

of 'radar' (radio-direction-finding, or RDF as it was initially called), was completely ignored by the politicians.

What the evidence suggests ... is that the debate about air programmes between the Air Ministry on the one hand and the Cabinet on the other, in the period 1936-39, was largely unaffected by technical developments, radar among them ... The views of most Ministers, and the decisions of the Cabinet, were based upon financial and political arguments, hardly ever on strictly military ones. If Ministers wanted more fighter aircraft, and we have seen that they did, they could have greatly strengthened their arguments by reference to improved machines, Hurricanes and Spitfires, as well as radar. Ministers as a whole did not do this and nor, at any rate in the Cabinet debate, did either Secretary of State for Air for the period. These were years in which, in the RAF, the balance was tipping temporarily in favour of defence. Major strategic decisions were not ostensibly made for that reason.³

Nevertheless, by the end of 1935 five 'detection stations' had been authorized for the shores of the Thames estuary and the coastlines abutting on them, the first instalment of a chain of twenty such posts stretching from the Tyne to the Solent. The evolution of radar in the hands of Robert Alexander Watt,^{*} one of those rare people whose administrative skills matched his abilities as a scientist, was extraordinarily swift. By July 1937 the secretary of state for air, Lord Swinton, was able to tell the Defence Plans (Policy) subcommittee of the Committee of Imperial Defence that these 'Chain Home' stations 'gave an indication of approaching aircraft at distances of about 100 miles, and thus enabled very early warning to be given to all parts of the defensive system,' while 'the technique of the co-operation of fighter squadrons with this method of detection was being actively developed.' During the 1937 exercises, however, Fighter Command's old-fashioned, twin-gun biplanes were quite unable to match the speeds of the latest monoplane bombers; Flight Lieutenant E.A. McNab, an RCAF exchange officer flying with the RAF that summer, reported that his formation of Gloster Gauntlets could only watch Bristol Blenheim bombers 'disappearing in the distance.'⁴

Before the war began, work had already started on a supplementary system of thirty 'Chain Home Low' stations which could detect low-flying aircraft sneaking in at altitudes below 3000 feet, the minimum height covered by the original system. That addition was completed just before the main phase of the Battle of Britain began in August 1940, enabling the RAF to fight with every possible advantage that radar offered. With the introduction of radar it was no longer necessary to maintain standing patrols in order to intercept enemy bombers. Defences could now hope to thwart the enemy with far fewer machines and with much less wear and tear on them and their pilots, thus multiplying their effectiveness by a factor of at least three or four - and possibly as much as five or six.

^{*} He was knighted in 1942 and then hyphenated his name to Watson-Watt.

Easier to put through, because it initially involved little or no capital expenditure, was the decision in 1936 to abolish the homogeneous Metropolitan Air Force in favour of separate functional commands for fighter, bomber, and maritime (or coastal) operations. Adhering to the principles of 1918, the new Fighter Command included in its span of operational control anti-aircraft artillery and searchlight units which were formally part of the British Army rather than the RAF. Its first air officer commanding-in-chief (AOC-in-C), appointed on 14 July 1936, was Air Marshal Sir Hugh Dowding.

Dowding was quick to test a new control system during the summer defence exercises of 1937, in which British air space was divided up between a number of fighter 'groups,' with each group further subdivided into 'sectors.' A main airfield within each sector was designated as the 'sector station,' where representations of the current situation could be plotted when warning of an attack came through the Chain Home system, supplemented by the eyeballs and binoculars of the volunteer Observer Corps posts sprinkled about the countryside. Both transmitted the enemy's height, speed, and direction by landline to Fighter Command headquarters at Bentley Priory (near Stanmore, Middlesex), and from there both information and orders were issued to the appropriate group and sector operations rooms where plots were constantly updated and monitored.

The task of directing, or 'vectoring,' the fighters on to enemy formations over high-frequency (HF) radio channels was the responsibility of the sector 'controller,' usually a former fighter pilot himself. Of course, once they had been vectored into visual contact there remained the twin problems of first catching up with the enemy aircraft and then shooting it down. To that end, much faster, multi-gun, monoplane fighters were beginning to join the RAF's order of battle. The Hawker Hurricane, with a top speed of 335 miles per hour (compared with the 274 miles per hour of the Heinkel 111, Germany's standard bomber of the day), began to come into service at the end of 1937, while the Supermarine Spitfire, with a maximum speed of 360 miles per hour, would follow in June 1938. Both were armed with eight wing-mounted .303 machine-guns, capable between them of firing 146 rounds per second for a theoretical fifteen seconds.⁵

Another method of concentrating firepower, thought the air staff, was to direct several fighters in such a way that each got a clear field of fire upon a single bomber from the rear or side, either simultaneously or in very quick succession – a process that the RAF tried to achieve through carefully regulated, close-formation attacks. These rigid systems minimized the fighters' other great asset, manoeuvrability, but that hardly mattered. 'Manoeuvre at high speeds in air fighting is not now practicable,' proclaimed the 1938 *Manual of Air Tactics*, 'because the effect of gravity on the human body during rapid changes of direction at high speed causes a temporary loss of consciousness.'⁶

Since twisting and turning at Hurricane and Spitfire speeds was not practicable, the air staff gave virtually no thought to the possibility of fighter versus fighter combat. The new fighters' only conceivable mission was to shoot down bombers, a process best achieved through tightly controlled attack formations

and tactics based on a section of three aircraft, either in close echelon or – most commonly – a tight vee, or ‘vic.’ Unfortunately, such formations also ensured that two out of every three pilots spent more time vigilantly watching their leader, in order to avoid collisions, than they did searching the sky for enemies. They were thus more likely to become victims than victors, surprise being the very essence of successful air fighting.

In contrast, the basic German formation (a result of Luftwaffe experience in the Spanish Civil War) was the *Rotte*, two aircraft in near line-abreast, about 250 yards apart. Each pilot searched inward, as well as to his front, scanning the hemisphere of sky beyond and behind his partner for any sign of the enemy. Two *Rotten* formed a *Schwarm*, in which the lateral relationship of each machine corresponded roughly to the relationship of the finger tips on an outspread hand – therefore to be known in English as a ‘finger four’ – although there might well be a slight difference in height between each pair, an arrangement which gave the *Schwarm* even more flexibility in changing direction. It was a much looser arrangement than the vic, enhancing the concept of mutual support while minimizing the danger of collision. Should the *Rotte* or *Schwarm* be approached from behind by enemy fighters, a hard 360° turn away from the angle of attack by the leading machine or pair, while the one closer to the enemy turned tightly in the opposite direction, into the attack, would usually result in the attackers being sandwiched between them.⁷

Whatever the relative weakness of its tactical doctrines, however, in the three years between 1936 and 1939 Fighter Command had undergone a dramatic transformation for the better. A memorandum prepared in early 1938 by Air Vice-Marshal Sholto Douglas, assistant chief of the air staff, illustrates the change. ‘I think that within the last few months, what with the advent of the eight-gun fighter, RDF, and the Biggin Hill Interception scheme [sector controller system], the pendulum has swung the other way and that at the moment – or at any rate as soon as all our Fighter Squadrons are equipped with Hurricanes and Spitfires – the fighter is on top of contemporary bombers.’⁸

None of this had much immediate relevance in Ottawa, although the government was firmly convinced ‘that the first line of defence for the Dominion of Canada must be the air force.’ One third – \$11.5 million – of a vastly increased defence budget was assigned to military aviation in 1937–8. It was badly needed, for only two years earlier ‘it was reported to the minister [of National Defence] that there were only twenty-three aircraft of service type in Canada. All were obsolescent except for training, and none were suitable for active service under present day conditions. There were no air bombs in Canada for immediate use.’⁹

The prospect of attacks on Canada from the air appeared remote even in 1939, since the country was separated from every likely adversary by great expanses of water. ‘The only air menace that North America has to fear for the present, is that of planes launched from ships,’ wrote C.P. Stacey in *The Military Problems of Canada*. Such a threat could best be countered, according to contemporary theory, by using naval forces or land-based torpedo-bomber and bomber aircraft to sink those ships. There was a requirement, also, to provide

specialized (and relatively cheap) army cooperation machines to work with any militia expeditionary force which might be mounted. Thus the provision of fighter aircraft had had a lower priority than that of other types in the eyes of the general staff (to which the air force was subordinate until November 1938) and the Cabinet. In 1938 the RCAF's only regular fighter squadron was flying nothing more modern than five Armstrong-Whitworth Siskin IIIA biplanes (the survivors of eight purchased between 1928 and 1931), each armed with only two .303 machine-guns and incapable of more than 150 miles per hour. But fighters were cheaper to buy than bombers: the first eight Hurricanes would arrive at Halifax in February 1939.¹⁰

Nor did the growing European crisis have much immediate effect on the RCAF's flying training program. Despite the spectacular rise in funding and the doubling of its meagre strength between 1936 and 1939, Air Vice-Marshal G.M. Croil pointed out in December 1938, with commendable honesty, that the prolonged parsimony of the interwar years meant that 'it is not possible to take full advantage of a sudden and relatively large increase in appropriations.' Furthermore, 'where time permits, increases should not be too sudden nor, in comparison to the previous year, too large,' if standards were to be maintained.¹¹ This was particularly true in the realm of pilot training, which was necessarily a sluggish process at first, requiring the training and certification of additional instructors by those few already qualified before any large-scale expansion could even commence.

RCAF recruitment standards were extraordinarily high. There was no dearth of young Canadians eager to become fighter pilots (many of them had obtained civil flying licences at their own expense), but until 1939, when a four-year 'short-service' scheme was introduced, a permanent commission required either graduation from the Royal Military College of Canada or an engineering degree, as well as the appropriate level of physical fitness. Moreover, a reserve commission in one of the Non-Permanent Active Air Force (NPAAF) squadrons was all too often dependent upon living in, or close to, a major centre of population and moving in the right social circles. The RAF, in contrast, had offered short-service commissions from 1934, and 'colonials' were welcomed. Consequently, while the RCAF recruited only fifty-four general list (ie, aircrew) candidates to permanent commissions in 1938 and 1939, it recommended triple that number for short-service commissions in the RAF. Many more went to Britain at their own expense and applied directly to the Air Ministry. By 1940 there were at least 441 Canadians commissioned in the RAF, and probably a majority, inspired by the records of such First World War Canadian aces as Bishop, Barker, Collishaw, and MacLaren, were either fighter pilots or yearning to become such. Nearly all held short-service commissions, but a few held permanent appointments. There were also a hundred or so non-commissioned Canadian aircrew in the RAF's ranks.¹²

The German annexation of Austria in March 1938 and of Czechoslovakia's Sudetenland in October increased European tensions and furthered the likelihood of war. The subsequent occupations of Bohemia and Moravia in March

1939, in blatant violation of the Munich Agreement, confirmed the need for Britain to strengthen its defences; and, that spring, the air staff argued that fifty-two fighter squadrons were the minimum necessary to defend the British Isles.¹³ When Great Britain declared war on 3 September 1939, Fighter Command had only thirty-nine squadrons in hand, however, and four of those, equipped with Hurricanes, were promptly dispatched to France as part of the Advanced Air Striking Force (AASF). Two more would be added later. Meanwhile, the Air Ministry took advantage of the 'phoney war' to set about organizing eighteen additional squadrons.

One of the eighteen was No 242 (Canadian) Squadron, RAF. Formed at Church Fenton in Yorkshire, it was the result of a public-relations exercise benefiting both the Canadian and British governments. On 12 September 1939, six days after British prime minister Neville Chamberlain made the initial proposals for what would eventually become the British Commonwealth Air Training Plan (BCATP) and just two days after the Canadian declaration of war, Prime Minister Mackenzie King, anxious for a significant Canadian presence overseas and believing that an air force contingent would probably prove most economical in human terms (thus reducing the likelihood of conscription, which had wrenched the nation apart in 1917), declared, 'It is the desire of this Government that Canadian Air Force units be formed as soon as sufficient trained personnel are available overseas for this purpose.'¹⁴

The British, lusting to display the solidarity of empire and commonwealth, were equally keen to see an RCAF unit in the field. They first suggested that an RCAF maritime reconnaissance squadron be based in the Caribbean, but a lack of suitable aircraft thwarted that proposal.¹⁵ Moreover, with the opening of negotiations for what would become the politically preferable BCATP, the Canadian government was already having second thoughts about overseas commitments. O.D. Skelton, undersecretary of state for external affairs and one of King's closest associates, explained to the British high commissioner in Ottawa: 'Whilst it is for many reasons desirable that Canada's contribution to the air war should be recognized and confirmed by the early participation of Royal Canadian Air Force units overseas, it must be borne in mind that the immediate despatch of even one unit would seriously detract from the inception and development of the scheme for training in Canada.' Sending an RCAF squadron overseas, therefore, 'should not now be contemplated.'¹⁶

The Air Ministry put forward an alternate idea: something might be done with Canadian airmen already in the RAF or serving with it as RCAF exchange officers. By the end of October 1939 arrangements were complete for the formation of a fighter squadron with Canadian aircrew, providing Mackenzie King with a 'much to be desired recognition of Canadian participation'¹⁷ at virtually no cost to his government in people, machines, or dollars. An RCAF officer already in England, Squadron Leader F.M. Gobeil, a highly-anglicized, French-Canadian graduate of the Royal Military College, was placed in command.

Since all – or nearly all – of the squadron's non-flying personnel was British, and only the commanding officer was RCAF, the record of its training

in England and its misfortunes during the Battle of France (10 May–18 June 1940) lie outside the bounds of this volume.¹⁸ Casualties were heavy. Of the twenty-two pilots on strength on 10 May, seven were killed in action, three captured, and three wounded. Replacements, for the most part British, had begun arriving in late May and early June, and when the legendary Squadron Leader Douglas Bader took over command from Gobeil on 24 June 1940, No 242's last link with anything formally Canadian was cut. Sent to the Far East in December 1941 (to be annihilated in the Dutch East Indies by early March 1942), it was then just another RAF unit with perhaps rather less than the usual proportion of Canadians to be found in British squadrons.

Meanwhile, in the eyes of the air staff, there were other threats to be faced and conquered besides those posed by the Luftwaffe. Much of the German success on the ground, in Poland, Norway, and France, had been due to the tactical and operational integration practised by their air and ground forces. The whole concept of integrated ground/air operations was anathema to the RAF, however. Its existence as a separate, independent service was predicated on the argument that strategic bombing was *the* war-winning weapon, and only reluctantly had senior officers even come to admit that there was a role for the air superiority fighter. With no little regret they had always accepted that the army was entitled to a minimal degree of what was known as army co-operation (ie, the use of limited air resources for reconnaissance and artillery-spotting duties that had been the primary function of the air arm during the First World War), but it was the least of their priorities. Prewar doctrine, such as it was, had called for one army cooperation squadron to be assigned to each infantry corps, and – as they were incorporated into the order of battle – one to each armoured division. To divert more valuable and limited resources to ground operations, a procedure which conceivably might also give the army some say in their handling, was unthinkable.¹⁹

It was, of course, true that the War Office had an obsolete understanding of how air power should be applied. The army sought nothing less than self-contained air forces under military control – an air 'brigade' for each field army, similar to the arrangements that had prevailed in 1917 and 1918 – while the Air Ministry insisted on the benefits of centralized control, citing enhanced flexibility and economy of force when employing finite air resources and arguing that the air arm should not be subordinate to ground commanders.²⁰

Canadian airmen, in contrast, were more amenable to army cooperation, possibly because Canadian airmen had been largely 'bush pilots in uniform' during the interwar years; perhaps because the RCAF had only become an independent service in 1938; and certainly because Canada's dominant military mind between the wars was that of soldier-scientist A.G.L. McNaughton, a dedicated advocate of air power in the land battle. In fact, while prewar British

* The controversy may be followed in A.W. Tedder's *With Prejudice* (London 1966), B.L. Montgomery's *Memoirs* (London 1958), J.C. Slessor's *The Central Blue* (London 1956), Henry Pownall's *Chief of Staff* (London 1972), and C.E. Carrington's *A Soldier at Bomber Command* (London 1985). Carrington's is the only published account by anyone intimately involved in the issue.

establishments called for one army co-operation squadron per infantry corps (and one per armoured division), the RCAF was thinking in terms of a three-squadron army cooperation wing 'for despatch overseas if required.'²¹ When the first squadron went to Britain in early 1940, however, it inevitably became embroiled in all the troubles which frustrated its RAF peers, in addition to those problems inherent in the broader picture of Anglo-Canadian cooperation.

On 24 November 1939, in London, Air Commodore L.S. Breadner had met with Sir Kingsley Wood, the British secretary of state for air, Canadian high commissioner Vincent Massey, and Wing Commander Vernon Heakes, the RCAF's liaison officer with the RAF, to consider what air units the RCAF should provide in support of a Canadian component of the British Expeditionary Force, either of one division, or, later perhaps, a two-division corps. Wood told the Canadians that the Air Ministry would be pleased if an army cooperation squadron arrived in the United Kingdom with the 1st Canadian Division that was expected at the turn of the year. Both division and squadron would subsequently be sent to France as part of the BEF; the soldiers would join IV British Corps and the airmen could then become the corps squadron.²²

No 110 Squadron, RCAF, flying Westland Lysanders, was selected and placed under the command of Squadron Leader W.D. Van Vliet, who was a graduate of both the RAF Staff College and the RAF's School of Army Co-operation, where he had passed out first in his course. His Staff College instructors had found him 'an honest, great-hearted and cheerful personality ... His sincerity and honesty of purpose are marked.' He was 'a hardworking, sound and practical officer with definite tenacity of purpose,' and the commandant was 'impressed with his mental honesty.'²³ His unit was an amalgam of Permanent Force and Auxiliary airmen. Its core was No 110 (City of Toronto) Squadron, reinforced by Permanent Force personnel from No 2 (Army Co-operation) Squadron and supplemented by Auxiliaries from Winnipeg, Calgary, and Regina. The squadron arrived in England in late February 1940, still largely untrained, ostensibly to work with the 1st Division until both reached expeditionary force standards. It was, however, condemned to thrash about in a political and bureaucratic maelstrom for many months to come, a struggle that would frequently frustrate everyone concerned, most of all Van Vliet. At the vortex of events, he was compelled to juggle demands, requests, and suggestions from a quite unreasonable number of superiors while trying to maintain the morale of his subordinates in an extraordinarily difficult environment.

As an RCAF unit, No 110 Squadron was subject to the newly-formed Overseas Headquarters in London, while as an army cooperation squadron it was part of the RAF's No 22 Group, responsible for army cooperation training. Major-General McNaughton, the general officer commanding (GOC) of the 1st Division and also the senior Canadian military officer overseas, considered that it came under his operational command, even if its administration and supply were RAF/RCAF responsibilities – while he himself was functionally subordinate to the War Office in London, but, at the same time, had an overriding political tie to the Canadian government in Ottawa.

To make an awkward situation worse, there was no provision in British (or Canadian) war establishments for an army cooperation squadron to be allocated to a single infantry division. As we have noted, British doctrine called for one squadron per infantry corps, of two or three divisions; but McNaughton crustily proclaimed his 'understanding that 110 (AC) Squadron, RCAF, has been provided primarily for the purpose of working with the Canadian forces in the field, and I hope that there will be no doubt that our requirements in this connection will have priority.'²⁴ Thus, at least until the 2nd Division arrived and a Canadian corps organization could be established, the squadron found itself adrift between the rock of McNaughton and the hard place of air force insularity.

For example, on 6 May 1940 Norman Rogers, minister of national defence, met with Sir Samuel Hoare (who had succeeded Kingsley Wood as secretary of state for air) to try to clarify financial relationships created by wartime circumstances. To Rogers, financing the BCATP and whatever units the RCAF sent overseas were both part of one overall arrangement. Indeed, in accepting a larger share of BCATP costs the government had reduced the number of army cooperation squadrons it had been planning to send overseas from three to one, Ottawa providing only the pay and allowances of its personnel while Whitehall supplied equipment and maintenance. That, of course, fitted in very poorly with McNaughton's insistence that the squadron be, in effect, an integral part of the Canadian Army Overseas, which was completely financed from Canadian resources. Hoare pointed out the anomaly, suggesting that once a Canadian corps had been formed and the squadron was working exclusively with it, 'it might be reasonable to suggest that it should be equipped and maintained in the same way that Canadian Troops were.'²⁵ The meeting then turned to the more immediate problem of No 110's affiliations when the 1st Division went to France, no one foreseeing the imminent Blitzkrieg that would make such discussion totally irrelevant.

On their arrival in England, the squadron's pilots and air gunners had initially been kept busy with individual and specialist training at the School of Army Co-operation near Salisbury. By June their basic training was complete and they were moved to Odiham, in Hampshire, for operational training, still flying the twelve Lysanders they had brought from Canada. 'Its concept and design made it a very versatile aircraft, on top of which it had excellent short take-off and landing capabilities ... Unfortunately the designers were still thinking in World War I terms when they put it on the drawing board. German *Blitzkrieg* and the Junkers 87 '*Stuka*' made the Lysander obsolescent when they invaded Poland and they really made it obsolete after Dunkirk. It was a flying coffin after that disaster, although we, fortunately, didn't have to prove the point.'²⁶

Whatever the dangers inherent in flying Lysanders in a combat environment – and they would have been immense – because the squadron was still comfortably ensconced in England, aircrew morale did not suffer much until the onset of the Battle of Britain, when they became mere bystanders, grounded for the most part in order to keep the skies clear for Fighter Command.²⁷

Inactivity did not sit well with a squadron that had been the first RCAF unit overseas and expected to be the first to see action. Nor did it please Van Vliet (now promoted to the rank of wing commander), who 'began to show the effects of his mounting concern over the predicament we found ourselves in,' according to Flight Lieutenant C. Carling-Kelly, who commanded 'C' Flight. 'Young healthy pilots, rarin' to go, eating their hearts out as we watched the daily air battles from the safety of our shelters around the station. It was a bad situation and Van [Vliet] kept more and more to himself, confiding in no one ... We all had our dreams, it was the futility of them that was beginning to erode our morale, including [that of] the CO.'²⁸

In due course, the departure of six pilots for fighter training prior to posting as replacements to No 1 (Fighter) Squadron RCAF – which was, by August, critically involved in the Battle of Britain – only made matters worse for those who remained. In Overseas Headquarters the problem was seen and understood, and the first step in solving it seemed to be a change of command. 'w/C Van Vliet had trained the squadron from the beginning and had a wide margin of age and experience over most of his officers, thus creating a relationship between them more like that of an instructor to his pupils. This relationship was ideal during the period of training but was ... less desirable now. The opinion of this HQ was that the stage had now been reached where the handing over to a younger Commanding Officer was essential.'²⁹ Van Vliet was repatriated to Canada (where he died of a heart attack two years later). He was first succeeded by his second-in-command, Squadron Leader E.H. Evans, who was promoted to wing commander's rank (but then posted back to Ottawa after only a few weeks), and subsequently by R.M. McKay, another graduate of the RAF Staff College, similarly promoted, both of whom had been with the squadron since it left Canada.

There was every prospect that, even though most of the bureaucratic issues that had beset No 110 Squadron had been ironed out by the early fall of 1940, the morale problem would recur with the dispatch in June of No 112, the second element of the RCAF's proposed three-squadron army cooperation wing. It had been offered by Ottawa on 11 May – the day after Hitler's offensive in the west began – 'if its presence in the United Kingdom would be regarded as a more useful contribution at an earlier [rather] than at a later stage.' By the 19th the Blitzkrieg threat had become critical, and Viscount Caldecote, Britain's assistant secretary of state for the dominions, was telling the Canadian high commissioner in London that his government 'would welcome' the arrival of No 112, together with 'as many fully equipped Lysander aircraft as possible.'³⁰

Apparently Ottawa had waited upon a formal acceptance of its offer, for No 112 Squadron's advance party embarked at Halifax the next day and the balance of the squadron sailed on 11 June, exactly a month after the offer had been made. In their response, the British had asked that Ottawa 'might consider the possibility of sending as many field-equipped Lysander aircraft as possible for use by No 112 Squadron.' This would have required an initial strength of twelve machines, plus four in immediate reserve, but so tightly

were the Canadians stretched that even to provide the initial twelve would have necessitated the temporary closure of the Army Co-operation School at Camp Borden. Five were all that could be spared and the RAF had to find the others. Arriving at High Post, near Old Sarum and the RAF's School of Army Co-operation, No 112 Squadron set about mastering the same obsolete equipment and tactics that No 110 had been practising for the past six months – until, in March 1941, it was redesignated as a fighter unit and re-equipped with Hurricanes.³¹

Meanwhile, the radical transformation of the strategic situation following the fall of France led to a fundamental overhaul of Britain's defences, and Lieutenant-General McNaughton found himself commanding VII (British) Corps, the ultimate reserve south of the Thames, consisting of his own infantry division together with a British armoured brigade and two brigades of New Zealand infantry which he quickly amalgamated into an ad hoc armoured division. His assigned corps squadron was No 110 and, for the moment, no one fussed over its technical status or its financing, all emphasis being on its tactical and technological shortcomings. Had the air battle been lost and Hitler actually committed himself to the invasion of Britain, no doubt VII Corps would have soon found itself leading a desperate fight and its squadrons of Lysanders would have been 'sitting ducks' in a relentlessly hostile environment. Happily, Fall Seelöwe (Operation Sealion), the proposed amphibious assault on Britain, was cancelled on 12 October: there would be no landing on British shores in 1940, or (at least until the equinoctial gales were over) in the spring of 1941. On the basis of signals and photographic intelligence, Prime Minister Churchill and his key advisers knew by the end of that month that the residual risk of invasion would be 'relatively remote,' although they were not so reckless as to broadcast their conclusions. On Christmas Day 1940 VII Corps was dissolved and the newly arrived 2nd Canadian Division joined with the 1st to form I (Canadian) Corps. No 110 Squadron – in March 1941 it became No 400 – finally fitted into the regulation Anglo-Canadian military mould.³²

The Battle of Britain would be half over before an RCAF contingent was ready to enter it, but it is necessary to review its progress to that point if only to correct some common misconceptions. The shortage of fighters and experienced pilots alleged by so many historians to have plagued Air Chief Marshal Dowding throughout the battle is one of those enduring myths which cluster about legendary events. True, the battle of France had left Fighter Command in poor shape – it had lost some nine hundred aircraft in six weeks, and half as many pilots – but the factories and the flying training schools had responded promptly to the crisis. As the British official historian of war production has pointed out, 'Fighter Command emerged from the Battle in the autumn with more aircraft than it possessed in the beginning,' and the number of fighters available for operations rose day by day, from 565 on 22 June to 666 on 13 July, then to 749 on 10 August, and 764 on 31 August. Thereafter, it declined slightly, but never dropped below 715

during the rest of the battle.³³ Moreover, pilot strength also rose, from 1396 on 10 August to 1492 on 14 September – an increase of nearly a hundred as the battle peaked – and to 1752 by 12 October, though such figures were achieved only through a combination of drastic cuts in training time and transfers from other commands, neither of which did much to guarantee a large force of experienced fighter pilots.³³

However, Dowding did have to face and master a whole new series of operational problems presented by the German occupation of France and the Low Countries. The prewar plan for the air defence of Britain had been predicated on the assumption that German bombers would be flying, unescorted, from bases in Germany. Now, with the enemy occupying the Channel coast, most of the United Kingdom lay within easy reach of their bombers, and the southeastern part of the country was even within the range of the waspish, pugnacious Messerschmitt Me 109s, thus enabling the Luftwaffe to bomb a variety of targets – from radar stations to the Houses of Parliament – under the protection of fighter escorts.

From Berlin's perspective the situation was not nearly so bleak, but it was still curiously unnerving. Hitler had never wanted to fight the British in 1939 and was hoping that the collapse of France would persuade them to sue for peace, or at least accept an offer to negotiate.³⁴ When Churchill declined to do either, the Germans faced the formidable problem of what to do next. On 30 June 1940, at Hitler's behest, Reichsmarschall Hermann Göring laid down the first clear statement on how his air force intended to deal with a still-belligerent United Kingdom. First it would drive the RAF out of the air, destroy its ground organization, and disrupt the British aircraft industry. Then it would 'dislocate Britain's supplies by attacking ports and harbour installations, ships bringing supplies into the country, and warships escorting them. These two tasks are to be carried out in concert and not treated separately. Meanwhile, as long as the enemy air force remains in being, the supreme principle of air warfare must be to attack it at every possible opportunity by day and by night, in the air and on the ground, with priority over other tasks.'³⁵ The main weight of the offensive would be borne by Luftflotte 2, headquartered in Brussels, and Luftflotte 3, with its headquarters in Paris. They could muster, between them, some one thousand serviceable twin-engined bombers, three hundred single-engined dive bombers, two hundred and sixty twin-engined fighters, and seven hundred single-engined fighters.³⁶

It was plain that Fighter Command was facing a formidable adversary. British fighters may have enjoyed a superior dog-fighting capability through being able to out-turn the enemy, but that failed to compensate for the Germans' greater speed, rate of climb, and diving performance, factors which usually enabled them to exercise the initiative. 'During the final phase [of the

³³ Luftwaffe intelligence assessed Fighter Command strength at only 400 to 500 machines on 1 August, with monthly production limited to 200 – 'comparable to German production figures and, in fact, less than half Britain's true monthly production.' M. Probert and S. Cox, eds., *The Battle Re-thought: A Symposium on the Battle of Britain* (Shrewsbury, England, 1991), 21

Battle of France] Me 109s avoided dogfights whenever possible and frequently carried out one assault in a steep dive, and then broke away by continuing the dive far below the British fighters. This form of attack from cloud cover or the direction of the sun was frequently successful in picking off the rear members of our fighter formations.³⁷

RAF pilots were still far from appreciating the marvellous degree of mutual cover and support provided by the Schwarm, but their vics were not quite as tight as they had once been and they had now added a 'tail-end charlie' – one or more pilots detailed to fly above and behind the main formation, weaving to and fro in order to keep watch astern. 'It should be a fundamental principle,' proclaimed a Bentley Priory memorandum issued in mid-June, 'that the rear units of any formation should be employed solely on look-out duties to avoid any possibility of surprise from astern or above.' However, 'having frequently flown in that tail-end position,' one veteran pilot has recorded, I 'knew full well the difficulty and hazards involved. If you weaved too much, you got left behind. If you did not weave enough, you got picked off.'³⁸ He might have added that, even if your weaving was just right, either the formation had to slow down slightly to allow you to keep up or your fuel consumption would be significantly higher than that of your comrades, perhaps compelling an early – and solitary – return to base.

Flight analysis showed that an Me 109 which had fallen into British hands in May enjoyed two distinct technical advantages over the Spitfire and the Hurricane. The Rolls-Royce Merlin engine that powered both British types relied on a float carburettor that starved the engine of fuel when negative gravity was induced as an aircraft was bunted sharply over from level flight into a steep dive. The 109 had fuel injection which kept its engine functioning properly regardless of the aircraft's attitude. The Messerschmitt also had a variable-pitch, constant-speed propeller rather than the two-pitch version – coarse and fine – of the Spitfire and Hurricane, a refinement that contributed substantially to its superior speed and rate of climb, especially at heights above 20,000 feet.

The first problem could not be dealt with immediately; until the introduction of a diaphragm-type carburettor for the Mark V Spitfire in late 1941, British pilots would have to be content with flipping into a half-roll and then entering the dive from an inverted position if they sought to follow an enemy down while staying reasonably close to him. Plans to introduce constant-speed propellers were already in hand, however, and between 22 June and 15 August more than a thousand Spitfires and Hurricanes were modified. Their engines had already been adapted to use 100-octane fuel imported from the United States (the Luftwaffe used 87-octane throughout the war), and the combination of constant-speed airscrews and a higher octane rating put the climb, ceiling, and speed of the Spitfire on a par with that of the Me 109.³⁹ The Hurricane, however, would never do quite so well.

The most important technological factors working in Dowding's favour were the combination of radar with sophisticated communication and control networks. The Germans were well aware of the Chain Home system – its tower-

ing masts dotted the English coast and were impossible to disguise – but they drastically underestimated its effectiveness while miscalculating its application.

As the British fighters are controlled from the ground by R[adio]/T[elephony] their forces are tied to their respective ground stations and are thereby restricted in mobility, even taking into consideration the probability that the ground stations are partly mobile. Consequently the assembly of strong fighter forces at determined points and at short notice is not to be expected. A massed German attack on a target area can therefore count on the same conditions of light fighter opposition as in attacks on widely scattered targets. It can, indeed, be assumed that considerable confusion in the defensive networks will be unavoidable during mass attacks and that the effectiveness of the defences may thereby be reduced.⁴⁰

There was a crucial flaw in this assessment. Thinking, perhaps, in terms of their own predilections in organizing air defence, they were assuming that the British control system was equally as inflexible as the Luftwaffe's, with individual machines under the direction of a specified controller unable to move easily from one area to another. It followed logically that a mass attack launched on a narrow front should overwhelm local defences; but, in fact, as outlined earlier, British radar stations fed information through Fighter Command's filter room to group operations rooms, and then to the sector controllers who directed as many aircraft as seemed necessary (or were available) to deal with an attack. Isolated mass raids only made it easier for the controllers to concentrate a large number of fighters in the appropriate sector.

Oberfeldwebel Gottfried Leske, the pilot of a Heinkel 111 who flew throughout the Battle of Britain (but was shot down and captured in early 1941), recorded in his diary the Luftwaffe's forming-up procedure, which British radar could usually 'see' and promptly report to Bentley Priory.

As always, we assembled shortly before we came to the Channel. The way we get into formation is technically very interesting. The best way to describe it is to think of the start of a trotting race. Circling all the time, the ships gradually get into formation, until all are placed, or rather moving, in the appointed battle order. And then slowly the whole formation begins to move across the Channel. In the meantime the destroyers [Me 110s] and fighters [Me 109s] have come up ... And now all the pilots open up on the throttle and begin to pick up speed ...

Once we are across the Channel anything can happen. But strangely, as a pilot I'm not so much worried about running into the enemy as I am about keeping my ship in the formation ...

And then those Spitfires and Hurricanes are there ... Bursts of machine-gun fire from all sides. Sometimes when the English have good luck, they catch one of us bombers, and then we see our comrades dangling from parachutes, trying to make the land, lost to our cause – at least until we free them from their prison camp.⁴¹

In accordance with Göring's directive, the Luftwaffe attacked the Chain Home system as well as airfields in its attempt at 'destroying his ground organi-

RCAF OVERSEAS ORDER OF BATTLE									
General Role	Unit	1939	1940	1941	1942	1943	1944	1945	1946
	14(F) Sqn/442 Sqn						2 TAF Sp 5 Sp 9	Mu 3	
	127(F) Sqn/443 Sqn						2 TAF Sp 5 Sp 9	Sp 14	
	664 Sqn						1 CDN ARMY AOP Au 4 Au 5		
	665 Sqn						1 CDN ARMY AOP Au 4 Au 5		
	666 Sqn						1 CDN ARMY AOP Au 4 Au 5		
		10 Sep 39 Declaration of War		07 Dec 41 Pearl Harbor			08 May 45 V-E Day	14 Aug 45 Cessation of hostilities	
Aircraft Types									
Au 4	- Auster AOP Mk IV								
Au 5	- Auster AOP Mk V								
Be 2	- Bristol Beaufighter Mk II								
Be 6	- Bristol Beaufighter Mk VI								
Be 10	- Bristol Beaufighter Mk X								
Be 11	- Bristol Beaufighter Mk XI								
Bl 1	- Bristol Blenheim Mk I(F)								
Bl 4	- Bristol Blenheim Mk IV								
Bo 3	- Douglas Boston Mk III								
De 1	- Douglas Paul Defiant Mk I								
Hu 1	- Hawker Hurricane Mk I								
Hu 2	- Hawker Hurricane Mk II								
Hu 4	- Hawker Hurricane Mk IV								
Ly 3	- Westland Lysander Mk III								
Mo 2	- de Havilland Mosquito Mk II								
Mo 2a	- de Havilland Mosquito Mk II(NF)								
Mo 6	- de Havilland Mosquito Mk VI(FB)								
Mo 6a	- de Havilland Mosquito Mk VI(PR)								
Mo 12	- de Havilland Mosquito Mk XII								
Mo 13	- de Havilland Mosquito Mk XIII(NF)								
Mo 16	- de Havilland Mosquito Mk XVI(PR)								
Mo 30	- de Havilland Mosquito Mk XXX(FB)								
Mo 30a	- de Havilland Mosquito Mk XXX(NF)								
Mu 1	- North American Mustang Mk I								
Mu 3	- North American Mustang Mk III								
Sp 1	- Supermarine Spitfire Mk I								
Sp 2	- Supermarine Spitfire Mk II								
Sp 5	- Supermarine Spitfire Mk V								
Sp 8	- Supermarine Spitfire Mk VIII								
Sp 9	- Supermarine Spitfire Mk IX								
Sp 9a	- Supermarine Spitfire Mk IX(LF)								
Sp 11	- Supermarine Spitfire Mk XI(PR)								
Sp 14	- Supermarine Spitfire Mk XIV								
Sp 14a	- Supermarine Spitfire Mk XIV(FR)								
Sp 16	- Supermarine Spitfire Mk XVI								
Ty 1	- Hawker Typhoon Mk I								
AC	Army Co-operation						MED	Mediterranean	
ADGB	Air Defence of Great Britain						SEA	South East Asia	
AOP	Air Observation Post						2 TAF	Second Tactical Air Force	
FC	Fighter Command								
* Intruder									

zation.' Heavy attacks were made on six stations in the southeast on 12 August, with considerable damage done; one, Ventnor, was knocked out for eleven days, but an ordinary radio transmitter was soon putting out pulses on the same frequency and 'though these produced no echo, the enemy, hearing them, could only suppose that the station had been repaired.' Meanwhile, the Reichsmarschall cancelled any further attacks on radar targets, arguing, 'It is doubtful whether there is any point in continuing the attacks on radar sites, in view of the fact that not one of those attacked has so far been put out of action.'⁴²

Two days earlier, his pilots had turned their attention to airfields. The primary targets, of course, were Fighter Command bases, but poor intelligence (or faulty navigation) meant that many sorties were misdirected. Of the three airfields which received the worst damage in the initial raids, Andover, Detling, and Eastchurch, none belonged to Fighter Command, but German intelligence officers seemed unaware of this mistake and thought that British defences had been struck a heavy blow. Over the next three weeks, however, the Luftwaffe did find and bomb a number of fighter fields, concentrating its attention on the sector stations of Tangmere, Kenley, Biggin Hill, and Hornchurch. Damage on the ground was mostly confined to buildings, and non-flying personnel suffered the bulk of the casualties, although opposing these raids cost Dowding a great deal in the air. Nearly a hundred of his pilots were killed between the 8th and the 18th, and sixty others were wounded, representing about 15 per cent of those he had in hand.⁴³ The supply of new pilots and replacement aircraft was adequate, but the strain of operations upon both pilots and groundcrew was a continuing concern.

When bad weather compelled some reduction in their scale of attack between the 19th and the 23rd, German commanders also took stock. Between 13 and 19 August they had lost, one way or another, nearly three hundred aircraft, or more than 10 per cent of the combined strength of Luftflotten 2 and 3. More to the point, such losses were indicative of a major effort which had, nonetheless, failed to diminish the RAF's considerable and effective opposition. For Dowding, there were some welcome reinforcements at hand. Several of the squadrons mangled in France had now been reformed, and the Fleet Air Arm had contributed another two squadrons to the relatively low-key operations of No 13 Group in the north, enabling him to move two of his own squadrons further south, into the heart of battle. Pilots who had escaped from countries occupied by the Germans were now training on British machines and would very shortly add three more squadrons (two Polish and one Czech) to his strength.⁴⁴ And, on 17 August 1940, No 1 Squadron, RCAF, became operational.

On 11 May 1940, a day after the initial German thrust into France, Holland, and Belgium, the Canadian high commissioner in London, Vincent Massey, had told Anthony Eden, British secretary of state for dominion affairs, that 'in the light of yesterday's critical developments ... the Canadian government would be glad to give immediate consideration to any suggestions which the Government of the United Kingdom may wish to make.' The British responded

with several, among them 'the possibility of making available a Royal Canadian Air Force squadron, both aircraft and personnel, at an establishment, if possible, of sixteen initial equipment [aircraft].'⁴⁵

On 21 May Ottawa signalled back that 'we are sending at earliest possible moment No 1 Fighter Squadron RCAF, together with all available Hurricanes, fourteen in number, it being understood [that the] United Kingdom will provide reinforcements as required, there being no facilities for [operational] training here.' The squadron, then stationed at Dartmouth, Nova Scotia, was ordered to pack its Hurricanes into crates and prepare to move overseas. Eight officers and eighty-six other ranks from No 115 Squadron were promptly posted in to bring the unit up to strength and, less than three weeks after the warning order had been issued, the crated Hurricanes were being loaded aboard ship and twenty-one pilots, seven other officers, and 314 airmen were filing aboard the *Duchess of Atholl*, bound for the United Kingdom.⁴⁶

The additional officers and men from 115 Squadron were something of a mixed blessing for the commanding officer, Squadron Leader E.A. McNab, who has already appeared in this narrative as an exchange officer serving with the RAF. No 115 was an Auxiliary squadron from Montreal, its personnel relatively unskilled and inexperienced by the standards of the regular air force. One of the new officers, nevertheless, was considered qualified to assume the role of senior flight commander and McNab's second-in-command despite his hoary years by fighter pilot standards. Thirty-eight-year-old Flight Lieutenant G.R. McGregor, a telephone company executive and three-time winner of the Webster Trophy, awarded annually to Canada's top amateur pilot,⁴⁷ had joined the Auxiliary Air Force in October 1938 with the rank of flying officer. Both he and McNab were to prove excellent leaders, ensuring that No 1 Squadron would have a more distinguished early combat record than some of the RCAF units that would form overseas later.

The Canadians arrived in England on 20 June and were promptly plunged into the rustic splendours of RAF Station Middle Wallop, in deepest Hampshire. A few days later there was a visit from the AOC-in-C, who, as Lieutenant-Colonel H.C.T. Dowding of the Royal Flying Corps, had had a great many Canadian airmen under his command on the Western Front during the First World War. Now, 'the pilots were introduced to him. He also inquired as to what degree of training the Squadron had reached. When the Air Chief Marshal was told that the Squadron's Hurricanes were not of the latest type, he immediately made arrangements to replace these A[ir]/C[raft] with new Hurricanes.'⁴⁸

Three new machines were delivered the same day and practice flying began on the 26th. Both pilots and groundcrew still needed a great deal of training – most particularly those who had come from No 115 Squadron and had flown in, or worked on, nothing more sophisticated than the Fairey Battle. For the pilots, flying regulations in Britain's crowded airspace were much more rigorous than those promulgated in Canada. There were new radio procedures to learn, medical aspects of high altitude flying to understand, more navigation and armament topics to master. In line with RAF practice and the demands of

the abominable vic, much attention was paid to formation flying, especially in climbing and diving turns. 'The important thing is to teach the pilot to stick to his leader at all times.'⁴⁹

As the Canadians worked their way closer to the RAF's understanding of operational competence, it was perhaps inevitable that questions should arise regarding the relationship between the squadron and superior RAF formations on the one hand and RCAF Overseas Headquarters on the other. When Group Captain G.V. Walsh, the RCAF's senior officer in the United Kingdom, visited Croydon on 11 July, McNab told him that, in an emergency, the air officer commanding No 11 Group planned to use the squadron on operations. Walsh was concerned for two reasons, as he subsequently explained to Air Vice-Marshal Keith Park, the AOC in question. First was the issue of operational readiness; he thought the squadron was not yet sufficiently trained, for, in his mind, only nine of the twenty-one pilots were marginally competent. 'Except under extreme emergency, I would not care to authorize its operational employment. In fact, I am not prepared to authorize the employment even of the pilots whose training approaches the operational standard unless the RAF themselves [sic] give a considered opinion that they are fit for the role to be given to them.' His second reservation concerned the maintenance of the squadron's Canadian identity; Ottawa had, as yet, made no arrangements to replace the casualties bound to occur once the unit went into action and, 'it might very well happen that if the unit was used prematurely replacements of casualties could not be made from RCAF personnel, and therefore the Unit, as an RCAF unit, might cease to exist.'⁵⁰

Park, a New Zealander, and perhaps therefore able to appreciate Canadian concerns more readily than a British-born officer, adopted a placatory tone. He was surprised that someone, unidentified, had misinformed McNab – his practice was not to deploy a squadron on operations until it had at least fourteen pilots fully qualified. He went on to express his gratitude for the offer of the squadron in an emergency. Such an emergency, he added, 'I interpret to mean a "blitzkrieg" against the country, and not the present half-hearted scale of attack of merely a hundred aircraft at a time, as has recently occurred on the Kentish coast.'⁵¹

Walsh was equally conciliatory in his response, assuring Park that he wished no special treatment for his men. Once the squadron had the requisite fourteen trained pilots, he was prepared to alter the squadron's status from serving 'together with,' to acting 'in combination with,' the RAF (see Chapter 1), and he outlined the bureaucratic channel for formally implementing the change. That procedure was not immutable, however, as far as he was concerned. 'Should a grave emergency arise where the services of every available pilot might be required and the Squadron has not been trained to full capacity, I will, on notification from either Fighter Command or yourself by signal, telephone or dispatch rider, place the Squadron as acting "in combination" at once, leaving you free to employ qualified personnel immediately on operations. Legal confirming action can then be taken in due course.'⁵²

Unlike some other occasions later in the war, there seems to have been a genuine mutual willingness to cooperate. Park would have liked the Canadians to fill a gap left when one of his squadrons was withdrawn to Scotland for rest and recuperation, but, he explained to Walsh, he had not told McNab, 'because I do not wish them unduly to press onwards or in any way skimp their operational training.'⁵³

Nevertheless, this exchange of letters probably led to an increase in the tempo of practice flights. By 23 July all pilots had logged sixteen hours or more on Hurricanes and were averaging three hours flying a day while rehearsing squadron-strength interceptions. As they became more confident they apparently also became more adventurous, for a patronizing staff officer found it necessary to remind McNab that 'any breach of Air Regulations or any foolhardy flying would be severely dealt with.' Other Britons were less hidebound and more cooperative. McNab had informally arranged for some advanced training with the commanding officer of the RAF's Air Fighting Development Unit at ADFU Northolt, Wing Commander G.H. Vasse, 'who would act in the capacity of instructor-umpire-critic, taking sections, flights, and the squadron in succession into the air, and criticising and directing them in the proper methods of attack.' Hearing about that, Park thought that the Canadians might even be relocated to the same airfield with the ADFU, but the move proved impracticable for administrative reasons.⁵⁴ However, they flew from Croydon to Northolt every day to train under Vasse.

On 8 August Walsh visited the squadron to see for himself how their training was proceeding.

Special instructions were given to Wing Commander Vasse not to favour the Canadians in any way and to be sure that every possible angle of their training should be covered and criticized by outsiders, that is RAF Officers, in order to make the individuals and the unit as a whole realize the importance of what they might consider minor details. Wing Commander Vasse stressed the point that the Squadron had no idea of how to carry out attacks when they arrived but the last few attacks they had undertaken were beginning to show a decided improvement. He said that the Officers were all seemingly quite capable and very enthusiastic. He regretted that the training had to be interrupted for half a day to allow for the inspection at Croydon by the Rt. Hon. Vincent Massey, High Commissioner for Canada. It was explained, however, that this was unavoidable and it was hoped that the interruption would not prove too serious.⁵⁵

Early in the month, in final preparation for the shift to operational status, McNab was attached to No 111 Squadron RAF and – on 11 August – was credited with shooting down a Dornier 17. By the 15th, McGregor was also acquiring a taste of operational experience with the same British squadron as his compatriots took off from Croydon for a last day's training at Northolt. Appropriately, perhaps, as they returned in the evening the reality of war was brought home when they 'found the Station had been bombed, the armament and Orderly rooms being completely demolished.'⁵⁶

Although his diary entry has been misdated to the 18th by his editor (it was acquired in partly undated, loose-leaf form), apparently Gottfried Leske was one of those who attacked Croydon.

This time we were to bomb the aerodromes that ring London ... There were twenty of us, including ourselves. Before and behind us were many tight sections of pursuit planes.

The air was soupy at 3,000 meters, but it improved as we approached the Channel ... High above us our tough little Me[sserschmitt]s are flying. Already we are over Croydon, then over our target. It is shaped like a heart and lies close to a big highway. The Ju[nker]s in front of us have already laid their eggs. One of the hangars seems to have been hit, but otherwise they haven't done much damage ...

We finally managed to get rid of our packages. But Zoellner says he didn't think they did much good. Probably just made a few big holes in the field. Well, that's better than nothing.⁵⁷

With Croydon temporarily unusable, No 1 Squadron RCAF was moved to Northolt, finally assessed as operationally ready for action.

McNab later described his squadron's battle inoculation, on 24 August 1940, as 'the lowest point in my life.'⁵⁸ Twelve keen Canadians were patrolling over the Tangmere field at 10,000 feet, assigned to cover Spitfires landing and taking off, when he spotted three twin-engined aircraft in line astern, 4000 feet below and flying towards Portsmouth where a major raid was just taking place. He led his men towards them and ordered an attack, but then recognized them as Blenheims and broke away, followed by his own 'Blue Section,' before anyone had opened fire. However, his instructions to the other two sections, transmitted by HF radio, were either not heard by them or not understood.* The Blenheims fired off recognition flares, but the keyed-up Canadians mistook them for incoming tracer rounds. One section attacked and damaged a Blenheim; the other first shot down a second Blenheim, then finished off the one already damaged.

A Coastal Command report of the incident, attached to the Canadians' Operations Record Book, told the tale from the victims' perspective.

Three Blenheims (long nosed) of 235 Squadron letters F, AI, and E were circling Thorney Island at 8,000 feet during the air raid.

At 1640 [hours] E was approached by Hurricanes and all the Blenheims fired the recognition signal (Yellow Red). A Hurricane then attacked E and shot the Blenheim down in flames into the sea off Wittering. One body picked up out the sea by boat and it is believed that the other member of the crew may have bailed out.

* VHF was still coming into service and generally only Spitfires were fitted with it, while HF – widely used by military and civilians alike – was not always reliable at such close ranges.

At 1640 AI was attacked by 6 Hurricanes, the first attack damaged the wings, fuselage and starboard engine and holed the perspex at the front of the aircraft. The Blenheim took avoiding action and fired another cartridge. A second attack was made by a Hurricane without results. The Blenheim crash-landed at Thorney Island aerodrome with wheels and flaps out of action. The crew escaped with cuts and bruises.⁵⁹

The whole incident was remarkably similar to the notorious 'Battle of Barking Creek' on the third day of the war, when a gaggle of Spitfires had attacked two Hurricanes under the impression that they were Me 109s. Then, one Hurricane had been shot down and its pilot killed; now, two Blenheims had been destroyed and at least one crewman killed. No official recriminations seem to have followed either mishap, however, senior officers apparently understanding that the fog of war falls particularly heavily upon newcomers to battle. Indeed, such errors were not uncommon, and throughout the war a considerable number of aircraft fell to friendly fire. More than once, Canadians would be the victims.

Two days after their ill-judged attack on the Blenheims the Canadians were sent to North Weald, substituting for a front-line squadron which desperately needed rest. From there, in the company of Spitfires, the Canadians intercepted two dozen or more Dornier 215s, escorted by fighters. While the Spitfires engaged the escort, McNab ordered an echelon starboard attack on the bombers, and in the confused combat that followed the squadron was credited with three Dorniers destroyed and three damaged, though return fire took its toll. Three Canadians, including McNab, were shot down and one of them was killed. The survivors were, however, airborne the next day.⁶⁰

Their next encounter came on 31 August. While patrolling the English coast near Dover, they were bounced by a formation of Me 109s which, coming out of the sun, quickly shot three of them down; all three pilots survived, but two were badly burned about the hands and legs. In the late afternoon of the same day, the eleven Hurricanes still fit to fly intercepted a formation of fifty bombers escorted by a 'large group' of Me 109s. They claimed two of the German fighters and one bomber destroyed, and one of each damaged, while losing just one machine of their own whose pilot suffered 'quite severe burns' before baling out.⁶¹

The following morning brought more of the same when they met 'twenty to thirty' enemy bombers, this time with a screen of Me 110 fighters (not the most effective escorts) at 18,000 feet over Biggin Hill. The Canadians were still using the standard attack formations which they had been so carefully taught, but which were not always appropriate, even against bombers flying in formation. 'Flight Lieutenant McGregor after two vectors [given by an air controller] sighted about twenty enemy bombers with escort above ... [He] gave orders for a head-on attack. After forming line astern by sections, he led his section echeloned to port, delivering his attack about ten degrees off enemy port bow and below ... Attack did not develop quite as expected as squadron was climbing to the bombers height at close range.' The diary records that a Do 215 and an Me 110 were shot down and four other enemy aircraft dam-

aged. The Canadian squadron lost two machines and one pilot, who was badly burned.⁶²

Fighting intensified through the first week of September as the Germans pressed their attacks against Fighter Command bases. On the 3rd the Canadians were ordered to patrol the south coast of England, where they found Me 109s flying far above them, at 30,000 feet, a height at which 'it was impossible for us to engage them.'⁶³ The next day, however, they were more successful. Eleven Hurricanes were 'vectored onto a formation of about twelve or fifteen Me 110s at 15,000 feet near East Grinstead,' which had formed a defensive circle in order to protect themselves against an attack by faster and far more manoeuvrable Spitfires. The latter were running low on fuel and had to leave the scene, but McNab positioned one section to attack from the side and, while the Germans concentrated on that threat, McGregor's section was able to get above them. 'We saw them below us and just dived down into them for all we were worth to try and break up the circle. I got inside their circle going in the opposite direction, and plastered them as I went by. As they broke up, I got on the tail of one of them and gave him a long burst and saw him catch on fire and dive down to earth. Then I went back to look for others.'⁶⁴ The station intelligence officer believed that two Me 110s were destroyed in this action, one probably destroyed, and five more damaged.⁶⁵

The last ten days of August had cost Fighter Command 231 pilots, or almost one-quarter of Dowding's initial strength, and 60 per cent of those casualties were experienced flyers who could only be replaced by inexperienced graduates of Operational Training Units (OTUs). The first week of September saw no let-up in the pressure, and maintaining a unit's morale and combat effectiveness in the course of this intensive fighting involved an impossibly delicate balancing act – as pilots gained practical experience they were likely to be killed, wounded, or mentally exhausted by the strain, or else promoted into other squadrons to take the place of flight commanders who had become physical or psychological casualties. The desperate need for replacements forced Dowding to alter his training and posting procedures, and some pilots were switched directly from Bomber Command to Hurricane and Spitfire squadrons, while the length of OTU courses was cut in half.⁶⁶

On the Canadian side, the problem of replacing casualties had been concerning Group Captain Walsh for some time. It will be remembered that when Ottawa had assigned No 1 Squadron to the defence of Britain, the British had agreed that the RAF would provide any reinforcements needed, 'there being no facilities for [operational] training' in Canada. Back then, the Air Ministry had estimated fighter wastage rates during 'intense' fighting – such as that which was now prevailing – at eight aircraft and four pilots each month. In the event, however, that had proved to be a gross underestimate, and if RAF pilots were to be posted in as replacements, the squadron would soon lose its Canadian character and become a British unit in fact if not in name. A pipeline was needed to feed in a continuing supply of RCAF aircrew, as and when required; the lack of Hurricanes in Canada meant that such reinforcements would have

to be trained in RAF OTUs in the United Kingdom. When Walsh pointed this out to Ottawa, he was told that twelve Harvard-trained pilots would be sent, 'but none came. He cabled again, asking for only six, and was told that they would be sent, but again none came, [since] pilots had to be "ploughed back" into the BCATP.'⁶⁷

While No 1 faced reinforcement problems, the two other RCAF squadrons already in the United Kingdom were essentially unemployed. Despite having been in England longer than No 1 Squadron, Walsh pointed out, 110 Squadron was unlikely to see any action unless Britain was actually invaded, when desperation might bring almost anything to pass. No 112 had reached Britain in late June, but its operational debut would also be some time in coming unless the Germans actually put troops ashore in the United Kingdom. 'It must be admitted that Army Co-operation Squadrons, even in a restricted role, are still necessary,' Walsh argued, 'but it will undoubtedly be very galling for the pilots of the Squadrons to be kept continuously in practice for an occasion which may never arise, while later arrivals from Canada are making their presence felt against the enemy.'⁶⁸

Noting that several No 110 Squadron pilots had already begged informally for an operational posting – but not telling Ottawa that he had, in fact, asked for volunteers! – Walsh was 'certain that once No 1 Canadian (F) Squadron becomes engaged [in the battle], I will receive numerous applications for transfer to the Fighter Squadron as soon as vacancies become available.' He therefore requested authority 'to train a number of our A[rmy] C[o-operation] pilots in Fighter pilot roles, provided they are, of course, suitable.' According to his own account of this bureaucratic coup, permission was denied, but he then cabled back that Ottawa's response had arrived too late and the deed was already done. Six volunteers were hurriedly dispatched to an OTU, given the shortened course, and posted to No 1 Squadron at the end of the month.⁶⁹

July and August had cost the Luftwaffe nearly three hundred Me 109 pilots (some 26 per cent of those available) and about four hundred bombers and their crews. Although the effectiveness of attacks on their air defences were worrisome to the British, Fighter Command seemed, from a German perspective, to be as strong in early September as it had been when the battle had begun a month earlier. That was not the story Göring was spreading, however. He was busy overestimating RAF losses and (deliberately) under-reporting his own – a political tactic that could only rebound upon him in the event that Adlergriffe (Eagle Attack) should fail.⁷⁰

Meanwhile, the problem remained of how to go about completing the destruction of Fighter Command, a process that was going rather too slowly to meet the requirements of Fall Seelöwe. Perhaps Dowding could be tempted to fight en masse by an attack on London? Hitler's mind had been firmly set against targeting residential areas, but, on the night of 24/25 August, some bombers had 'overshot their targets, the oil installations at Rochester and Thameshaven, east of London, and dropped their loads over the centre of the capital.' Churchill had responded by ordering attacks on Berlin, a reprisal –

three reprisals, in fact – which outraged Hitler. On 31 August he authorized the Luftwaffe to retaliate in kind, and gave Göring the opportunity he sought.⁷¹

The commander of Luftflotte 2, General Albert Kesselring, also favoured switching the objective from Fighter Command itself to the immovable hub of empire. Should damage to No 11 Group's southern airfields become unbearable, he argued, Dowding could simply move his squadrons north and west, to bases just out of range of German fighters but from which they could still defend southeastern England. Unescorted attacks on more distant airfields, beyond the range of fighter cover, meant that his bombers would simply be shot out of the sky. 'We have no chance of destroying the English fighters on the ground. We must force their last reserves of Spitfires and Hurricanes into combat in the air,' and attacking London was the way to do it. Hugo Sperrle, of Luftflotte 3, was in fundamental disagreement. He thought that there was little prospect of driving the British fighters from the skies, particularly since the need to provide close escorts for the bombers put his own fighters at a tactical disadvantage. The better strategy was to continue applying pressure upon Fighter Command airfields for the present. (He does not seem to have argued for a return to attacking radar stations in conjunction with airfields, the original German strategy which probably still offered the best chance of success.)⁷²

Meeting with the two on 3 September, Göring, no doubt heavily influenced by Hitler's change of mind and the damage to his own prestige associated with British attacks on Berlin, ruled in favour of Kesselring. The Luftwaffe had been attacking airfields for a month now, without any apparent decision, and any alternative looked good to a man as intellectually shallow and publicity-conscious as the Reichsmarschall.⁷³

During the first day of the mass raids on London, No 1 Squadron was scrambled three times, but only its commanding officer saw any combat. Since the British did not yet know about Göring's new strategy, the Canadians' job on 7 September was to protect Northolt while the two RAF squadrons based there flew interception missions. Their Operations Record Book noted that 'a 200 plus raid penetrated to London where heavy bombing occurred but although we sighted part of this raid we were not allowed to engage as Control insisted on maintaining Station defence.'⁷⁴ The only hint of action came in the last patrol of the day. Whether Squadron Leader McNab was with his squadron during the first two scrambles is not clear, but during the third, when one flight took off at 1708 hours and the other thirty minutes later, he appears to have been away on his own, 'on an independent flight in the general direction of Beacon Hill.' His combat report stated that he was 'flying easterly towards a position over Maidstone [on the Channel coast] at 21,000 feet, in company with a Spitfire about 500 yards to my starboard, when approximately five Me 109s ... crossed in front of me ... I attacked the rear one with a deflection shot and followed into line astern using my excess speed due to height to follow. The Me 109 climbed and I fired 150 rounds from each gun dead astern from about 150 yards. The E/A suddenly climbed vertically and fell straight down. I got a glimpse of white

vapour from below his fuselage before breaking off [my attack].⁷⁵ His victim was assessed as 'probably destroyed.'

Those pilots who were assigned to intercept enemy formations now discovered that the escorting fighters had adopted a different tactic to complement the bombers' altered strategic purpose. During previous attacks on radar stations and airfields the Me 109s had (quite properly) ranged freely in the general vicinity of the bomber phalanx, seeking to engage the British fighters long before they could attack the vulnerable Heinkels, Dorniers, and Junkers. Now they clung to their charges like sheepdogs to their flock. One group would fly in close contact with the bombers and another immediately above and behind, even though this restriction robbed the Messerschmitts of their greatest assets, speed and performance at altitude, and deprived them of their most successful tactic, the quick dive through an enemy formation followed by a climb back to altitude before their prey could react.⁷⁶ Many years later, one-time fighter pilot Johannes Steinhoff^{*} recalled belonging 'to a wing whose express task was to escort the bombers to London and southern England.'

I can think of no more idiotic occupation for a fighter pilot than this shuttle service to London and back. 'Stay with the bombers at all costs,' we were strictly ordered. 'Don't engage in combat with the Spitfires. Don't let them lure you into attacking them even when they are in an ideal position. Remain with the bombers.' That was hammered into us *ad nauseum*. And if a man had done that sixty times, as I did, if he had bumbled rather than flown alongside the Heinkels or Dorniers ... as they crawled along ... if he had seen, time and again, the gleaming contrails high overhead as the Spits' reception committee, forewarned by their long-range direction finders on the ground, waited for this procession above Dover ... if a man had experienced all that, how could he possibly fail to have doubts about the sagacity of the high command?⁷⁷

On 9 September the Canadians had their first experience with close escorts, as twelve of them, together with the Poles of No 303 Squadron, spotted a large formation of bombers in the Guildford area. Working with ground control, McNab tried to manoeuvre his pilots into a position above and behind the enemy, but, while doing so, they were attacked by the covering Me 109s. The combat that followed was even-handed. The squadron claimed one German fighter destroyed and three others damaged, while one Canadian (one of those transferred from No 110 Squadron) flying as 'tail-end charlie' was shot down and wounded. McNab might be justly criticized for putting an inexperienced newcomer in the most isolated – and therefore most dangerous – position in the formation, but the veterans of No 1 were now his friends, a friendship tempered in battle. Like many another commander through the ages, he perhaps found it easier to hazard the life of a comparative stranger rather than that of a cherished comrade.

* Steinhoff rose to become chief of staff in the postwar German air force, and ended his career chairing NATO's Military Committee.

The intelligence report on this engagement illustrates the gravest tactical weakness which still beset Fighter Command.

The Squadron was in line astern when the engagement started and when attacked by e[nemy]/a[ircraft] most pilots found e/a on their tails and broke away before being able to fire ...

Some of the pilots were able to fire at the enemy, but with no conclusive results, while others were unable to find a target due to the suddenness of the attack and having to break away on finding themselves the object of attack.⁷⁸

The enemy pilots, in their Schwärme, rarely had such problems, but although their tactics were better, the intelligence assessments presented to their leaders were as weak as the strategies laid down by Berlin. In the course of the now discontinued airfield raids, 'runways and buildings were usually only slightly damaged and could be repaired overnight,' recalled then Oberstleutnant Adolf Galland, 'At Luftwaffe HQ, however, somebody took the reports of the bomber or Stuka squadrons in one hand and a thick blue pencil in the other and crossed the squadron or base in question off the tactical map. It did not exist any more – in any case, not on paper.' As for the shift to bombing economic objectives, 'failure to achieve any noticeable success, constantly changing orders betraying lack of purpose and obvious misjudgment of the situation by the Command, and unjustified accusations had a most demoralising effect on us fighter pilots, who were already overtaxed by physical and mental strain.'⁷⁹

Meanwhile, Gottfried Leske complained that the 'English' (Germans rarely distinguished between the various Commonwealth contingents in the RAF's ranks) '[are] always there when we come, and they send up hordes of fighters. Not that it will help them,' he added optimistically. 'They can't keep it up much longer.'

Sometimes when we come, in many layers and one formation closely following another, it's hard to imagine how a single English fighter will manage to get between us. It's as though we formed a wall. It really takes nerve to dive in between us the way they do. It's practically suicide. Because even if the Tommy is lucky enough to get one of our ships, he can't count on coming out alive.

Sometimes I get annoyed when the Hurricanes squeeze themselves in between us like that. I mean annoyed, nothing else. It's how you'd feel if you were on parade and some damned civilian suddenly got into the parade and upset the whole marching order. It doesn't even occur to me then that these Tommies are trying to do more than just disturb our marching order. I just feel that they don't belong and that they really ought to know better.

It's funny the ideas you get. Maybe it's because you can't hate your opponent every day and every minute. We know the English are our enemies and that we must beat them and that we will beat them, but we can't keep hating every damned pilot of every damned Hurricane.⁸⁰

No 1 Squadron's next engagement was on 11 September when an afternoon patrol near Gatwick sighted about twenty Heinkel 111s, with a fighter escort 3000 feet *below* the bombers. The Canadians dived into the bomber formation, broke it up, and pursued the Heinkels individually. The enemy fighters failed to intervene and, when the claims had been tallied, the Canadians were credited with two He 111s destroyed and two more damaged. Flying Officer A.M. Yuile also claimed a Ju 52, although it is hard to imagine what that slow and unwieldy three-engined transport was doing in the midst of a formation of higher-speed Heinkel bombers. Two of the Canadians were shot down, one of them with wounds.⁸¹

On Sunday, 15 September – the high point of the battle by most accounts, now celebrated as 'Battle of Britain Sunday' – the Germans launched an attack on London by 123 bombers, escorted by over 650 fighters. At 1100 hours radar picked up enemy formations gathering over Boulogne and Calais, and the bombers were under constant attack from the time they crossed the English coast. Of the twenty-four squadrons scrambled to counter this raid, all but two managed to engage the raiders. The Canadians left Northolt at 1140 hours, 'with orders to patrol at 15,000 feet,' according to the squadron intelligence officer. 'Not long after they were attacked from above by Me 109s out of the sun, who made the attack and then sheered off before most of the squadron were able to fire.' Two Canadians were shot down, one of whom died, while the other, Flying Officer A.D. Nesbitt (who would subsequently command the squadron and was destined to finish the war as a group captain commanding No 143 (RCAF) Wing of the Second Tactical Air Force) claimed one Me 109. On a second sally, flying in conjunction with two other squadrons which tackled the covering fighters, the Canadians were able to close with a formation of Heinkel 111s and shoot down two, claim two more and an Me 109 as 'probably destroyed,' and damage several others, with only one of their own slightly wounded.⁸²

At the end of the day Fighter Command was credited with 185 German aircraft destroyed while losing twenty-five of its own (a total which included the RCAF losses), but postwar analysis has revealed that the enemy loss was actually only sixty-one (of which twenty-six were fighters) while Dowding's casualties numbered thirty-one.⁸³ There were always great difficulties in establishing an accurate count since no pilot, having fired on an enemy machine, could afford to follow its subsequent gyrations for more than a few seconds if he hoped to avoid being shot down himself. Thus an enemy who dived away, accelerating and trailing exhaust smoke, could easily leave his attacker with the impression that he was going down on fire and out of control. There were, as always, exceptions, in which the outcome was irrefutable. No 1's Flying Officer P.W. Lochnan shot down a Heinkel 111 with the help of 'three Spitfires and two other Hurricanes,' then, in a scene reminiscent of popular war films, landed his machine in a field beside the downed bomber and personally captured the crew.⁸⁴ One is left to wonder, however, how many of the other five pilots involved also claimed that particular victory.

The Germans were back in force on the 16th and McNab took his squadron into the air in mid-afternoon.

As we climbed through the cumulus [clouds] we could see the first wave coming in. There must have been a hundred bombers in stepped-up formation with easily as many fighters surrounding them. British squadrons of Hurricanes and Spitfires were about to engage. Our Wing continued climbing and then we saw our target – the same size following the first wave. Just before we went in to the attack I looked over the channel to see the same number approaching, and our squadrons climbing [at] full throttle to intercept. It was a terrific battle. There must have been nearly a thousand aeroplanes milling in a small area just south of London. It was a quick shot and away for someone was sure to be on your own tail.⁸⁵

On 18 September the Canadians were in action again.

The Squadron led by Flight Lieutenant McGregor joined up with 229 Squadron with orders to patrol Biggin Hill-Kenley, and were then vectored to the area North of Dungeness.

Flying at 20,000 feet they were suddenly attacked by Me 109s and broke away, not being able to reform after. They patrolled individually but without contact except in the case of Flying Officer [O.J] Peterson who had climbed up to 27,000 feet where he sighted 3 Me 109s below. He attacked the No. 3 which went into a flat dive with smoke coming from the belly.⁸⁶

Peterson, who would be killed in action on 27 September, claimed this 109 as probably destroyed and a second as damaged. He was lucky this time, since the Me 109E could outperform the Hurricane at any height but its advantage increased dramatically above 20,000 feet.* The experience of Flying Officer F.W. Beardmore, who also 'patrolled individually,' could be regarded as more typical – he was shot down, but was able to parachute to safety.⁸⁷

The next ten days were relatively quiet as the squadron experimented with Air Vice-Marshal Trafford Leigh-Mallory's controversial 'big wing.' To this point in the battle No 11 Group, covering London and the southeast, closest to the enemy, had committed its squadrons independently, even though several might eventually be engaged at once – a tactic which ensured that they would get into action as quickly as possible. Even with radar, there was little time to spare if the enemy was to be intercepted before he reached his objectives and, in Air Vice-Marshal Park's opinion, massing several squadrons under one commander and then launching them all at the enemy at one time would take too long. The Germans were likely to have concluded their bombing and be well on their way back to the Continent before contact could be made.⁸⁸

Leigh-Mallory, the frustrated AOC of No 12 Group (he was senior to Park, but commanding a group that was only on the fringes of the battle), prodded

* Several observations in the squadron diary make it clear that the Canadians were well aware of that.

by his protégé, Douglas Bader, argued that some delay would be justified if the Germans could be hit harder – and the best way to do that was to strike with larger formations even if the enemy could only be caught on his way home. His was a view shared by the assistant chief of the air staff, Air Vice-Marshal Sholto Douglas, who would become the next AOC-in-C of Fighter Command.⁸⁹

No 1 Squadron's first experience with the recommended 'big wing,' however, was less than satisfying. 'Heavy fog impeded enemy operations during the early part of the day but by noon the weather had cleared and at 1800 hours a wing formation took off to intercept. There was some doubt amongst the three Squadrons as to which squadron was to lead and all took off together, fortunately without accident. The matter straightened itself out in the air ... but no interception was made, although enemy aircraft were seen a long way off the coast. This was the first Wing Formation operational flight from Northolt.'⁹⁰

Even when procedures had been properly established, attempts to employ any kind of coordinated 'big wing' concept were doomed to failure when battle was finally joined. 'Situational awareness' – a term that had not yet been coined – was a key factor in aerial combat, but mentally it was impossible for even the most experienced pilot to hold in his mind the relative geometry of half a dozen shifting, jinking, machines – of which his was one – for more than a few frantic seconds at most. 'Command' in the usual sense of the word was out of the question once contact was established and the shooting began. Squadrons immediately broke down into smaller units, usually pairs or individual aircraft, *Schwärme* or 'finger fours' at most, each skirmishing in its own isolated battle over many cubic miles of airspace.

In hindsight, then, training time might have been better spent experimenting with different formations within the squadron. Curiously, however, given the hierarchical nature of military institutions and Fighter Command's prewar doctrinal rigidity, decisions of that kind were now left to the men who actually flew, so that there was no coherence in tactical doctrine. As the Commonwealth's premier ace of that war, Air Vice-Marshal J.E. Johnson, has noted, tactics had become 'the opinion of the senior officer present';⁹¹ but when squadron formations broke up into the inevitable, kaleidoscopic confusion of small-scale engagements, the 'senior officer present' might well be a twenty-two-year-old from Moreton-in-the-Marsh, or Moose Jaw, Saskatchewan. Generally speaking, military intellectuals they were not; consequently, there was much warmth but little analytical thought put into the tactical debate, leading, in the absence of higher direction, to a growing lack of uniformity.

Some ideas caught on, often apparently among more than one squadron at a time. One notable innovator was an older South African, Squadron Leader A.A.N. Malan, who adopted a formation of three sections of four aircraft instead of four sections of three. 'When the melee began and the formation broke up, the four aircraft sections split easily into two ... Malan's theory was that a three-aircraft fighting unit contained one too many; and a lone fighter in the combat area was a sitting duck.'⁹² So far, so good. He placed the four

aircraft of his sections in line astern, however, the last one still being 'tail-end Charlie.'

Malan's approach was taken up in Tactical Memorandum No. 9, distributed in December 1940, the tone of the memorandum being merely advisory, not mandatory. 'Many squadrons now favour working in Sections of four aircraft with the object of being able to operate in pairs if the Squadron breaks up and dogfighting develops.' Further, 'it has been found that pairs of aircraft can keep together much better than Sections of three aircraft, and that they can afford better mutual support to each other in a dogfight.'⁹³ Bentley Priory was not yet ready to abandon the idea of weavers, despite being aware of some of its disadvantages. 'The method generally adopted of guarding against surprise is to provide "weaving" aircraft ... These aircraft turn continuously from one flank to the other so that they can keep a constant look-out behind ... There is a tendency for the "weaving" aircraft to lag behind the main formation and it is particularly important that the Formation Leader flies at a speed which will enable them to keep in very close contact with the Squadron formation.'⁹⁴

No 1 Squadron was now down to fourteen pilots, and 27 September brought more losses as the Luftwaffe made its last major effort to bomb London by day. Shortly after 0900 hours, and in the company of No 303 (Polish) Squadron, the Canadians sighted a group of thirty Ju 88s heading for London with an escort of single- and twin-engined fighters. Polish-Canadian efforts led to claims of one Ju 88, four Me 110s, and one Me 109 destroyed, one Ju 88 probably destroyed, and one Me 110 damaged. Two Canadians 'had their aircraft shot up and made safe forced landings,' at Gatwick and Kenley, respectively, while a third was shot down and killed.⁹⁵

These misfortunes were reflected in the second patrol of the day when the squadron could only muster eight machines. This time they flew in the company of No 229 Squadron, but it should be borne in mind that these were not 'big wing' formations; even if the squadrons chose to link up in the air, each still operated independently under the exclusive command of its 'senior officer present.' Near Gatwick about twenty Me 109s were sighted, 2000 feet above the Hurricanes. 'Keeping watch on the enemy, the Squadron did an irregular patrol until three of the enemy made a diving attack, fired a short burst and climbed again. As they went by, Red 1, Flight Lieutenant McGregor, got in two good bursts on one of the e/a which started smoking and spun down towards the ground. No other pilots were able to fire.'⁹⁶

In mid-afternoon the Canadians, now reduced to six serviceable aircraft, scrambled for a third time, again in the company of No 229, the two units successfully attacking a group of Dorniers and claiming five destroyed and one damaged. This success, mirrored by those of other squadrons from No 11 Group, ended (for the most part) the appearance of obsolescent Dornier 17s and Heinkel 111s in the daytime skies, leaving the Luftwaffe to rely on the faster Ju 88 and a fighter-bomber variant of the Me 110 for what day-bombing there was. Future raids generally came in high and fast, making it extremely difficult, if not impossible, for the Hurricanes to reach the enemy. Even Spit-

fires had trouble unless they were already aloft when the incoming raiders were plotted.

The Canadians flew two patrols in company with Nos 229 and 303 squadrons on 28 September, when 'large numbers' of Me 109s were seen far above them. The enemy fighters were probably covering Ju 88s or Me 110s which the Canadians did not see, for they chose to leave the Hurricanes alone and the latter simply could not climb high enough to get within range. This frustrating experience occurred with increasing frequency through the last week of September and into the following month. On 1 October the squadron diarist noted that 'long patrols were carried out and visual contact was made with large numbers of Me 109s on each occasion but they stayed about 5,000 feet above and we were unable to engage them.' The next day, 'several patrols were carried out but although Me 109's were seen we were unable to engage them as they had their usual height advantage and refused to come down.'⁹⁷

Blows were still given and taken, but those inflicted on the Canadians, combined with the introduction of a cold or influenza virus into the squadron's ranks, were taking their toll, making the shortage of pilots within the unit most noticeable and affecting morale among those still fit to fight. The return of three who had been wounded raised the number available to twelve; five others, including the commanding officer, were sick or in hospital, although morale rose on 4 October when the squadron learned that McNab had been awarded a Distinguished Flying Cross (DFC), the first member of the RCAF to be so decorated.

In early October the Battle of Britain was winding down, but it was not quite over. On the 5th the Canadians contacted approximately sixty Me 109s escorting fifteen Me 110s. 'Considerable milling about' resulted and one Hurricane, flown by Flying Officer H. de M. Molson (scion of the famous brewing family and later to be a long-time member of the Senate), went down; though wounded, Molson managed to bale out of his aircraft. 'He was amply revenged,' at least as far as the unit diarist was concerned, 'as the squadron bag for the fight was three Me 109s destroyed, one Me 109 damaged and two Me 110s damaged.'⁹⁸

By now the squadron had been in almost constant action for nearly two months, and losses had been heavy – three killed and eight wounded out of the twenty-one original pilots and six reinforcements from Nos 110 and 112 squadrons. The squadron medical officer, Captain R.J. Nodwell of the Royal Canadian Army Medical Corps (doctors, never mind flight surgeons, had not yet entered the ranks of the RCAF overseas), who had been hospitalized with pneumonia early in September, was shocked by the changes he found on his return.

On [re]joining the Squadron 30/9/40 it was noted that there was a marked change in the general reactions of the pilots as compared to three weeks previously.

There is a definite air of constant tension and they are unable to relax as they are on constant call. The pilots go to work with forced enthusiasm and appear to be suffering from strain and general tiredness ...

This constant strain and overwork is showing its effects on most of the pilots, and in some it is marked. They tire very easily, and recovery is slower. Acute reactions in the air are thereby affected. There is now a general tendency to eat irregularly or to have a sandwich in place of a hot meal. The pilots are becoming run-down and infections which would otherwise be minimal are becoming more severe. There is a general state of becoming stale. Needless casualties are bound to occur as a result of these conditions if continued.

It is considered that personnel engaged in active flying should have at least 24 hours off once a week, in which to get a good sleep, a 48 hour leave regularly every two weeks, and a two week leave every three months.

It is recommended that the Squadron as a whole, be given respite from their strenuous duties to allow for recuperation, and that definite leave periods be enforced to provide proper relaxation and rest.⁹⁹

Unknown to the good doctor, however, the Battle of Britain was ending. Fighting continued through October, but as the autumn weather deteriorated German attacks gradually petered out. On the 8th the squadron was ordered out of No 11 Group to one of the quiet backwaters of No 13 Group; its new base, where it would spend the next two months in rest and recovery, was Prestwick, on the west coast of Scotland, 'where the quarters were found to be comfortable and the food excellent.' There was a change of command as McNab was promoted to wing commander and attached once more to the RAF. Flight Lieutenant McGregor, also awarded a DFC (together with Flying Officer B.D. Russel), was promoted to fill the vacancy created by McNab's departure. The most dangerous opponent his squadron would face during its stay at Prestwick was a barrage balloon which broke free of its mooring. One pilot was dispatched to shoot it down into the sea.¹⁰⁰

In December the squadron moved further north, to Castletown, near Thurso on the northeastern tip of Scotland, where it became part of the defences of the Home Fleet, stationed in the Orkney Islands' Scapa Flow. An important target for the Germans in the event of invasion, but beyond the range of their fighter aircraft, its aerial tranquility was disturbed only by high-flying photo-reconnaissance machines that were quite out of the Canadians' reach. 'All accommodation is very cold and not good. Thurso is a very small village with little entertainment, few women and the coldest hotel rooms ever experienced. Dispersal is in an old dilapidated farmhouse. It is dark until 0915 hours, and the sun goes down about 1530 hours and never gets very high up in the sky.'¹⁰¹

A week later McGregor was posted out, to take command of No 2 Squadron RCAF, and Flight Lieutenant Paul B. Pitcher found himself commanding a unit in desperate administrative straits. The other ranks were housed in a camp which lacked piped water, where there were no tables in their mess halls, there was no fuel for the stoves, and there were eight miles of blizzard-wracked 'highway' between airfield and living quarters. The only bright spot in a dismal picture was the relative abundance of good Scotch whisky.¹⁰² Squadron Leader Pitcher (apparently doomed to inherit difficult commands, a fate that

will lead him to appear in this story more than once) was perhaps fortunate at this point to undergo, in quick succession, a bout of measles, 'near pneumonia,' and scarlet fever – a sequence of events which led to a prolonged stay in hospital, followed by sick leave and a staff posting.

In mid-February the squadron, led by the senior flight commander, Flight Lieutenant Nesbitt, started south to Driffield in Yorkshire. No sooner had it arrived there than orders came to continue south at the end of the month, to Digby, in Lincolnshire. There it would re-equip with Hurricane IIs and turn to convoy protection duties over the North Sea and the English Channel and – eventually – to offensive operations over the French coast and the Low Countries.¹⁰³ The Germans having given up on invading Britain, any serious aerial fighting to be done during daylight hours would have to take place over occupied Europe. Fighter operations were about to enter a new phase, one in which the RAF and the RCAF would – for good or ill – take the war to the enemy.

Turning to the Offensive, 1941-2

For Fighter Command the campaigns of 1939 and 1940 had been strategically defensive enterprises, but in the early spring of 1941 it began, more and more, to take the offensive. At first, the commitment was minimal. Typically, with cloud forecast over the Continent and authorization from group headquarters, two or three pilots would plan their own operation, code-named a Rhubarb, selecting a course which they hoped would lead them to surprise some in-souciant enemy airman en route to pay a social call at another base, or perhaps startle a pair of novices simply putting in essential flying hours. Using cloud cover they would stalk their foe, pounce when the opportunity arose, then re-enter the cloud before they could be attacked themselves by a stronger force. If they encountered no unsuspecting victims, they might attack targets of opportunity on the ground before recrossing the Channel.

The main motive for these early intrusions seems to have been to provide excitement and just a whiff of danger for aspiring young fighter pilots. They were not universally popular. 'I loathed those Rhubarbs with a deep, dark hatred,' wrote J.E. Johnson, the Englishman destined to become the Commonwealth's highest scoring ace and to command a Canadian fighter wing for many months later in the war. 'Apart from the *Flak*, the hazards of making a let-down over unknown territory and with no accurate knowledge of the cloud base seemed far too great a risk for the damage we inflicted.'¹ Fighter pilots being what they were, many more were happy to jink their way across the English Channel on what were virtually independent missions. After the war, however, the Air Ministry had to admit that it was 'difficult to believe that Rhubarb operations interfered with the working of the enemy war machine to any great extent.'²

A more formal and slightly more effective use of air resources involved the dispatch of larger formations on 'fighter sweeps over enemy territory without bombers,' sometimes referred to as Rodeos. Operations on that scale had to be authorized by Bentley Priory and planned and coordinated by group headquarters. They were seen to be 'useful as a means of training pilots, and of exercising them on occasions when bombers were not available.'³ Five squadrons of Spitfires flew the first Rodeo on 9 January 1941, but such undertakings were still not an effective way of bringing the enemy to battle when he

willingly paid the insignificant price of ignoring them. A bomber force – with the consequent threat, however remote, of substantial damage to such strategically important targets as factories or power stations – was needed to persuade the Luftwaffe to come up and fight on the RAF's terms.

On 10 January 1941 several fighter squadrons accompanied a flight of medium bombers bent on attacking airfields on the edge of the Forêt de Guines, south of Calais, in the first of what were subsequently labelled *Circuses*. It was still not possible, however, to exercise any real compulsion upon the enemy, since none of the targets within the range of fighter cover were really critical. The enemy might choose to fight, but could not be compelled to do so. Moreover, while the concept of *Circuses* was happily embraced by Fighter Command's current AOC-in-C, Air Marshal Sholto Douglas, it was not nearly as well received by Bomber Command's Sir Richard Peirse, who questioned his Blenheim bombers being used as 'bait.' Doubtfully, Peirse told the new CAS, Sir Charles Portal, that 'if we do (and we do) want engagements, then they must be profitable to us either because we shoot down more fighters than we ourselves lose, or because we inflict material bombing damage on the enemy. Preferably a combination of both.' Portal, however, promptly responded that he regarded 'the exercise of the initiative as in itself an extremely important factor in morale, and [he] would willingly accept equal loss or even more in order to throw the enemy on the defensive, and give ... [their] units the moral superiority gained by doing most of the fighting on the other side [of the English Channel].' He, too, disliked the term 'bait,' however, and told Peirse that 'it need not be mentioned to the Blenheims.'⁴

While they usually enjoyed an overall numerical superiority – often, indeed, a very substantial one – in their *Circus* operations, Fighter Command pilots were always at a tactical disadvantage. In what was almost a mirror image of the frustrations *Jagdflieger* had incurred in escorting bombers over England during the previous autumn, the British and their Allies were constrained by the requirement to remain in the immediate vicinity of the bombers when providing close cover – a commitment which both slowed them down and left them subject to German tactical initiatives. Even when flying as high cover, with more freedom to manoeuvre, they were condemned to fly well below the effective ceiling of the Messerschmitt 109E, since the Spitfire VB which had begun to enter service in February 1941 was still inferior to its German counterpart at heights over 30,000 feet. 'When it comes to fighter v. fighter and the struggle for the altitude gauge,' a senior staff officer told Douglas, 'we must expect for the time being to be at a disadvantage as compared with the improved Me 109 that we are now meeting.'⁵ Moreover, were they so unfortunate as to be shot down, the likelihood of German airmen surviving to fight another day was good. Fighter Command's pilots, in contrast, were now almost always lost, since a parachute descent onto French or Belgian soil usually led to a prison camp.

Tactically, however, Fighter Command was making some progress. The new AOC-in-C had established a new appointment – wing commander (flying) – to lead each fighter wing in the air. The Tangmere wing was given to Douglas

Bader, who took on Flying Officer Hugh Dundas as his wingman and doctrinal acolyte. As Dundas later related: 'I was in favour of trying line-abreast formation, already extensively used by the Germans. I argued that four aircraft, flying side by side, each one about fifty yards from his neighbour, could never be surprised from behind. The two on the left would cover the tails of the two on the right, and vice-versa ... If attacked, you would break outwards, one pair to port, the other to starboard.'⁶

One morning Bader decided to experiment along those lines, and four pilots took off for the Pas de Calais. When 'half a dozen' 109s attacked them, they broke outwards in typical German fashion and, although they mistimed the break on this first attempt, they shot down at least one Messerschmitt. 'That afternoon we had a post-mortem. We all agreed that the main advantage of the new formation had been proved. It was practically impossible to be taken by surprise from behind.' Indeed, 'the tactical superiority of the section of two or four was so clear,' reported Douglas, that 'it was decided that the section of two aircraft should be adopted, and in the spring of 1941 a new sub-division of the [fighter] Squadron into two Flights each comprising three sections of two aircraft was standardized throughout the Command.'⁷

In May the first Me 109F appeared, giving the enemy a renewed technological advantage. 'At all heights a Spitfire can turn inside a Bf 109,' but the 109 appears to have quicker initial acceleration in a dive and also in climbing.⁸ This ability to out-turn an enemy was a definite defensive asset, but of very little value when attacking. The 109F had a better ceiling than any RAF fighter and a better overall performance. Whenever they chose to fight, the 109s simply dived through the stacked British formations, then zoomed off to regain the height advantage and dive again, if and when the situation warranted another attempt.

With the Germans holding a technological edge even over the Spitfire, the air environment over France was certainly not one in which the Hawker Hurricane could flourish. The two Canadian fighter squadrons that were operational in the spring of 1941, Nos 401 and 402 (formerly Nos 1 and 2), were both equipped with Hurricane IIAs and consequently spent much of their time flying defensive patrols over southern England and coastal convoys. On 15 April, together with two RAF Spitfire squadrons, No 402 participated in an uneventful Rodeo which took its pilots over Boulogne, that being the RCAF's first offensive fighter mission.⁹ Most Rodeos (and Circuses) were equally tranquil, the Germans choosing to fight only when they were quite sure of their tactical advantage, with radar helping them come to such a determination.

Although these various fighter offensives were often led by distinguished veterans of the Battle of Britain, they also involved many inexperienced pilots, a good proportion of them coming directly from OTUs. A rough estimate of wastage, including postings to other theatres and to staff appointments,

⁶ German airmen, and Allied ones as well, often referred to the Me 109 as the Bf 109, *Bf* standing for *Bayrische Flugzeugwerke A.G.*, the company which had designed and built the first 109s and 110s before being reorganized as Messerschmitt A.G. in July 1938. The Me designation is employed throughout this volume, except when engaging in direct quotations, as in this case, since it was the most commonly used abbreviation among Allied airmen.

between August 1940 and April 1941 showed a turnover of 1300 pilots, 115 per cent of the effective August strength.¹⁰ In March, the wing commander (tactics) at Bentley Priory complained that 'the average number of experienced war pilots in squadrons I have visited lately is five, and I don't think Squadrons are being allowed to do nearly enough training of their inexperienced pilots. Squadrons ought to go up and carry out surprise attacks on each other, and especially practise regaining formation after being split up. I think perhaps fighter pilots are so busy keeping formation that they are not able to keep a good enough look-out.'¹¹

Under the guise of maintaining morale, Fighter Command nevertheless pressed on with its *Circuses*. Mid-June brought the largest yet, with more than 250 fighters escorting eighteen Blenheims of Bomber Command's No 2 Group to attack a chemical plant and power station near Bethune. As usual, no damage was done by the bombing, but this time the Luftwaffe reacted strenuously, shooting down nine of the intruders. Douglas was, however, able to take a positive view of the affair. He reported that 'although we lost nine pilots, those who returned reported a very favourable outcome of their combats,' and 'it seemed that the long-expected "fighter battle on terms tactically favourable to ourselves" had come at last.'¹²

Coincidentally, two days later policy-makers reviewed the ultimate purpose of these offensive operations, subsequently ordering a major modification which may have been necessary for political and grand strategic reasons but which did nothing to ease the strain on squadron pilots. For some time intelligence sources had been identifying German movements towards, and concentrations along, the Russian border, all pointing to an imminent attack on the Soviet Union. During the first week of June, decrypts of Luftwaffe Enigma cyphers – the special intelligence which the British code-named *Ultra* – established that the transfer of Luftflotte 2 from France to the east was substantially completed. Another *Blitzkrieg* was clearly in the making and there was little confidence in London that the Russians could resist it. On 17 June the CAS asked Douglas, in consultation with his colleagues at Bomber and Coastal Commands, to devise 'the most effective means possible of checking the withdrawal of Luftwaffe Units to the East – where the German attack on Russia was imminent – and, if possible, forcing the enemy to return some of the Units already withdrawn.'¹³

Douglas met with his fellow commanders-in-chief on 19 June (just three days before the Germans invaded the Soviet Union) to consider how that might be done. They agreed it was unlikely they could mount direct attacks in sufficient strength to bring back significant numbers of enemy fighters from the east, but they concluded that the violent reaction which had distinguished the Bethune raid might mean that the enemy was sensitive to attacks there – apparently dismissing out of hand the possibility that the Luftwaffe was simply taking advantage of a fleeting tactical opportunity rather than deliberately defending some key interest.

Since the enemy had reacted most energetically so far to the *CIRCUS* against a target near Bethune on 17th June and another against a target in that area on 21st May, we

concluded that the industrial area which included Bethune, Lens and Lille was probably his most sensitive spot [within range of fighter escort]. By attacking this area it was hoped to induce him to concentrate in North-East France such fighter units as he still had in the West. Bombers without escort might then hope to reach West and North-West Germany in daylight round the flank of the defences, and this in turn might force the enemy to bring back fighters from the Eastern Front in order to defend the Fatherland.¹⁴

The rate and weight of Circuses was increased and, on 8 July 1941, an RAF squadron of Boeing B-17 Flying Fortresses made its first appearance over enemy-held territory. With an operational ceiling of 30,000 feet, eleven 50-calibre machine-guns, and the acclaimed Norden bombsight, it was thought that these early 'Forts' would be able to fly successful missions unescorted. But, in the course of twenty-six such raids (mostly in the form of individual sorties, a technique rightly criticized by the Americans), 'they were far from successful,' four Fortresses being lost before the end of September for no observable gain. 'In 51 sorties by individual aircraft, 26 were abortive and no bombs were dropped. There were difficulties with the Norden bombsight, numerous mechanical failures and a tendency for the guns to freeze up at altitude. Most serious of all was the inadequate defensive armament. All guns were manually operated and there was a blind spot at the tail. It was decided to abandon operations over Europe.'¹⁵ An attempt to bomb the nearest German targets with smaller, lighter, British-built aircraft led to an attack on two power stations, near Cologne, on 12 August. Fifty-four Blenheims were used, together with 'an extensive series of diversions and fighter-escort flights ... but the limit of the fighters' range was reached well short of Cologne ... Most crews reached the targets and reported accurate bombing but ten aircraft were shot down by *Flak* or fighters - 18.5 per cent of the attacking force.' On the 28th, eighteen Blenheims attempted another low-level attack on Rotterdam docks, only to lose seven out of seventeen.¹⁶ The influential AOC of No 5 Group, Air Vice-Marshal J.C. Slessor, was soon noting that 'this day bomber business ... is terribly uneconomical,' and that approach, too, was tacitly abandoned.

Fighter Command had already accepted that its own offensive would have to be restricted to French and Belgian air space and limited to 'the destruction of certain important targets by day bombing, and incidentally the destruction of enemy fighter aircraft.'¹⁷ This variation, emphasizing the destruction of ground targets and focusing around the protection of a few heavy bombers, would subsequently be called a Ramrod; and it committed the machines involved to relatively deep penetrations of French airspace in pursuit of 'sensitive' targets.

In these upcoming operations a few RCAF officers would find themselves assigned greater responsibilities than fell to squadron commanders despite the absence, as yet, of any Canadian fighter formation.* The first of them was

* In air force terminology, a squadron was a unit, while any grouping of squadrons was a formation.

Gordon McGregor, DFC, whom we have already met as a thirty-eight-year-old Battle of Britain pilot.¹⁸ In mid-April 1941 he became wing commander (flying) for RAF Station Digby, in Lincolnshire, where the wing included No 401 Squadron. On 3 July 1941, flying its Hurricane IIs as one of the Digby squadrons, and so far employed only on defensive operations, it staged south to West Malling. From there, forming a wing with two British squadrons, the Canadians took off to participate in their first offensive sweep.

Apparently they were intended to act as a diversion for an early Ramrod although, with two out of three squadrons flying Hurricanes, they were probably more temptation than distraction from an enemy perspective. Fortunately, the Germans were not to be tempted or distracted on this particular occasion, and according to the somewhat cynical squadron diarist 'with some sort of cohesion the two Hurricane squadrons made a tour of France and returning to the coast again, saw the bombers go out, some AA fire, a red blob suspended in the sky, and some say thousands of unidentified aircraft some distance away.' Two days later, after a second uneventful sweep – 'It was a pleasant outing, no Jerries being seen, no AA fire just nothing' – Pilot Officer Hugh Godefroy, flying his first Circus, 'was startled at the number of aircraft in the formation. Above us were the Spitfires, a squadron at every thousand feet up to twenty-seven thousand ... Below us, like a mother hen with its brood, was a single four-engined [Short] Stirling bomber surrounded by squadrons of Hurricanes.'¹⁹

After these operations, none of which had incited a German response, No 401 Squadron joined No 402 on the sidelines to await the day when they would be re-equipped with machines more appropriate for the work in hand. The timing was fortuitous and fortunate: enemy opposition increased or declined in apparently random sequences, but Fighter Command had now lost 121 pilots while claiming – undoubtedly with wild exaggeration – to have 'destroyed 321 German fighters.'²⁰ On the Allied side, at least one Canadian in the RAF with first-hand involvement in the fighting clearly distrusted those figures. At a No 11 Group conference, Winnipegger John Kent, DFC, leader of the Polish wing at Northolt, audaciously 'raised the question of just what our purpose was in carrying out these operations.'

If it was to destroy the industrial potential of the various targets and so reduce the contribution of industry in the Occupied Countries to Germany's war effort I maintained that it would require a far greater bomber force than we had so far escorted.

If, I continued, the bombers were merely there as bait to bring up the fighters ... we should restrict our radius of activity to that which would permit us to fight without the nagging fear of running out of fuel. This mental obstacle seriously interfered with a pilot's fighting spirit and it was my opinion that we had already lost far too many first class men because these factors were not receiving sufficient consideration.

But the AOC declined to recommend or support any shift in strategy 'and we continued to go to Lille and lose good men, all to little purpose.'²¹

At Bentley Priory, however, the AOC-in-C was himself becoming a doubter. He pointed out to Sir Wilfred Freeman, the vice chief of the air staff (VCAS), that

taught by experience, the enemy has vastly improved his RDF warning system and his system of reporting our fighters after they come within visual contact of his Observer Corps. We hear the German fighters receiving their instructions in the air about the approach of our main force when the latter are still over British territory. In the course of the battle over occupied territory we frequently hear the enemy giving accurate information to his fighters about the whereabouts and direction of flight of our patrols. (Sometimes on the other hand his information is wide of the mark.) The consequence of this improvement in the enemy's defence organization is that a larger proportion of his fighters are brought into the battle from the right direction and at the right height to give him the greatest possible tactical advantage. This does not happen of course on every occasion, but it does quite frequently.

Douglas therefore proposed reducing the scale of his offensive once the Russian front had stabilized. Instead of frequent, almost regular, raids at times which the Germans could readily predict from their weather charts, he suggested it would be enough to indulge in 'periodical offensive sweeps to give the fighter boys a "jolly" and some practical training, and to keep up their spirits and morale. It will also annoy the Hun and keep him on his toes if he never knows when we are going to put over another fighter sweep.'²² That, surely, was as far as a commander could go (if he wished to retain his appointment) towards suggesting that his pilots were being squandered on fruitless, ill-considered missions.

There were, nevertheless, more than enough pilots graduating through the training system to make up losses. Indeed, RCAF graduates of the BCATP were now appearing in such numbers that it was possible to begin implementing Article XV of the BCATP Agreement and form Canadian squadrons in the United Kingdom. The first such unit was No 403 which, authorized on 1 March 1941, became operational on Spitfire 1s in May under a British commanding officer, Squadron Leader B.G. Morris. It converted to Spitfire VBs in August, flying its first offensive mission on the 5th, losing Morris (who became a prisoner of war) on the 21st. He was succeeded by Squadron Leader R.A. Lee-Knight, who was killed in action only five weeks later. Four more British officers would command the squadron before it was finally turned over to a Canadian, Squadron Leader L.S. Ford, DFC, on 13 August 1942.

In September 1941 two more RCAF Spitfire squadrons, Nos 411 and 412, both formed in June, joined the battle. Making them fully Canadian in fact as well as in name was not an easy task, however, given the enormous demands for skilled tradesmen in the BCATP and, especially, the difficulty of providing newly trained groundcrew and administrative staff in the right proportions and numbers. By far the greater part of a fighter squadron consisted of non-flying personnel, and No 411 could only report itself 70 per cent Canadian by July 1942, while the other two squadrons, Nos 403 and 412, were no better off.

There were brief moments in 1942 when the Canadian composition of their non-flying elements exceeded 80 per cent (apparently as new drafts from Canada destined for currently forming squadrons were temporarily posted in), but it would be mid-1943 before all three could consistently report they were 100 per cent Canadianized.²³

It should be pointed out, perhaps, that the measure of Canadianization was one of service affiliation rather than nationality, and that some members of the RCAF were not Canadians. One of No 412 Squadron's pilots, for example, was a British-educated Anglo-American, twenty-year-old Pilot Officer J.G. Magee, who had enlisted in the RCAF in September 1940. A year later, in the weeks before joining his squadron, Magee had learned to fly a Spitfire at an OTU in South Wales, an experience he found so exhilarating that he was driven to compose a sonnet about it. Less than three months after penning 'High Flight,' perhaps the best-known and celebrated poem of the Second World War, John Gillespie Magee died when his Spitfire collided with another aircraft while on a training exercise.

Even if it was possible to have all the pilots Canadian, it was not always practicable to do so, for qualified commanding officers and flight commanders were essential. There was good reason for the succession of British COs in No 403 Squadron, since Canadians of the right calibre were hard to find at this early stage of the war and the demand for them was outstripping the supply.

One of the few who had shown the requisite abilities in the eyes of Overseas Headquarters was No 411's Squadron Leader Paul Pitcher, whose unit flew its first offensive sorties on 20 September. No 412, under Squadron Leader C.W. Trevena (also RCAF), was only a day behind. Pitcher, a lawyer and prewar auxiliary airman from Montreal who had flown with No 401 Squadron in the Battle of Britain (and very briefly commanded it in the spring of 1941, before he fell sick), found that establishing a sound ethos and maintaining morale in his new appointment was no easy task. No 411's early experiences were a litany of mishaps, with the first crash occurring on 3 July, followed by ground collisions, heavy landings, raising the undercarriage too soon, landing with the wheels retracted, trying to take off with the brakes on, and even crashing into a totem pole at the end of the runway! When Pilot Officer W.F. Ash took up Pilot Officer R.W. McNair in an open cockpit, two-seater trainer and indulged in some unpremeditated aerobatics, he lost McNair, who drifted earthwards by parachute after 'accidentally loosening his harness pin.'²⁴

These various and apparently unending misadventures were the visible signs of a disciplinary malaise that took its toll on morale. After a spell of bad weather and of operations being cancelled for various reasons, the squadron diarist reported, in an unusually candid entry, 'Two squadron formations were carried out, and after each one there was such a lot of harsh criticism and "bitter recriminations" that about one more Balbo* ought, just about, to split

* A 'Balbo' was a massed formation of aircraft, so called after the Italian air marshal of that name who promoted mass flights during the 1930s in order to publicize Italy's growing air force. Balbo was shot down and killed by 'friendly fire' in 1940, while flying to Tripoli to take over the Italian air command in Libya.

up 411.' A few days later, in a squadron which had now been categorized as 'day operational' for better than two weeks, 'Two pilots scrambled to convoy a destroyer (though they didn't know it was a destroyer since they had not learned the code-words for various naval craft). They did not find the destroyer though, and patrolled the sunken vessel again.'²⁵ Earlier entries in the diary make no mention of any 'sunken vessel,' but use of the word 'again' suggests that No 411 had unwittingly patrolled over a wreck more than once.

The one bright spot was McNair, who registered the squadron's first victory, over an Me 109F, on 10 October.

The Wing Commander gave the signal to return to base and then the squadron turned to proceed towards the English coast.

I heard someone over the R/T saying 'There were scattered forces of Me 109s over Boulogne.' I went over at about 18,000 ft and saw numerous a/c below me at quite a low altitude. I dived on them and while still at about 5,000 ft above them I pulled up over the sea and came back on them again in a slow dive. I saw a group of seven E[nemy]/A[ircraft] circling a pilot in the sea, I picked out one, opened fire at him at about 250 yds, a quarter astern; he went into a sharp left-hand diving turn. I got on his tail and gave him a 3-second burst closing to 60 yds. I overshot him, pulled away to the right, and in going down I saw him go straight into the sea.

That ingenuous account depicts very well the bold but thoughtful novice taking a good look before committing himself, and then relying on surprise – but not excessive speed – to dive through six opponents while shooting down a seventh.

McNair would eventually be credited with fourteen enemy aircraft destroyed, three probably destroyed and thirteen damaged, but his first victory was very nearly his last. He broke clear and set a course for home but, his vigilance perhaps impaired by the euphoria of victory, he did not see the machine that shot *him* down until it was too late. Fortunately, the German who ambushed him in mid-Channel was no virtuoso of air fighting, either.

I continued on towards home when an E[nemy] A[ircraft] dived on me from port side out of the sun, his burst hitting my engine. I took violent evasive action, by skidding and slipping turns. The E a/c was now on my tail, putting in a continuous burst, scoring a number of hits. The cockpit became full of smoke, and the E a/c overshot me, coming directly in front of me at about 50 yards and about 10 ft above. I pulled up and gave him a burst, saw hits registering and his hood came off. Only my starboard guns were firing. Flames were now coming out of my cockpit, so I put my nose down. Finding that my engine was cutting out, I pulled up to 400 feet, and baled out into the sea. I was picked up about 15 minutes later.

This second Messerschmitt was originally assessed as 'damaged' in McNair's combat report, a claim subsequently changed to 'probably destroyed' (which seems more likely) and then back to 'damaged.'²⁶

By 7 November the pilots of No 411 had claimed only two enemy machines destroyed, one probably destroyed and one damaged, while losing two of their own to the enemy and two more destroyed and ten damaged through their own ineptitude. A squadron history prepared in 1957 notes that the 'talk around the barracks and the messes was all of volunteering for overseas'; and in mid-December, given the opportunity to volunteer for service in the 'Near, Middle and Far East, all pilots submitted their names.'²⁷ Four days later, exactly six months after the squadron had been formed, two more pilots were lost when '... an error in navigation on the part of the leader took the section over Calais instead of Dover, when returning from a Convoy Patrol near the French coast. The section was pounced on by five Me 109s and the two pilots concerned 'bought it' ... It has been a tough month for this unit. Four pilots killed, at any rate missing, and some five flying accidents. Our motto 'Inimicus Inimico' – 'Hostile to an enemy' – should more aptly be read 'Hostile to Ourselves.'²⁸

The unfortunate Pitcher was replaced by another Canadian of much greater combat experience, Squadron Leader P.S. Turner, RAF. Turner, a Torontonian, well knew the dangers of complaisant or unassertive management from his unhappy experiences as a pilot officer with 242 Squadron during the Battle of France; and he had learned much of the art of leadership from a subsequent commanding officer, the already legendary Douglas Bader. At the same time, he understood – and could sympathize with – the foibles and idiosyncrasies of his fellow-countrymen. As the year turned, the squadron diary detailed fewer mishaps and recorded more and more successful sorties.

Squadron Leader C.W. Trevena, the initial commander of No 412, had begun his service career in the ranks of the Non-Permanent Auxiliaries before being commissioned in July 1937. He had gone overseas with No 110 Squadron, and been one of Group Captain Walsh's volunteers posted (after an abbreviated OTU fighter course) to No 1 Squadron as a replacement pilot in the later stages of the Battle of Britain. Three months as a flight commander with No 403 in the spring of 1941 had led to his appointment as commanding officer of No 412 at the end of June. By the time his command became operational, however, at the end of August, it was rivalling No 411 at accidentally destroying its own aircraft.

Its first offensive sorties were flown on 21 September but were not marked with any great success. That may have been, in part, because the Germans still had a technological edge with their fuel injected engines. At the end of October, however, 'Sgt. Pickell returned from the Rolls Royce works at Hucknall with a new Spitfire VB which had been fitted with a new negative 'G' carburettor which now prevents the engine cutting when the control column is pushed sharply forward. Previously RAF fighter aircraft were at a disadvantage in carrying out this manoeuvre when in combat with German fighters which are fitted with the fuel injection system. Incidentally, 412 Squadron is the first Unit in the RAF [sic] to be fitted with this new gadget.'²⁹ Unfortunately, the 'gadget' proved to be no more than that, and of no help to No 412 Squadron. In July 1942 the AOC-in-C Fighter Command