS

OCTOBER 1944 - SEPTEMBER 1945

0 100 200 300 400 mi
0 100 200 300 400 500 600 km

Bases ⊕
Airfield - All weather ▲
Airfield - Fairweather △
Airstrip ■

METRES	FEET
5000	16404
3000	9843
1000	3281
0	0

ly accepted the advice of the CAS in Ottawa, Air Marshal Robert Leckie, and the Air Ministry that, given the uncertainty of American commitments, such a move would be a mistake – receiving, in return, a reaffirmation of the promise that the two units would be withdrawn when the war in Europe had ended. (Breadner, nevertheless, promised No 436 Squadron, which he did visit, repatriation after three years of overseas service.)[62]

Another reason – and this applied to both squadrons – was that operations from Imphal were not easy. Lying in a deep valley, and with two steep, jungle-cloaked ridges between it and the Chindwin River and the plains of central Burma, the Imphal area was no place to have an accident – always a threat given the sudden changes in cloud cover and rapid development of storm fronts. The Canadians had to adjust the flying techniques learned so laboriously over the plains and in the relatively quiet skies of northwestern India. Instead of flying in formation, which had taken up so much practice time in India, operations in Burma were usually undertaken by single aircraft or small flights, since neither the airfields, drop zones, or loading and unloading facilities could handle many aircraft at a time. Moreover, the closely timed troop-dropping exercises, which had formed a major part of the squadron's training, were not used until the capture of Rangoon because Slim did not wish to expend air resources in such operations. Air supply of his ground forces was considerably more important.[63]

The preferred method of delivering cargo was the conventional and obvious one of landing at one of the forward landing strips and unloading it there; but this method was not always the easiest or safest for the crews, who invariably found these strips small and rough, and often with restricted approaches. Landing with heavy loads frequently resulted in burst tires, and the need for steep approaches and takeoffs subjected both pilots and aircraft to severe stress. Many of the airfields had been hastily built by the advancing army for only temporary use and they usually lacked even rudimentary air traffic control, so that the crew of the first machine to land was often required to serve in that capacity for the benefit of those who followed.[64]

Although flying weather was generally excellent outside the monsoon season, dust clouds rising to 300 feet were a severe problem at a number of the airfields; and the degree of hazard was simply increased when they became congested with aircraft circling, landing, unloading, and taking off again, always in sweltering heat and sometimes under threat of Japanese air and ground attack. Since crews could not count on much assistance from people on the ground, in the end they determined the speed of turn-around themselves. The Canadian squadrons reported usual turn-around times of ten minutes, although off-loading four-gallon jerricans of fuel took up to thirty minutes.[65]

When landing was impracticable, loads were free- or para-dropped. However, because of the lead time required and the army's speed of advance, the location of drop-zones was usually predicted rather than fixed and, as they were often poorly marked or obscured, they were not easy to find. Once over the drop zone, pilots normally circled it eight to ten times (and sometimes more) as over six thousand pounds of cargo had to be moved to the door and

pushed out by three or four men in carefully timed bursts of ten to fifteen seconds. When the drop zones were close to the front line, as they often had to be, the Dakotas, circling at minimum speed no more than six hundred feet above the ground (and often much lower as free drops were carried out at the lowest possible altitude), were exceptionally vulnerable to enemy ground fire. Furthermore, nearby hills or adjacent drop zones, with their circuiting aircraft, often hampered delivery as the pilot had to find space for a straight run over his drop zone and still have room to circle. To prevent cargo being lost to the enemy or to the exuberant jungle, accuracy was vital, particularly in the case of free drops where crew inexperience could easily cut the recovery rate in half.[66]

Despite its many sterling qualities, the Dakota was not entirely suited to these operations. The main shortcoming was that, when fully loaded, it could not successfully complete a takeoff or landing if one engine failed. The extreme heat in India and Burma further reduced single-engine capability and, under some conditions, even a machine already in flight could not maintain altitude on one engine unless its load was lightened by jettisoning the cargo very quickly. There were compensations, however. The aircraft could take a lot of punishment from ground fire and, if it crashed, its rugged construction added considerably to the crew's chances of survival.[67]

Groundcrew worked in trying conditions of heat and humidity, servicing machines without adequate heavy equipment but maintaining a high rate of serviceability on aircraft which were consistently flown at, or over, the recommended intensive rate – and in very rough service. When, as was inevitable, an aircraft was grounded by mechanical problems at a forward strip, groundcrew were flown in and, if necessary, remained with the aircraft overnight to effect repairs. Groundcrew also played an important role in the actual conduct of air operations. In both squadrons they volunteered to act as 'kickers' in ejecting the cargo over the drop zones. This was hard, uncomfortable, and sometimes dangerous work. Many accumulated hundreds of hours of flying time and some were killed in action.[68]

Air transport relied heavily on a substantial degree of air superiority, particularly over the forward areas where the transports were concentrated and most vulnerable. Although it was provided with 'knock-out' rifle holes in the windows, the Dakota was virtually defenceless against fighter attack, and a crew's only hope of survival lay in evasion. The basic tactic was to get the slow, ponderous machine as low as possible as quickly as possible, thereby limiting the surfaces exposed to enemy fire and forcing an attacker to pull out of his dive early. As the attacker approached effective range – 500 to 1000 yards – a steep turn towards it would, with luck, cause the much faster fighter to overshoot, with few effective rounds fired. But a Dakota stood little chance against a determined or numerically superior enemy; and despite the overall air superiority enjoyed by the Allies during 1945 – in December 1944 they had 650 fighters in Southeast Asia, while the Japanese 5th Air Division in Burma, now being left to wither on the vine, had sixty-six, a figure that fell to fifty by April – the enemy was still capable of some offensive action, particularly if it

concentrated on the air transports. In spite of this threat, however, the nearly four hundred Allied transport aircraft operating all over Burma (five hundred by May) usually flew unescorted because there were simply too few fighters available to escort them; ground support for the army and attacks on the enemy's airfields had priority.[69]

The Japanese preferred to use their diminishing air power in direct support of their own land forces rather than to interdict Allied air supply. On 11 January, however, No 435 Squadron was told that a number of enemy fighters had been moved up to the forward area, and the next day five of its Dakotas flying over Shwebo were attacked by an uncertain* number of 'Oscars' (Nakajima Ki 43s). This attack lasted only ten minutes but left two Dakotas destroyed and one damaged, and killed six aircrew. Indeed, the losses might have been higher except that the Japanese had been attacking ground targets and engaged the Canadian aircraft only after completing their primary mission and expending most of their ammunition.[70]

Flight Lieutenant H. Coons, in command of a flight which was circuiting at four hundred feet over a drop zone, first spotted the Japanese aircraft and broadcast a warning as he dived for the tree tops. His aircraft was attacked five times, and on the fifth pass it lost four feet of wing tip when it hit a tree during the evasion turn. A groundcrew 'kicker,' Corporal A.M. White, was injured, but the aircraft returned safely to base. Another Dakota was shot down on its first pass, with only one survivor who was thrown clear of the aircraft on impact. Flight Lieutenant R.P. Simpson (the only RAF aircraft captain in the squadron) was shot down with a full load of ammunition, but despite fire in the cargo he was able to crash-land and evacuate his crew – although one of them later died of cannon-shell wounds. A fourth machine was able to avoid the enemy by violent corkscrewing, while a fifth, alerted by Coons's warning, landed at a nearby strip. Its crew assisted the rescue party which went to the scene of Simpson's crash. For their skill and courage, Coons received a Bar to his DFC and Simpson the DFC.[71]

The Canadians modified their tactics following this episode, ordering pilots to fly at tree-top level and, in the case of No 435 Squadron, to set back the flying day so that it started at noon and ended fifteen hours later in order to take advantage of the darkness. Soon, however, the Japanese air forces were less of a concern. Concluding that their forward air bases had become untenable because of Allied pressure, and needing to strengthen their forces in the Pacific, where the Americans had already liberated much of the Philippines and were preparing to take Iwo Jima, they ordered most of their fighter units from Burma, and by the end of January No 435 Squadron was again flying by day.[72]

Meanwhile, on 14–15 January 1945, Slim's troops had established the first bridgeheads across the Irrawaddy River, forty miles north of Mandalay and

* Estimates of the number of fighters attacking the transports ranged from a low of five to a high of twelve; thirty had attacked the airfield at Shwebo and twelve at Onbauk, where they destroyed four Dakotas on the ground.

fifteen miles east of Shwebo. The enemy fought bitterly to pinch these out, and No 435 Squadron was called upon to drop supplies to hard-pressed Gurkhas holding forward positions near Kyaukmyaung. The first Canadian aircraft to cross the Irrawaddy in support of ground forces was flown by Warrant Officer F.M. Smith on 23 January. Because of the drop zone's location, Smith was required to circle in part over Japanese lines subject to light but effective ground fire. A groundcrew 'kicker,' Sergeant N. Jarjour, was hit on the third circuit and, after two more circuits, Smith flew him to a field hospital at Shwebo. He then returned and dropped the remainder of his load on the river bank, farther from the front line. The pilots on these missions endeavoured to make their dropping runs from south to north, so that if their aircraft was hit by ground fire – some were – and an engine put out of commission, they could glide back over the river to British territory. Strangely, however, although both Canadian squadrons were flying in the same general vicinity, crews from No 436 did not come under enemy fire at this time, from either the ground or the air.[73]

The requirement to support forward units as well as to build up reserves at Shwebo meant that all transport units were extremely busy in January. The average round trip from the Imphal valley to the front took between two and three hours and, if there were no delays in loading and unloading, crews could put in three sorties each day. On 20 January No 436 Squadron reported that it had topped all RAF transport squadrons with a lift of 145 tons – a figure the squadron exceeded in the final days of the month – and over one two-week period it lifted 2500 tons of cargo and 735 passengers in 2087 tactical hours. No 435 was only marginally less busy. This hectic pace continued into early February, when the latter was primarily engaged in flying the 'milk run' from Imphal to Shwebo. On one occasion, crews counted fifty transport aircraft on the ground at Shwebo, with another ten in the landing circuit. It is testimony both to the Dakota's reliability and to the hard work and improvisation of the groundcrews that, despite parts and tool shortages, serviceability was still being maintained near 90 per cent in both squadrons. Slim was amazed, commenting that 'the heroes of this time were the men who kept the wheels turning and the wings flying.'[74]

Among the latter he should, perhaps, have included the navigators as well. Radio beacons in Burma were often unreliable and it was relatively easy to get lost, particularly at night or in heavy cloud. On 7 February 1945, for example, Squadron Leader R.L. Denison of No 436 Squadron spent two hours trying to contact his base, receiving 'nothing encouraging' until his port engine began to fail. Deciding, with his navigator, that they must be somewhere near Imphal, Denison let down through a hole in the clouds only to find himself 'surrounded by a black void, [with] only one brush fire visible.' With no other reference points to go by, and as their radar screen was now a blank, Denison decided that his crew would have to bail out, and he therefore climbed to a safe height to give them a chance. Once they had jumped, he 'trimmed the aircraft for one engine, left the controls and after considerable difficulty managed to capture the chest pack but could not get hold of my jungle kit as the aircraft had

commenced a deep spiral dive. I managed to crawl out the door about a minute to a minute and a half after the others had left.' Fortunately, they had been over British territory and the villagers where most of the crew landed were friendly. Denison himself, however, came down in the Chindwin and had to swim to shore. After spending a night on the river bank, he too was found by a friendly Burmese and eventually reunited with his crew.[75]

In part because of air supply, the bridgeheads across the Irrawaddy held and the Allied forces in the north began their move down to Mandalay. 'We rumbled down the cattle tracks in the heavy dust,' Major John Masters, a British Gurkha officer, recalled, past stands of jungle where the crackle of small-arms fire showed that we had caught some Japanese.'

> The tank treads clanked through villages blazing in huge yellow and scarlet conflagrations, palm and bamboo exploding like artillery, gray-green tanks squatting in the paddy round the back ... We passed the twenty-five-pounder gun-how[itzer]s ... bounding and roaring in a score of clearings, hurling their shells far ahead into yet another village. Tanks again, the troops that had cleared the village back there, rumbling on, twenty Gurkhas clinging to the superstructures. Infantry, trudging along the sides of the road, plastered with dust and sweat ... the mules of the mountain artillery ... Japanese sprawled in the road ... their chests blown in, some by tank shells, some by suicide ... The light hung sullen and dark over all, smoke rose in vast writhing pillars from a dozen burning villages, and spread and joined to make a gloomy roof above us. Every village held some Japanese, every Japanese fought to the death, but they were becoming less and less organized.[76]

Additional crossings of the Irrawaddy were made farther to the south in early February, with the road and rail centres of Meiktila and Thazi as their objectives. When these had been secured, the way to Rangoon would be open. But the farther his 300,000 men marched from Imphal, the more Slim doubted whether the air forces could continue to provide them with the nine-tenths of their supplies upon which they relied and on which further advances depended. He had already been putting heavy demands on the fourteen transport squadrons now assigned to his army – eight American, four RAF (with 225 Canadian air crew), and two RCAF – and he realized that 'the administrative side of the battle began to look more like a gamble' than he relished. It was a question, essentially, of economical range – too much fuel had to be carried for the Dakotas' round trips between Imphal and the south – and of wear and tear: squadrons were averaging over two hundred flying hours every month on each machine as they strove to make three lifts a day.[77]

In mid-February No 435 Squadron began landing at Myitche, a dirt strip 1900 yards long by 35 wide (with only an Aldis Lamp for flying control) located west of Meiktila. No 436 Squadron, in turn, began landing at Meiktila on 6 March, just three days after its capture by IV (British) Corps. But the surrounding countryside had not yet been cleared of the enemy and Meiktila itself soon came under heavy counter-attack, so that the Canadian crews were often flying low over Japanese-held territory. The risks in pushing them so far for-

ward so fast were obvious, but the longer distances to be flown if they were not cut very close to the essential margin of supplies. 'Time and again,' Slim recalled, 'and just in time, the bare essentials for their operations reached those who so critically needed them.'[78]

What the transport squadrons clearly required were bases which would put southern Burma within economical range while still enjoying good communications with India. These could be found only on the Arakan coast, where small amphibious operations had secured the Akyab and Ramree Islands in December 1944 and January 1945. On 10 March, then, No 436 Squadron (along with No 194) started its move to Mawnubyn, on Akyab Island. They were ready for operations ten days later. Meanwhile, heavy fighting continued around both Myitche and Meiktila and, despite the fact that the move to Akyab had reduced the flying time to the latter by about forty-five minutes, 436 Squadron's total daily sorties did not increase significantly. Aircraft were frequently diverted from one objective to another as drop zones changed hands, with the result that a single sortie might last as long as four hours. Indeed, possession of Meiktila was still contested by the rival ground forces, and for some time the pilots were told whether they could use the airstrip there only when they were well en route. The strip itself was recaptured and held by the Japanese between 22 and 31 March, but was taken again on 1 April and thereafter remained in Allied hands.[79]

Further south, ground forces had meanwhile entered Mandalay on 8 March, and were soon engaged in a prolonged struggle for possession of Mandalay Hill. Flying out of Imphal with Meiktila as its main destination, No 435 Squadron supplied Allied forces near Mandalay until that city was firmly in Allied hands on 20 March. No 436 began landing supplies there four days later. Depending on the availability of air transport, taking Rangoon by an overland approach before the monsoon arrived was now a possibility, but only just, even against a disorganized enemy.[80]

That meant calling upon the Imphal-based squadrons, even if they were out of economical range. In mid-April, for example, No 435 flew from Imphal to Tennant, an airfield near Toungoo on the railway less than a hundred miles from Rangoon. The flight took over six hours and required a refuelling stop at Meiktila, using fuel which itself had to be flown in. That could be justified upon occasion, but not as a regular occurrence, and for that reason No 435 spent most of its time flying to Meiktila and Myitche, where stockpiles were still being built up.[81]

The squadron had been located in the Imphal Valley long enough now to have established many of the rudiments of what might be called station life. Like No 436, it operated an all-ranks mess in order to reduce labour requirements and avoid hiring native helpers, who were considered to be unsanitary in their habits and unsuited to the preparation of North American food. The rations were monotonous, reflecting transportation, storage, and availability problems, and relied heavily on tinned corned beef and fish. This situation was common to most messes in Southeast Asia (although units in Ceylon were considered to be much better off), and the Canadian Air Liaison Mission had

declared that 'the standard of messing ... is ... far inferior in every respect to that enjoyed by the RCAF in Canada.'[82]

Japanese resistance north of Rangoon began to melt away in April, and Slim's forces made quick progress.[83] John Masters looked on in silence as General Slim, '4 Corps Commander ... and three divisional commanders watched the leading division crash past the start point.'

> The dust thickened under the trees lining the road until the column was motoring into a thunderous yellow tunnel, first the tanks, infantry all over them, then trucks filled with men, then more tanks, going fast, nose to tail, guns, more trucks, more guns – British, Sikhs, Gurkhas, Madrassis, Pathans ...
>
> This was the old Indian Army going down to the attack, for the last time in history, exactly two hundred and fifty years after the Honourable East India Company had enlisted its first ten sepoys on the Coromandel Coast.[84]

But the monsoon season was now very close at hand and, as a hedge against its slowing Slim's advance, Mountbatten decided to proceed with Operation Dracula, the seaborne assault on Rangoon.

The approaching change of season was already noticeable to the airmen. Thunderstorms were becoming more frequent, and the almost daily early morning rains rendered the largely soft-surfaced forward air strips unusable until late afternoon, when they had dried out. The unstable air was especially evident over the mountains, where the always dangerous up- and down-drafts increased in intensity. Flying in from Akyab Island, No 436 Squadron crews in particular began to see the first of the towering cumulo-nimbus clouds that marked the coming of the monsoon, at first welcomed as useful aids to navigation but subsequently recognized for the hazard they were. Early in April, crews were involved primarily with the 'milk run' to Myitche and Meiktila, but by mid-month they were following Fourteenth Army on its march south, dropping provisions to front-line units. On 27 April, in fact, their drop zone was just sixty-five miles north of Rangoon, well over four hours from base; yet one crew, led by Squadron Leader F. Smith (who would later undertake dangerous weather reconnaissance flights during monsoon season), managed three lifts in a day, working without rest from seven o'clock in the morning to nine at night. By the end of the month the squadron had carried 3907 tons of supplies and 1300 passengers (including thirty former prisoners of war who had become separated from their guards while being evacuated from Rangoon and who simply walked north until they reached the Allied front). To accomplish that had required an average of 230 flying hours for each serviceable aircraft, an effort that could not be maintained indefinitely.[85]

No 435 Squadron, meanwhile, continued flying supplies to the bases in the north in April. Meiktila, Myingyan, Taungtha, and Sinthe were the principal destinations for its widely varied cargoes, although it was also beginning to carry staple foods and supplies to the native population in smaller centres.

Sharing the Imphal valley with only one American transport squadron, they too were extremely busy, flying 3809 hours to move 3390 tons of supplies and 2562 passengers.[86]

The focus of operations, however, was now at Rangoon, where Operation Dracula was ready to proceed after ten days of hectic planning. 'Shortly after 7 o'clock in the morning of 2 May, seasick, drenched to the skin, stiff from six hours of crouching in the bellies of their little assault boats, men of the 9th Jats, 13th Frontier Force rifles, 8th Gurkhas, Lincolns, 1st Punjab, and Garwhalis with their British gunners, tanks, and other supporting arms, ran up the soggy beaches on both sides of the ... river – ten miles below Rangoon.'[87] The enemy had already pulled back, and 'the only casualty of the actual landing was one man, gored by a bull, although in the latter stages casualties occurred to sea mines and during the round-up of small parties of Japanese die-hards.' The next day, the landing force re-embarked in their craft and sailed easily into the city. All in all it was an anti-climax, even if a joyful one.[88]

Both Canadian squadrons had been called upon for Dracula, although somewhat indirectly. Worried about the coastal battery at Elephant Point, where the Rangoon River emptied into the Bay of Bengal, Mountbatten's planners had laid on an airborne assault to silence the guns, and the two RCAF units were ordered to supply jump-masters. Accordingly, twenty wireless operator/air gunners from each joined two USAAF troop-carrier squadrons and, after ten days of intensive training in formation flying and dropping, they, their American crews, and a battalion of Gurkhas assembled at Akyab on 29 April. The small force left at 0300 hours on 1 May and, three hours later, with no enemy opposition, dropped the Gurkhas exactly on target.[89]

Rangoon was captured on 3 May, just twelve days before the monsoon arrived in full force. By the end of the month it had reached Mandalay and Akyab as well. Characterized by heavy rain, high winds, and frequent severe thunderstorms, the monsoon made life on the ground miserable as rivers and creeks flooded and ground turned to deep mud. Groundcrews struggled manfully despite the lack of proper shelter – a situation which made electrical repairs particularly difficult.[90] From a flyer's point of view, the main problems were poor visibility, severe turbulence, unpredictable weather, particularly over mountains and near the coast, and the large, exceptionally dangerous cumulonimbus clouds which had to be avoided at all cost. 'After crossing the Irrawaddy River and starting over the Arakan Zone the clouds started to build up higher,' Flight Lieutenant R.W. Cornell of No 436 Squadron reported, 'but conditions were very good and I was brushing through the tops of the clouds, alternating between clear and momentary instrument flying.'

> I had entered what appeared to be a small layer of cloud when it began to rain. After flying instruments for about a minute three sudden bursts of extremely heavy rain, possibly hail, hit the aircraft ... I immediately put the aircraft into a turn to starboard ... but had only completed half of it when the force of the C[umulo]N[imbus] hit the aircraft.