

escort arrangements had been ineffective, more elaborate measures were planned, the fighters being detailed to escort the bombers at the same altitude and to remain in the immediate vicinity until the mission was completed. In addition, 62 Squadron's Bristol Fighters were ordered to patrol the Peronne-Bethencourt line when they finished their regular patrols and four of 1 Brigade's squadrons, Nos 19, 22, 40, and 64, were assigned to patrol parallel lines on either side of the objectives, creating a corridor for the bombers and their close escorts to fly through. In all, thirty bombers with fifty close escorts and an additional seventy-four fighters guarding the flanks were involved in the attack. There was little opposition in the north, but in the south the bombers were attacked by enemy scouts flying in the cloud cover below the flank guards. They forced the bombers to abort the raid and in neither sector was any effective damage inflicted on the bridges. Nor were the efforts of the five night-flying squadrons, 106 aeroplanes in all, on the night of 9-10 August any more successful. Photographs taken the following day showed that all the bridges between Cappy and Bethencourt were intact, and the Peronne rail bridge, while damaged, remained open for traffic, despite the delivery of another eighteen tons of bombs.⁴⁸

With German reinforcements moving across the bridges, and the Allies still dazed by their own initial success, the ground attack stalled. The Canadian Corps was able to advance two to three thousand yards on the 9th but was unable to reach as far as the line Chaulnes-Roye. The attacks that day were weaker and they were mounted piecemeal, unco-ordinated by Fourth Army Headquarters. Moreover, the Allies were encroaching on the old 1916 Somme battlefield which was studded with obstacles. As the offensive slowed and the German defences strengthened, the battle degenerated into one of local attacks and counter-attacks across the front. These continued on the 10th and 11th until, at the behest of Rawlinson, Haig ordered a halt on the Somme and began to look elsewhere for weak spots in the German defences.⁴⁹

While the battlefield stabilized, V Brigade fighter squadrons were kept busy. On the 9th they had been in the air even before the ground attack began but, because of the confusion, their efforts were not well synchronized with the infantry. They were also harassed by growing numbers of enemy aircraft whose pilots resumed their low altitude attacks. Rather than flying, as they had done at first, in large formation of up to thirty aircraft at heights of 12,000-15,000 feet, the Germans now flew in small formations of eight to ten machines at low levels over the forward area. Here they offered effective opposition to both the RAF squadrons flying close-support missions, compelling Salmond to divert some fighters to protective duties and reducing the number of aircraft committed to low-flying work. Nos 23 and 48 Squadrons, and one flight from each of the other fighter squadrons, were ordered to patrol around 4000 feet to protect the lower-flying aircraft.⁵⁰

A battle of attrition in the air ensued, individual and formation combats going on continuously over the battlefield. No 41 Squadron claimed five victims on the 9th, for the loss of one pilot, Lieutenant F.W.H. Martin of Regina. Lieutenant W.G. Claxton of Toronto and Captain F.R. McCall of Calgary were especially effective. In the morning Claxton destroyed a balloon near Bray and in the afternoon was credited with shooting down two Fokker biplanes. McCall, on an

offensive patrol over Bray, got into a dogfight and shot down two more enemy machines, one from only ten yards range.⁵¹

Over the next few days each pilot reported a startling series of successes. Claxton claimed a Fokker biplane on the 10th, and another on the 11th. On the 12th both Claxton and McCall claimed victories. On 17 August Claxton was wounded and crashed behind enemy lines when, with McCall, he attacked a German force estimated at forty aircraft. In three months' fighting Claxton was credited with thirty-seven enemy aircraft, including four on one eventful flight.⁵²

No 65 Squadron, which had lost four pilots in the first day's fighting, lost another four on the 9th, including Lieutenant H.E. Dempsey of Souris, Man. On the 12th the squadron was withdrawn from the line for rest, but before then the unit had been awarded six DFCs.[†] The squadron's leading pilot, Captain J.L.M. White, a former machine-gun officer with the CEF, was credited with thirteen victories by the war's end. On the 9th he was chased off the line at Meharicourt by fourteen Germans but was able to climb above them. He then dived on the enemy machines while they were attacking a formation of Sopwith Dolphins from 23 Squadron and sent one down in flames and forced another to spin away before he had to break off, 'there being too many E.A. attacking me.'⁵³

Other Canadians had similar experiences. In 24 Squadron Farrell and Lieutenant G.F. Foster of Montreal each claimed an enemy aircraft on 10 August. Lieutenant C.F. Falkenberg of Quebec City won a DFC leading a patrol from 84 Squadron against a formation of twelve enemy aircraft. From 14,000 feet the SE5as dove out of the sun upon the unsuspecting Fokker biplanes 5000 feet below them. Falkenberg selected his victim and followed it despite a series of vertical banks by the Fokker. The enemy pilot, finding his tactics unsuccessful, dropped into a steep dive but Falkenberg managed one final burst from both guns. He reported that the enemy machine's 'right hand top plane collapsed and fell back flush with the fuselage.' Falkenberg then seized a position on the tail of another aircraft and fired a drum of Lewis gun ammunition into it. It disappeared into cloud in a series of spins and stalls. Captain D. Carruthers of Kingston, Ont., also on this patrol, fired a long burst into an enemy machine on the initial dive; the German aircraft rolled on its back and fell to the ground.⁵⁴

The fighter squadrons of III Brigade were busy as well. Three Canadians in 3 Squadron, Captain H.L. Wallace of Lethbridge, Alta, and Lieutenants L.H. McIntyre of Peterborough, Ont., and W.H. Boyd of Campbellford, Ont.,[‡] were each

* Claxton received a DSO and DFC and Bar. McCall's claims also totalled thirty-seven by the end of the war. He was awarded a DSO, MC and Bar, and DFC.

† Including those awarded to A.A. Leitch from Ontario, J.M. McLennan of Whitehorse (POW 28 Sept. 1918), and J.L.M. White of Halifax (who would get a Bar to his before the war ended). Other Canadians with the squadron included W.J. Brooks of Toronto (POW 28 Sept. 1918), R.O. Campbell of Kincardine, Ont. (KIA 27 Sept. 1918), M.L. Fitzgerald of Hamilton, J.C. Malcolmson of Toronto (POW 28 Sept. 1918), R.C. Mitten of Punnichy, Sask. (POW 28 Sept. 1918), E.F.W. Peacock of Montreal, R.L. Scharff (POW 1 Sept. 1918), and P.L. Teasdale, addresses unknown, W.R. Thornton of Dresden, Ont. (POW 26 Sept. 1918), and G.D. Tod, address unknown.

‡ Other Canadians in 3 Squadron were C.G. Brock of Winnipeg, V.H. McElroy of Richmond, Ont., and V.B. McIntosh of Toronto.

credited with a kill on 10 August. In all, the four fighter squadrons of III Brigade claimed twenty-eight enemy crashed or out of control between 1600 hrs on the 9th and 1600 hrs on the 10th, ten of them claimed by Canadians. They lost only six pilots, including two Canadians.⁵⁵ It is certain, however, that the brigade was mistaken in its victory estimate, and that the relationship between victories and losses was much less lopsided than its figures indicate.

The exploits of Torontonians H.J. Burden highlighted the work of 56 Squadron. At 0900 hrs Burden left the ground leading a patrol that included Lieutenants C.B. Stenning and H.A.S. Molyneux, both also from Toronto.* An hour later, west of Bray, they sighted six Germans heading east. When the patrol closed with the enemy Burden forced down two and the other four spun down to ground level before making their getaway. After climbing west to 12,000 feet Burden's patrol attacked another formation of twenty enemy machines, diving on them out of the sun. Burden got on the tail of the top enemy fighter and, holding his fire until he approached to within fifty yards, fired a long burst which broke up the enemy machine. During the evening patrol, encountering a flight of enemy scouts, Burden forced one to spin and crash. Climbing above his antagonists he met yet another in a head-on duel. The German lost, crashing into a field to become the fifth victim claimed by Burden for the day.⁵⁶

Near Marchelepot another Canadian flight commander in 56 Squadron, Captain W.R. Irwin of Ripley, Ont., spotted a formation of fifteen enemy aircraft below. He led his three aircraft and those of two other RAF patrols into an attack. Irwin finally got behind an enemy machine and fired a hundred rounds at point-blank range. The German 'went over on his back and went down like a falling leaf, slipping from side to side, obviously out of control.' A second enemy machine, after he had fired about 150 rounds into it, burst into flames and fell burning and smoking into the clouds. Irwin, who was awarded a DFC, was then attacked himself but spun to safety in a cloud, where he reloaded his Lewis gun and climbed again, only to find the fight over.⁵⁷

Bombing policy was again changed for operations on 10 and 11 August. Most of the day bombers were ordered to attack the railway stations at Peronne and Equancourt, the targets they had originally been assigned.[†] Peronne was the principal target on the 10th and late that morning two formations of six bombers each from 27 and 49 Squadrons were escorted to the city by forty fighters from 32 and 62 Squadrons. The ratio of fighters to bombers gives some idea of the ferocity of the fighting as the Germans sought desperately to preserve their supply and reinforcement routes. The flight from 27 Squadron, led by Captain M.L. Doyle of River Louison, NB, and including Lieutenants E.J. Jacques of Battleford, Sask., and H.W. Hewson of Clarenceville, Que., was attacked five minutes before reaching Peronne by eight Fokkers and a general *mêlée* developed in which seven SE5as

* Other Canadians with 56 Squadron were W.O. Boger of Winnipeg, A.M. Clermont of Toronto, G.A. Elmslie of Montreal, T.D. Hazen of Sarnia, Ont., V.H. Hervey of Calgary, and F.A. Sedore of Sutton West, Ont.

† The Somme bridges were left for the DH4s of 205 Squadron which made morning and afternoon raids against Brie and St Christ. A direct hit on each bridge was claimed, but the bridges, in fact, were unscathed.

from 56 Squadron joined. The bomber crews claimed one victim and one of the escorting fighter pilots, Captain J.H.L. Flynn of Waterloo, Ont., was credited with another out of control. One DH9 and four fighters fell behind enemy lines, however, including 32 Squadron's Lieutenant W.E. Jackson of Peterborough, Ont. Despite the opposition, the bombers managed to drop their twenty 112-lb bombs on the railway sidings and the town, but low clouds obscured the results, as they did with some of the raids by 107 and 98 Squadrons, which attacked Equancourt's railway station.⁵⁸

Because of its importance as a rail centre, Peronne was attacked repeatedly. In the early evening it was the turn of 103 Squadron of X Brigade and 18 Squadron of I Brigade to mount a raid. During their attack Second Lieutenant I.B. Corey of Barnston, Que.,* claimed one of No 103's four victories over the defending fighters. Later, 83 and 207 Squadrons dropped over two hundred 112-lb bombs and ninety 25-lb bombs on the target from heights of 1000 to 6000 feet. The next day the DH4s of 205 Squadron made three raids on Peronne. The two formations of eight and six aircraft in the first raid were attacked as they approached their target. Between them they claimed five enemy fighters, including one that was hit by a falling bomb which broke off its left wing. The afternoon raid of fourteen DH4s shot down one German scout which ventured into the middle of the formation. The enemy machines which attacked the bombers in the evening raid were driven off by the escorting Bristol Fighters, although the DH4s claimed one forced down. The raids on railway centres were pressed through 11 August but it was too late to make much difference to the battle. On that day, despite Foch's urging that the attack be continued, Haig called a halt on the Somme, turning instead to the British Third Army to continue the offensive in the north.⁵⁹

In four days' fighting the allied front had been advanced by ten to twelve miles at some points and the Amiens rail link had been secured from German shelling. At a cost of about twenty thousand casualties the Australian, British, and Canadian troops inflicted almost four times as many casualties on the enemy, more than eighteen thousand of them prisoners, and captured 240 guns. Most of the gains had come on the first day of the battle.⁶⁰

The principal contributions of the air arm, too, were made at the outset, during the logistical build-up preceding the attack and in the initial assault on 8 August. After the undoubted success of the first hours of the attack, however, the effectiveness of RAF operations certainly diminished. Indeed, one authority has observed: '... it is impossible to assert with any confidence that the result of the battle after about 14:00 hours on the 8th would have been materially different, or that the ultimate line reached and held by our forward troops on the 11th would have been materially short of where in fact it was, if not a bomb had been dropped or a round fired by aircraft against ground objectives.'⁶¹ In assessing the reasons for the relative ineffectiveness of air operations after a brilliant early showing, the confusion among allied commanders about the ultimate purpose of the offensive

* Other Canadians with 103 Squadron included A.A. Adams of Moose Jaw, Sask., D.M. Darroch of Montreal, C.H. Heebner of Toronto (POW 24 Sept. 1918), J.B. Russell of Ottawa, P.S. Tennant of Vernon, BC (POW 2 Nov. 1918) and J.H. Whitham of Fort William, Ont.

seems to have been important. Unfortunately those directing the operation were unclear in their own minds whether their objective was the line of the old Amiens defences or Ham, or somewhere in between. They also failed to lay down the objective of the RAF in unequivocal terms. Like many others intimately involved in planning the battle, Brigadier-General Charlton clearly had the impression that the attack was a limited one. Moreover, the operation raised serious questions about the efficiency of the RAF chain of command. Both the appointment of an overall commander of the air forces in the offensive, and a clearly stated objective for the RAF, were required and would have allowed a more efficient use of air power. As it was, Charlton's stated purpose of assisting the ground troops to achieve their objective made no provision for a continuing battle. Also, while Salmond's strategic objective included sealing off the battlefield from enemy interference by attacking aerodromes and railway centres through which reinforcements might be expected to reach the battle, he miscalculated the speed of the German reaction and, in the event, abandoned both targets for the chimera of the Somme bridges.

The decision to switch the bulk of available air resources to the Somme bridges in mid-battle was a questionable one. Despite 700 sorties, and fifty-seven tons of bombs, the bridges were not seriously damaged and German reinforcements continued to reach the battle area by rail and road.⁶² No written record was kept to indicate how and exactly why the decision was taken, but bridges were among the most difficult of bombing targets. A miss of inches and the bomb exploded harmlessly in mud or water while if a lucky hit was made, the damage could usually be repaired quickly; effective demolition was almost impossible.

General Salmond subsequently maintained that had the bombers of Trenchard's Independent Force been available to him, he could have made the rout complete. Even at the time, however, there was clearly a difference of opinion about the efficacy of bridge bombing. On 29 July 1918 a memorandum on target selection for bombers prepared by the Inter-Allied Transportation Council was forwarded to Major-General F.H. Sykes, the Chief of the Air Staff, for his comments. The memorandum gave bridges a high priority as targets, since 'The partial destruction of bridges will cause more prolonged interruption of [train] traffic than the breaking of tracks at any other points.'⁶³ In his reply, Sykes, while agreeing, pointed out that 'Experience has shown that a bridge offers so small a target that even from a low altitude it is exceedingly difficult to hit, even direct hits will not as a rule cause any very prolonged interruption of traffic. To destroy a bridge an attack in considerable strength and carried out from a low height is necessary. Such an operation must inevitably be costly as all important bridges are very strongly defended against aircraft attack. Systematic raids on bridges would, under existing condition, entail a policy too expensive to be maintained.'⁶⁴ Sykes' comments, dated 13 August, were made at virtually the same time that the accuracy of his assessment was being proven in battle.

The cost of the air battle was extremely high. On the first day of the battle the RAF suffered eighty-six casualties, sixty-two of them killed, missing, or prisoners. Fifteen of these were Canadian. On the 9th there were forty-eight casualties, thirty-four of whom were killed or missing and there were eight Canadians in the latter group. Canadian casualties alone, in the four-day air battle from 8 to 11

August, were thirty-one, twenty-six of whom were killed or became prisoners of war. German losses were much smaller, forty-eight aircrew and thirty aircraft. On the surface it would appear that the Germans won the engagement, but this verdict has to be qualified. The German air force was far less able to absorb heavy casualties than was the RAF. 'Compared with the German air casualties,' the German history of the battle noted, 'those of the enemy had to be called very high. Of course, on the German side, the loss of aircraft was more serious in view of the dwindling flow of materiel.'⁶⁵

Normally, the GAF wisely chose to fight on its own terms; at Amiens circumstances compelled it to fight on allied terms. The attack on the Somme bridges had posed the most serious possible threat to the seventy thousand German Second Army men and their equipment still west of the river. A threat to the bridges was a threat to the survival of almost every one of them. The destruction of the bridges, as we have seen, was beyond the capacity of the bomber weapon of 1918. Protection by ground fire alone would probably have sufficed to keep these bridges in use but they were so important that the Germans did not dare take the risk and every effort had to be made to keep them intact, either for reinforcement or evacuation. In fact, by 11 August eighteen reserve divisions had been moved up to join the remnants of the Second Army's original six. It seems unlikely that anything else that the RAF might have done would have brought the German airmen to battle in such numbers and kept them fighting at such a pitch. In the process, as the British official historian has pointed out, 'the German air-service was so roughly handled that it was never able fully to recover.'⁶⁶

Actual German losses in the air battle are not the true measure of the punishment that their air force had taken. Their casualties take no account of machines flown back to bases (their aerodromes were so close to the bridges that they could often glide down to them right out of the battle) so badly damaged that they could not fly again without major repairs or replacement. The forty-eight airmen that they lost* contained an inordinate proportion of the pilots from the élite *Jagdgeschwadern* that had borne the brunt of the battle. When the Richthofen wing moved to Bernes on 11 August, it had been reduced to a quarter of the strength with which it had entered the battle three days earlier; and, unlike its opponents, it was virtually impossible for the GAF to make good its losses in men or *matériel*.

* The figure would have been higher had it not been for the use of parachutes by the German fighter pilots. On 29 June *Leutnant* Ernst Udet of the Richthofen *Jagdgeschwader* had made a successful operational jump when he 'bailed out' under fire from a height of 500 metres, and was back in the air that same afternoon. Just the day before another of the pilots in Udet's squadron had also jumped successfully from a burning aircraft. 'Suddenly there came a day when no pilot would take off without one,' recalled a German air liaison officer some years later. Two more pilots of the wing jumped in July, one successfully and one unsuccessfully. On 10 August the wing recovered one out of two jumpers – in a span of six weeks four out of six parachutists had made successful jumps. Karl Bodenschatz, *Jagd in Flanderns Himmel* (München 1942), 110, 115–16, 125, and Hans Schroeder, *An Airman Remembers* (London nd), 273. No doubt other fighter wings had a similar record and the number of parachute escapes from burning or disabled aircraft continued to mount. British airmen, however, were never issued parachutes during the First World War.

Perfecting the Air Weapon

Despite the imperfect planning and staff work that had prevented the Amiens battle from becoming anything more than a limited success, both Foch and Haig were quick to appreciate the possibilities which now opened up. The Allies had found an effective tactical doctrine that would break the deadlock of trench warfare without incurring the casualty levels which had marked their earlier attempts. Tanks, artillery, and aircraft, properly co-ordinated so that they provided support for each other as well as for the infantry, could smash the wire and machine-gun defence systems which had dominated the Western Front for nearly four years. Most of the major logistical and production problems which had plagued the Entente for so long had been overcome. The promise of an end to the battles of attrition signalled by Amiens had done as much to improve allied morale as it had done to impair the German. Late on the evening of 21 August 1918 Foch had told Haig that 'any timidity on their [British Third Army's] part would hardly be justified in view of the enemy's situation and the moral ascendancy you have gained over him.' Haig, writing to his army commanders the next day, proclaimed that 'Risks which a month ago would have been criminal to incur ought now to be incurred as a duty ... The situation is most favourable. Let each one of us energetically and, without hesitation, push forward to our objective.'¹

These exhortations were aimed most immediately at Rawlinson's Fourth Army, the victors of Amiens, and Sir Julian Byng's Third Army, which had just struck between Alette and the River Ancre in an operation designed to secure the line of the Albert-Arras railway. This was scheduled to become the starting line for a much greater assault by both armies along the thirty-three miles of front from Neuville, just south of Arras, to Lihons, the point of junction with the French. Their attack was launched on 23 August and, during the next eight days, the German position which hinged on Roye was turned from the north. Ludendorff's forces were pushed back behind the east bank of the Somme, with a loss of some 34,000 prisoners and 270 guns.

Before these operations began one significant alteration in RAF dispositions had been made. No 73 Squadron (Sopwith Camels), with at least nine Canadians among its twenty-four pilots,* was attached to the Tank Corps in order to reinforce

* E. Barker of Newboro', Ont., W.A. Brett of Dugald, Man. (KIA 27 Sept. 1918), G.C.C. Carr-Harris of Kingston, Ont., J.H. Drewry of Victoria, H.V. Fellowes of Grimsby Beach, Ont. (POW

8 Squadron's* specialized tank-support role. At Amiens the tanks had clearly demonstrated their ability to dominate most aspects of the battlefield. Impervious to small arms fire, they had plunged through wire and over trenches, grinding enemy strong-points beneath their huge tracks. They had also shown themselves, with their slow speeds and limited vision, to be easy targets for the German anti-tank guns just coming into use (the 7.7 cm anti-aircraft 'flak' gun was sometimes pressed into service as an anti-tank gun, the precursor of the dreaded dual purpose '88' of the Second World War) and for field artillery hastily adapted to an anti-tank role. On 10 August, for example, 'some 67 tanks in all were engaged, and of these 30 received direct hits. On one occasion, a single, well-sited gun had disabled eight tanks in succession.'²

The response to 'LL'[†] calls sent down by artillery observation aircraft working with the Tank Corps was too slow to be very useful against concealed anti-tank guns, which might not open fire until the tanks were within a few hundred yards. The proximity of friendly armour and infantry then made it hazardous to employ artillery fire to suppress or destroy these guns; it was considered that the most feasible way to neutralize them was to attack directly with low-flying aeroplanes. However, the one flight which 8 Squadron was normally able to spare from contact patrol and artillery observation duties was numerically too weak to be effective in this counter anti-tank role, nor were their Armstrong-Whitworth FK8s really fast or nimble enough for this ultra low-level close support work. The addition of twenty-four Camels to the Tank Corps' air arm, however, permitted the deployment of at least one machine well-suited to the role over each two thousand yards of front during tank assaults. By carefully studying the ground on layered maps and air photographs, the Camel pilots were able to make up charts which plotted likely German gun positions.[‡] These locations were then examined frequently during the course of the tank assault and any sign of activity brought a thorough strafing of the spot.³

The reconnaissance of these anti-tank gun positions was not left as an exclusive responsibility of the fighters and one flight of 8 Squadron. After Amiens all corps aircraft in the battle zone were instructed that '... it will be seldom that the duty in which machines are at the moment engaged will not yield in importance to offensive action at once against the anti-tank gun.' Corps squadron aircrews were therefore to keep a special eye open for anti-tank guns and to facilitate the rapid bringing down of fire on these vital targets. A Wireless Central Information Bureau (known as the CIB) was set up to co-ordinate artillery and low-level air support and monitor enemy activity. Corps patrols observing either enemy air

1 Sept. 1918), W.H. Hubbard of Toronto (WIA 26 Dec. 1916), E.J. Lussier of Medicine Hat, Alta, O.T. Moran of Winnipeg, and D.B. Sinclair of London, Ont. (POW 2 Sept. 1918)

* Canadian flying personnel included J.R. Desy, address unknown (KIA 27 Oct. 1918), A. Grundy of Merritt, BC, V.R. Homersham of Winnipeg, J.R.R.G. MacCallum of Toronto (KIA 23 Aug. 1918), W.F.R. Robinson of Round Hill, NS (MIA 24 Sept. 1918), W. Spriggs of Port Williams, NS, R.F. Talbot of Montreal (KIA 2 Sept. 1918), S.B. Trites of Salisbury, NB, and F.A. Whittall of Westmount, Que.

† 'All available batteries to open fire (sudden attack on very favourable target).'

‡ This process of potential gun-site identification was made significantly easier after 2 September, when a document was captured setting forth German principles for the deployment of anti-tank guns in the defence. J.F.C. Fuller, *Tanks in the Great War, 1914-1918* (London 1920), 247-8



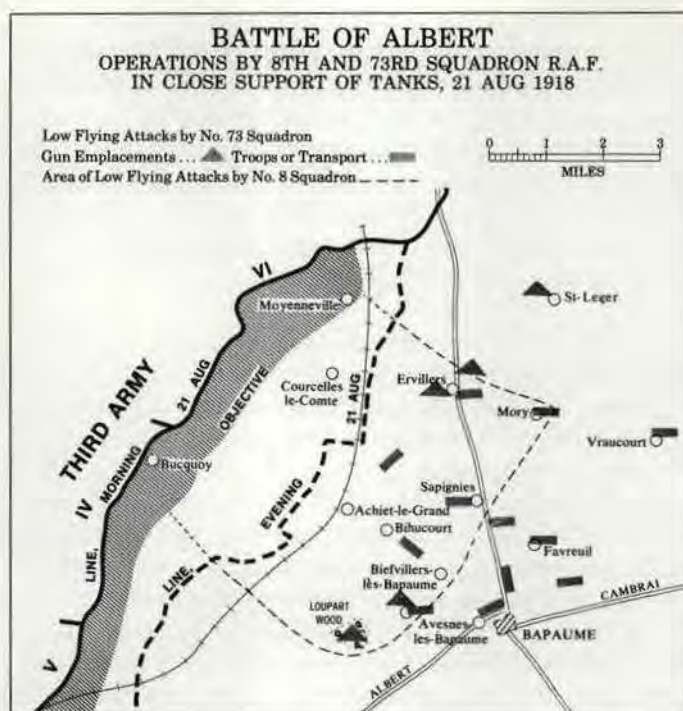
activity or vital ground targets were to transmit their target locations by wireless telegraphy (Morse) to the CIB, which would immediately re-transmit the information by wireless telephone (voice transmission) to the appropriate artillery battery or fighter squadron headquarters. The original observer of the target was also to fire a red Very flare in order to attract any other British aircraft which might be already in the vicinity. A constant flow of information was ensured by instructing all artillery and contact patrols to make a routine call to the CIB every half hour. If a call was not made on schedule it could be assumed that the machine was for some reason no longer operational and a replacement was to be promptly dispatched.⁴

A direct wireless link between tanks and aircraft had for some time been recognized as the best solution to communications problems. As the events of July and August had shown, however, contemporary wireless telephony equipment was impractical for such an operational task. Although tests proved that it was possible for tanks to receive messages clearly in Morse from aircraft at 2500 feet altitude and 9000 yards away, the supply of wireless telegraphy sets for the allied armies had already been allotted to the end of the year. None were available for this new requirement. Consequently, communication between tanks and aircraft remained tenuous and irregular and was largely restricted to written messages dropped at tank brigade and battalion level and at pre-selected rallying points.⁵

The essence of the new approach was the co-ordination of the various arms in a series of attacks based on the operational and tactical concepts of fluidity and of reinforcing success rather than failure. This form of warfare embodied all the fundamental principles, materials, and technology of the 'blitzkrieg' which so astonished the world in 1939 and 1940, first in Poland and then in France. From the experience of Amiens the allied commanders had now devised ways – not a moment too soon – to pull all arms together. The new techniques were not to be fairly tested upon their first application, however. The dawn attack on 21 August was launched, as so often on the Western Front, through a thick fog. The entire RAF flew only twenty-five reconnaissances and forty-five contact and counter-attack patrols during the day; on the Third Army front no flying was possible until 1100 hrs, when the first contact patrol of 8 Squadron, piloted by Lieutenant A. Grundy of Merritt, BC, reported that the attack was developing successfully. On a counter-anti-tank gun sortie flown by 8 Squadron, Lieutenant F.A. Whittall of Westmount, Que., was also able to silence two enemy guns that were firing on British tanks. Driving off an enemy aircraft which was attacking another of the Armstrong-Whitworths, Whittall and his observer then engaged and silenced a third gun which was firing on two Whippet tanks. However, the bulk of the counter-anti-tank gun patrols were flown by the newcomers of 73 Squadron, out to prove their worth.⁶

The tank attack was restricted to the area between Bucquoy and Moyenneville, since the ground south of this frontage was unsuitable for tank action. No 73's first patrol, five strong and led by Captain W.H. Hubbard of Toronto,* attacked gun

* Hubbard's wingman was R.N. Chandler, a young Londoner who was to be awarded a DFC for his work in the last three months of the war. Chandler emigrated to Canada in the early postwar years and joined the RCAF in 1940. He retired in 1946 with the rank of wing commander.



emplacements in Loupart Wood, near Mory, and strafed troops in Favreuil, Grevillers, and Mory. A second flight of six machines, including Second Lieutenants E. Barker of Newboro', Ont., and W.A. Brett of Dugald, Man., took off before the initial flight had landed, dropped all their bombs on Mory, and then heavily machine-gunned columns on the Ervillers-Bapaume road, which ran laterally behind the German front. During the early afternoon a third patrol, which included Lieutenant E.J. Lussier of Medicine Hat, Alta, hit the gun emplacements in Loupart Wood again with twenty 25-lb bombs, dropped four more on Ervillers, and shot up motor transport and troops in the vicinity of Achiet-le-Grand and Sapignies. Each of the three flights (with Second Lieutenant G.C.C. Carr-Harris of Kingston, Ont., substituting for Brett) then carried out second strikes in the same general area, so that the tank battlefront was under virtually continuous surveillance and attack by this one squadron from noon until 1900 hrs.⁷

Close air support was so successful in this operation that only thirty-seven of the 190 tanks employed in the assault received direct hits. This unprecedentedly small casualty figure might have been even lower if the morning fog had not lifted gradually from the west, thus giving the anti-tank gunners a golden opportunity to engage their targets for the few minutes that they themselves remained invisible to the British close support machines.⁸

The three fighting squadrons – Nos 3, 56, and 60 – which had been allocated to additional ground-attack roles sent their machines off in pairs at half-hourly intervals during the time that flying was possible. 'A series of low bombing and ground attacks were carried out ... in and around Bapaume. In the evening Sailly dump on the Bapaume-Peronne road was bombed and machine-gunned, and [enemy gun]

pits were attacked, resulting in twenty-three of the latter suffering destruction by Burden and Holleran,' wrote 56 Squadron's historian.* Burden's diary added that 'on my last trip in the afternoon I got a railway station complete also a team of horses, a wagon and a billet with 4 bombs and shot up all manner of Huns from 100 feet with Armour Piercing Ammunition.'⁹

No 3 Squadron's Camels also attacked the Saily-Saillisel supply dump that evening and Lieutenant V.H. McElroy of Richmond, Ont., reported dropping two bombs 'which caused large explosions in the dump.' Earlier in the day he had strafed troops in Favreuil with bombs and machine-gun fire from 'a very low altitude' and shot up a kite balloon south of Tilloy. His machine had been hit a number of times but he was back in the air for the attack on Saily dump within a few hours. Lieutenant C.G. Brock of Winnipeg was not quite so lucky. In a low-level attack on a transport column that caused 'many casualties' he was hit in the knee - his second wound - but managed to get his machine back to base. Unluckier still was Lieutenant L.H. McIntyre of Peterborough, Ont.,[†] who was 'last seen diving steeply on an enemy balloon.'¹⁰

No 60 Squadron's SE5as, flying in pairs, were working the same area of the front and flew fourteen patrols during the day. Only one patrol, which included Lieutenant A.R. Oliver of Galt, Ont., was 'prevented from going far over the line, as every time they attempted to do so they were chased by 6 Fokker biplanes and a two-seater.' Second Lieutenant A.N. Westergaard of Macoun, Sask., on his second sortie of the day, was again reduced to 'bombing buildings' instead of more specific targets, until he discovered that a fault in the fuel system was starving his engine of gasoline. Limping homewards at 1000 feet he had the misfortune to be attacked by a German two-seater which shot away most of his control wires and the leading edges of both top and bottom left-hand planes, before he was able to edge across the lines and land the badly damaged machine at the nearest aerodrome.^{‡11}

At the same time, squadrons from IX (HQ) Brigade were striking deeper into enemy territory. Eleven de Havilland bombers attacked the road and rail bridges at Aubigny-au-Bac, some twenty miles behind the front. The formation, led by Captain M.L. Doyle of River Louison, NB,[§] met heavy and accurate anti-aircraft fire over the target but, although five Fokker triplanes were seen, enemy aircraft

* Other Canadian pilots with 56 Squadron at this time included G.F. Bayne of Montreal, A.M. Clermont of Toronto, G.A. Elmslie of Montreal, T.D. Hazen of Sarnia, Ont. (KIA 19 Aug. 1918), V.H. Hervey of Calgary (WIA 13 Aug. 1918), W.R. Irwin of Ripley, Ont. (WIA 15 Sept. 1918), G.O. MacKenzie of Embro, Ont. (KIA 27 Sept. 1918), H.A.S. Molyneux of Toronto, and F.A. Sedore of Sutton, Ont. (WIA 24 Sept. 1918).

† Other Canadians serving in 3 Squadron on 21 August included W.H. Boyd of Campbellford, Ont., and P.R. Davis of Simcoe, Ont.

‡ Canadian pilots with 60 Squadron on 21 August also included J.N. Bartlett of Winnipeg, C.S. Hall of Seaforth, Ont., B.S. Johnston of Courtright, Ont., and S.A. Thomson of Vancouver, who joined the squadron this day and was to be killed in action on 5 September 1918.

§ Other machines participating in this raid were flown by F.C. Crummy of Toronto, W.J. Dalziel of Wapella, Sask., H.W. Hewson of Clarenceville, Que., and J.B. Hutcheson of Kerrobert, Sask. Other Canadians with the squadron on 21 August included A.V. Cosgrove of Winnipeg (MIA 25 Sept. 1918), P.V. Holder of Lunenburg, NS, and E.J. Jacques of Battleford, Sask. A.F. Millar of Rapid City, Man., had been killed in action a week earlier.

made no attempt to interfere. That evening a flight of six DH9s from 107 Squadron, each carrying two 112-lb bombs and with the leader's machine equipped with the new high-altitude drift sight, bombed Roisel station from 13,000 feet. This mission, led by Captain F.M. Carter of Orillia, Ont., with Lieutenant A.W.H. Arundell of Montreal as his observer,* was attacked by eight triplanes but the enemy was driven off without loss.¹²

Such high-level interdiction bombing remained a regular feature of RAF operations during the last two-and-a-half months of campaigning on the Western Front, but little damage appears to have been done and that which did occur was easily repaired. Selection of targets by the staff had improved; it was generally much more relevant to the development of current ground operations than had previously been the case, but there was still too much dispersion of effort and an inability to appreciate the technical difficulties of hitting small targets such as bridges. Even if good fortune brought a direct hit, the damage inflicted by a single bomb was easy to repair. High-level day bombing, at least in the tactical and operational zones, continued to absorb a proportion of RAF resources in men and machines which could have been better employed in low-bombing, reconnaissance, and artillery observation missions.

Low-level tactical night bombing and strafing was much more successful, and it became progressively more important as overwhelming British air superiority compelled the Germans to move by night. A fine example is provided by the work of 102 Squadron's FE2bs on the night of 21–22 August when a total of thirty-eight sorties were flown against troops, trains, and transport facilities opposite the Third Army front. A machine flown by Lieutenant J. Farley of Toronto dropped six 25-lb bombs on a column of horse transport on the Albert-Bapaume road, scoring at least one direct hit and scattering the remainder. It probably took hours to reorganize the column; panicked horses, overturned wagons, and demoralized drivers were not easily reformed in the dark and the supplies they carried are unlikely to have reached their destination before first light. Even more successful was a machine in which Second Lieutenant E.J. Clark of Montreal† was flying as observer. On their first trip Clark and his pilot bombed and badly damaged a column of motor transport and in the course of a second sortie they caught about twenty horse-drawn wagons just after first light:

Bombs burst in the midst of this transport and knocked out 6 or 8 teams. Some of the rear teams took refuge in the sunken road just west of the CANAL DU NORD. There were also two large lorries in here. We were at 200 feet and dived right down on the sunken road with altimeter registering Nil, and secured a direct hit among the teams and lorries [with] one 25-lb bomb. Waggon and dead horses could be seen scattered all over the road and also several men. 250 rounds of S[mall]. A[rms]. A[mmunition]. were fired into the wreckage. 4 Teams escaped, 2 along road to BAPAUME and 2 towards CAMBRAI.¹³

* Flying in Carter's formation were J.H. Grahame of Stony Mountain, Man., and J.V. Turner of Brockville, Ont. Other Canadians serving with the squadron included S.L. Dunlop and F.C. King of Ottawa and F. Player of Moose Jaw, Sask. (KIA 4 Sept. 1918).

† Other Canadians flying on this night included J.A. Le Royer of Quebec City (WIA 5 July 1917), G.L. Shephard of Kingston, Ont. (WIA 4 Oct. 1918), and C.S. Stayner of Noel, NS (WIA 24 Aug. 1918). Canadian aircrew in 102 Squadron included F. Collins of Toronto and H. Fall of Montreal.

The rest of the squadron also found satisfactory targets and during the night a total of seven 112-lb bombs, 250 25-lb bombs, and nearly 5000 rounds of machine-gun ammunition were expended. During the last two-and-a-half months of the war this type of action was employed most successfully on all but the darkest nights.

On 22 August, as the ground forces resumed their attacks just after dawn, four Sopwith Camels of 54 Squadron, led by Captain E.J. Salter of Mimico, Ont., and including Lieutenants A.H. Belliveau of Fredericton and A.S. Compton of Toronto,* met a patrol of four enemy aircraft coming west from Bapaume. The German machines were obviously flown by inexperienced pilots. Despite having the sun in their eyes, Salter's flight apparently saw their enemy first and were able to manoeuvre themselves into a position above and behind the Germans. They then dived in line-ahead formation on the highest of the enemy machines, a two-seater Albatros, and each of them gave it a short burst in turn. The Albatros went into a nose-dive and was seen to crash near Grevillers.¹⁴

Another Canadian, Captain E.T. Morrow of Toronto, won a DFC when a flight of IX Brigade's 62 (Bristol Fighter) Squadron was assigned to escort eleven day bombers of 27 Squadron, commanded by his fellow-Torontonian, Lieutenant F.C. Crummy, in a raid on Cambrai. The Brisfits, led by Morrow with Second Lieutenant L.M. Thompson of Balgonie, Sask.,† as his observer, engaged 'a large number of hostile scouts' and Morrow and Thompson claimed two destroyed before Morrow was badly wounded in the leg and their machine set on fire. Morrow lost consciousness and the aircraft went into a spin but after a few moments he recovered and managed to regain control, while Thompson battled the flames with a fire extinguisher. They crashed inside the British lines where Thompson carried his pilot clear of the burning plane.¹⁵

On 23 August 56 Squadron, 'in all kinds of machines,' was out again, strafing the enemy in front of the Third Army. 'Since the push started our machines have been shot up and shot down and we only have about 10 serviceable,' complained Burden in his diary. The next day Burden noted that 'This low stuff isn't nearly good enough on SE's. Machines come home written off or else get shot down.' The SE5a was not as manoeuvrable at low altitude as the Sopwith Camel, but Burden might have been more cheerful if he had realized how badly the other side was hurting. That same day Karl Bodenschatz, the adjutant of the Richthofen *Jagdgeschwader*, recorded in his diary that 'the German Luftwaffe is choking to death under the weight of enemy strength in the air. There is little left that can be done.' That morning the Fourth Army had joined the ground attack, stretching the battlefield from Neuville to Lihons, south of the Somme. On the Fourth Army front the bulk of the low strafing work fell to 203 Squadron, still com-

* Other Canadians flying with 54 Squadron on 22 August included H.R. Abey of Kaslo, BC (WIA and POW 2 Nov. 1918), J.V. Dallin of Peterborough, Ont., M.A. Genest of Trois Rivières, Que., H.B.T. Lockwood of Long Branch, Ont., G.M. Saunders of Toronto, and J.M. Stevenson of Charlottetown.

† Canadians serving with 62 Squadron on this day included A.W. Blowes of Mitchell, Ont., L. Campbell of Hamilton (KIA 9 Oct. 1918), W.E. Hall of Foxwarren, Man. (POW 4 Sept. 1918), P.S. Manley of Thorold, Ont. (POW 27 Sept. 1918), C.H. Moss of Moose Jaw, Sask. (WIA 16 Sept. 1918), G.K. Runciman, address unknown (WIA 29 June 1918), J.R. Stewart of Hamilton (WIA 1 Sept. 1918), and W.K. Swayze of Lindsay, Ont. (POW 4 Sept. 1918).

manded by Raymond Collishaw, who now had fifty-four victories to his credit. His skills in air combat honed to a fine edge, Collishaw disliked the chancy nature of close ground-support work, recognizing that a stray bullet was as likely to bring down a veteran ace as the rawest novice. His skill and experience counted for little when he flew against ground targets at fifty feet. Nevertheless, he was leading his squadron when one of his flight commanders, Lieutenant J.P. Hales of Guelph, Ont.,* was shot down near Villers-Bretonneux. Collishaw reported that he had seen the body lifted from the crashed Camel: from the ground the view was very different and an enemy war diarist plaintively reported 'Low flying enemy aircraft overhead. No German planes in sight, no "flak" guns firing.'¹⁶

Poor weather on the morning of the 24th brought air operations almost to a stop, a circumstance that significantly hindered the British advance. However, there was flying during the afternoon despite continued bad visibility; 60 Squadron, for example, managed to fly eight two-plane strafing missions. With the clouds still low and offering good cover and escape routes, the German air force was more evident that afternoon than it had been during the earlier phases of the battle. But shortages of fuel, parts, and mechanics, meant that many of the German airmen were not getting enough training time in the air to enable them to match the RAF's skills. One pair of pilots from 60 Squadron were 'attacked by 8 Fokker biplanes' – but they both escaped undamaged, although one of the SE5as developed engine trouble and had to make a forced landing just southwest of Achiet-le-Grand. Lieutenant Allan R. Oliver and his flight leader had a similar experience. Oliver, who had only two weeks of operational flying experience at this time, reported being 'chased by 4 Fokker biplanes – must have been very dud pilots as they were on my tail and above me, but I only got two holes in my machine.'¹⁷

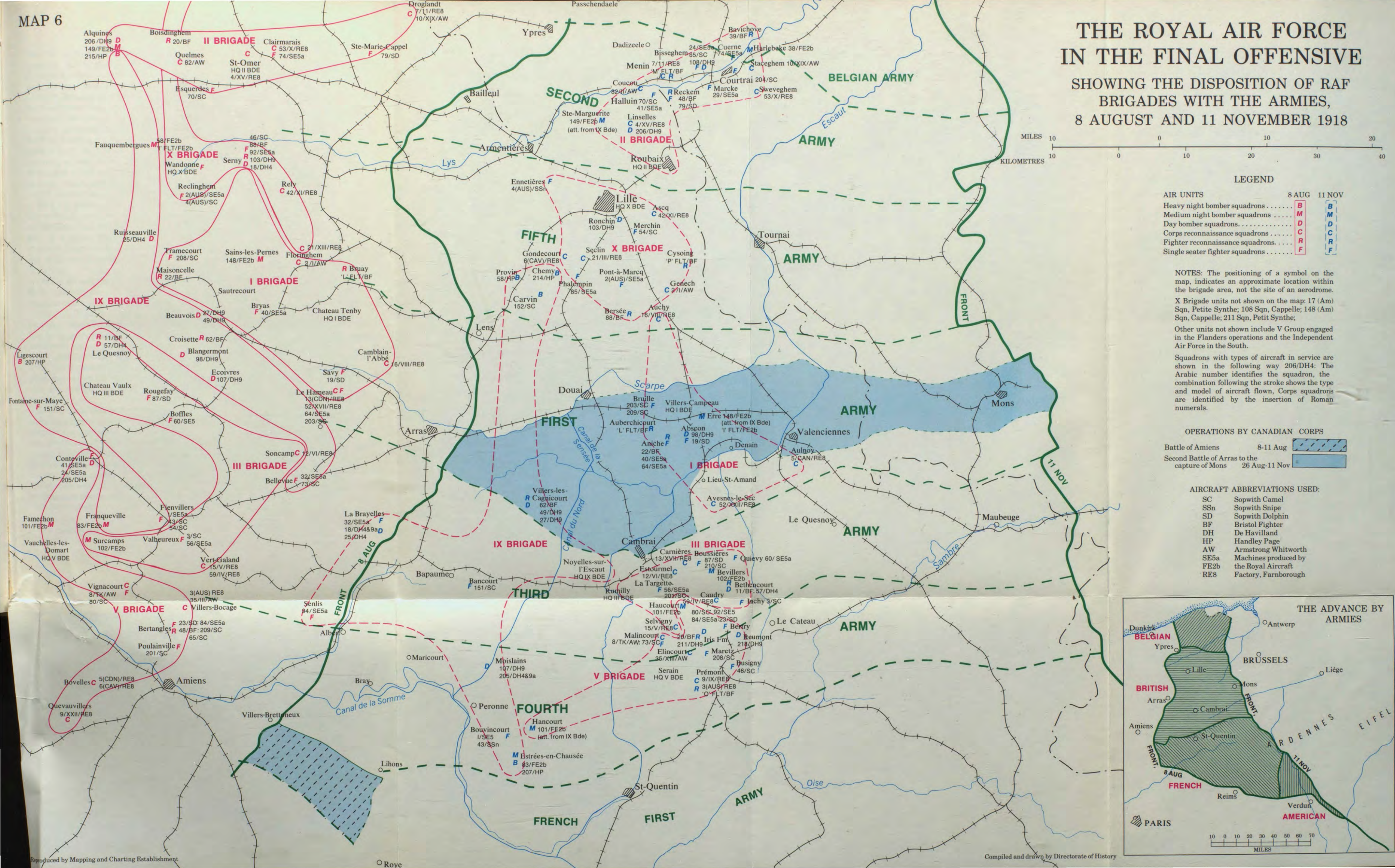
The weather cleared towards nightfall and the FE2bs of 102 Squadron were in the air until 0230 hrs on the 25th, when a rising ground mist made further flying impossible. Especially successful were two of the squadron's Canadians. Between midnight and 0130 hrs Farley's machine strafed a column of horse transport and bombed a train in Velu station from 1000 feet, claiming at least four direct hits, while Captain J.A. Le Royer of Quebec City dropped fourteen 25-lb bombs on a 'column of infantry over ¼ mile long at Beugny' on the Bapaume-Cambrai road and totally disorganized it. A German infantryman wrote this night of '... consecutive waves of enemy aircraft which attacked the low ground of the Ancre valley and the roads ... against which no German planes took to the air and no "flak" gave fire, [and] even during the hours of moonlight dropped their bombs without hindrance.' Indeed, No 102's only casualty was Lieutenant C.S. Stayner of Noel, NS, who was badly burnt by the ignition of a magnesium flare inside his cockpit.¹⁸

These night intruder sorties, as a later generation would describe this type of operation, were a game that two could play successfully in a pre-radar age, when

* Other Canadian pilots serving with 203 Squadron on 23 August included F.G. Black of Orillia, Ont. (WIA 21 Sept. 1918), H.J.L. Botterell of Ottawa, P.B. Calder of Edmonton, Alta, M.G. Cruise of Port Dover, Ont. (KIA 20 Sept. 1918), D.A. Haig of Agincourt, Ont., and A.T. Whealy of Toronto.

THE ROYAL AIR FORCE IN THE FINAL OFFENSIVE

SHOWING THE DISPOSITION OF RAF
BRIGADES WITH THE ARMIES,
8 AUGUST AND 11 NOVEMBER 1918



night-fighter interception was largely a matter of luck. The only RAF night-fighter squadron, No 151 (Sopwith Camels),* had been hurriedly formed from the Home Defence squadrons at the end of June and sent to France immediately to deal with the great increase in German night bombing which had begun during the summer. Between 23 July 1918 and the end of the war it did not suffer a single battle casualty, while claiming twenty-six victories. It was not able to stop the bombing, however. For instance, on the night of 24/25 August the Germans scored a significant success with an attack on Bertangles aerodrome, five miles north of Amiens, by five aircraft which came in low and fast. The first machine made a lucky hit and set a hangar containing six Bristol Fighters on fire, thus providing an easy target for the other four. Altogether the five dropped 660 lbs of bombs and killed and wounded thirty-six men, burnt nine Brisfits, badly damaged two others, and destroyed most of 48 Squadron's heavy transport, all for the loss of one machine which was wrecked in a forced landing on the German side of the lines. Such was the efficiency of the RAF logistics organization by this time that within forty-eight hours the remnants of the squadron had been moved to Boisdighen, one hundred miles away, and completely re-equipped. Nevertheless, as a senior British air officer later observed, 'The moral effect on the squadron remained great for some time, especially as Boisdighen was on the line of German machines proceeding to the coast and air alarms were constantly occurring.'¹⁹

On the ground the British armies surged ponderously and irregularly towards the Hindenburg Line, in the face of stubborn and sometimes ferocious resistance. One German regimental historian wrote of the fighting in the south on and after 22 August: 'What took place on these days in the deep valley between the high ground at Bray, Suzanne and Maricourt could no longer be called a battle. The hostile brigades rolled forward behind a mighty curtain of fire and thoroughly smothered the very mixed up German combatants, who had to defend themselves simultaneously against infantry, squadrons of tanks, cavalry and aircraft. What did it matter if here and there our guns blew up a tank, if our machine guns shot an attacking cavalry detachment to pieces, if our fighter aeroplanes shot down several hostile machines? The enemy filled the gaps in a twinkling of an eye ...'²⁰

In fact, the British had no superiority in numbers and their armies had to use the same divisions over and over again. Equipment and munitions were comparatively plentiful but manpower was not. The strain on the assaulting troops and airmen was severe. In 1916 and 1917 much longer intervals had separated successive attacks but now the survivors of each battle, hastily and often scantily reinforced, were repeatedly thrown back into the assault. Morale was maintained by continual success, by the capture of ground, guns, and men in ever increasing numbers, by the obvious weakening of the German will to fight, and, perhaps not least, by the co-ordinated competence of the combined arms so visible to the ground troops. The demonstrable command of the air not only made the infantry's task much

* M.S. Cook of Ottawa and A.A. Mitchell of Victoria were the only Canadians serving in 151 Squadron.

easier but also did wonders for their spirits. On the 25th, at one point on the front, eighteen British aircraft, unopposed by the enemy, provided continuous reports of the development of an attack and directed the British guns so that 'all approach roads and cross roads were under artillery fire.' The corps machines were able to operate in this fashion through the efforts of airmen like 73 Squadron's Lieutenant E.J. Lussier of Medicine Hat, Alta, who, in addition to his ground counter-attack duties, attacked two Fokker biplanes and shot one of them down. In the evening he got a second, which he caught trying to attack the reconnaissance machines. He won a DFC for his work on this occasion.²¹

On the same day Favreuil, Sapignies, Behagnies, and Mory were taken; on the 26th the First Army joined the attack. With his northern flank covered by the flooded Scarpe and Sensée rivers, General Sir Henry Horne pushed eastwards and began to turn the German position on the Somme, using the Canadian Corps as his spearhead. Bapaume fell on the 29th and Peronne on 1 September as three armies advanced on a front of forty miles. The British found themselves attacking across ground which the enemy had been carefully fortifying for some months. Very heavy artillery barrages became an accepted part of every infantry and tank movement. The gun-fire was essential for the ground forces, but it imposed a heavy burden on the corps squadrons involved. Nos 5 and 52* Squadrons, working with the Canadian Corps, had to fly at two hundred feet or less so that their observers could glimpse targets through the heavy smoke-screens laid down by the artillery in order to conceal the advance of infantry and tanks from the Germans. The consequences of thus being compelled to fly inside the arc of shells are best described by one of 5 Squadron's pilots: 'Not only was there the danger of being hit by one of our own shells, but the enemy had now installed concrete machine-gun emplacements manned by specially trained aerial machine-gunners whose sole duty was to prevent aircraft from crossing the lines. The slow and clumsy R.E.8's particularly were easy targets and the squadron historian has recorded that "quite a large number of machines about this time were lost by being hit by our own shells ... [and] when our machines attempted to cross over the enemy's lines they were met by such a barrage of machine-gun fire that it seemed impossible for them to return."'²² Half of the twelve Canadian aircrew who served with the squadron during the last three months of the war became casualties by 2 October.[†]

Under such conditions aircraft from the two corps squadrons kept in touch with the Canadian Corps' advance. Fighters ranged ahead of them, carrying out low-

* Canadian aircrew with 52 squadron on 1 September included F.C. Annesley of Toronto, S.E. Buck of Brantford, Ont., A.K. Charlesworth of Bashaw, Alta, J.A. MacGregor of Colbourne, Ont., and A.E. Rintoul of Dauphin, Man.

† The Canadians in the squadron were A.J. Bishop, address unknown, C.C. Brooks of Montreal, G.I. Carr of Sunnyside, Alta (WIA 2 Sept. 1918), E.P. Eveleigh of Sussex, NB (WIA 15 Sept. 1918), C.F. Galbraith of Burnside, Man. (died 16 Sept. 1918 from wounds suffered on 13 Sept.; awarded posthumous DFC), N. Goudie of Kamloops, BC, A. Johnson of Montreal (WIA 1 Oct. 1918), W.C. Lynch of Port Robinson, Ont., G.W.H. Parlee of Stewiacke, NS (KIA 20 Aug. 1918), A.C. Pollard of Victoria, E. Shampier of Kingston, NB, and A.T. Sprangle, address unknown.

level attacks. These aircraft came from Nos 54, 208, and 209 (Sopwith Camels) and 64 (SE5as),* which had at least thirty Canadians flying with them during the last two-and-a-half months of the war. All four were, at this time, put under the operational command of Major B.E. Smythies, the Commanding Officer of 64 Squadron, as a specialist formation for the purpose of close ground support. This was the first time that one officer had been given a free hand to direct all close-support attacks on a given front. The only pre-condition 'was that the attacks were to be from as low a height as possible, and never from above 1,000 ft.'²³

Smythies' four squadrons dropped more than 550 25-lb bombs and fired 26,000 rounds against ground targets along a front of some 8000 yards, extending about 1000 yards deep during their first day under his command. On the 27th they and 73 Squadron – the unit dedicated to knocking out anti-tank guns – in spite of low clouds and rain, dropped 646 bombs and fired 47,570 rounds. Their impact was substantial. On targets in each thousand-yard square of front they had expended an average of 150 bombs and nearly 10,000 rounds of small arms ammunition in the course of two days. General Salmond proudly explained to a visitor to his headquarters that 'The enemy could scarcely make a movement without some slow old observation plane of ours calling up the fighting planes, which were on to the enemy in a flash.' Prisoners, he added, were reporting that against these low-flying aeroplanes 'it was almost impossible to re-form beaten troops.'²⁴

Under this impressive umbrella of air support more Germans were qualifying as beaten troops every day. On the 27th the Canadians took Monchy-le-Preux and, by the evening of the 28th, they were established on the western edges of Boiry-Notre Dame and Rémy, right against the Hindenburg Line. That night the Australians stormed Mont St Quentin, to the south, a move which threatened the Somme crossings and compelled the enemy to abandon Bapaume. Ludendorff was forced to sanction a general withdrawal of his Second, Eighteenth, and Ninth Armies towards the prepared defences of the Hindenburg position. Just southeast of Arras, where the northern end of the Hindenburg Line was intersected by the southern end of another prepared defensive position known as the Wotan Line, lay the Drocourt-Quéant switch, a complex of wire, trenches, and strong-points which, if it could be broken, offered the possibility of rolling up both defence lines from the north and south, respectively. At 0500 hrs on 2 September 1918 the Canadian Corps of the First Army and XVII Corps of the Third Army attacked the switch line, supported by strong elements of the Tank Corps.

The evolving specialization of air roles meant that many of the same airmen and machines were again to the fore. Nos 5 and 52 Squadrons were still working

* Canadians serving with 208 Squadron included H.J. Botterell of Ottawa, R.E. Goodfellow of Toronto, E.A. Kenny of Orillia, Ont., C.H. Living of Ottawa (POW 2 Sept. 1918), H.J. Philp of Nestleton, Ont., C.G. Swannell of Nelson, BC, and G.A. Wightman of Westmount, Que. No 209 Squadron had W.R. May of Edmonton (WIA 8 Aug. 1918) as one of its flight commanders and R.L. Scharff (POW 1 Sept. 1918) and J.E. Walker (WIA 17 June 1918, MIA 17 Sept. 1918), addresses unknown, among its pilots. Only one Canadian has been identified as serving in 64 Squadron, H.T. McKinnie of Del Bonita, Alta (WIA 4 Sept. 1918).

with the Canadian Corps, and No 13* with XVII Corps. No 8 Squadron was co-operating with the tanks, No 73 was concentrating on neutralizing the enemy's anti-tank defences, and the same four fighter squadrons were allocated to the ground-support role again. Fighter cover immediately over the battlefield was the responsibility of 40 Squadron's SE5as† and the Bristol Fighters of 22 Squadron,‡ while the fighters of II and X Brigades were assigned to provide more distant, high-level cover.²⁵

There had been little time for adequate ground reconnaissance but air photographs had plainly revealed the enemy's position. The attack went in smoothly enough on the ground. During the morning the close-support squadrons dropped 573 bombs and fired nearly 50,000 rounds at ground targets, claiming 'A large number of direct hits ... on troops, transport and batteries in action,' while 73 Squadron 'effectively engaged anti-Tank guns with bombs and machine gun fire,' despite low cloud and poor visibility. A representative patrol was that of 8 Squadron's Lieutenant A. Grundy and his British observer, who started an early morning counter-attack patrol by dropping six 25-lb bombs on several anti-tank guns and their crews. 'Did not see flash of guns again and men were dispersed,' their terse report read. Half-an-hour later they were machine-gunning more anti-tank guns and enemy infantry formations before coming back to report the latest positions of a number of British tanks. By noon the ground troops had broken through the German defences, but the cost, both on the ground and in the air, had been high. Clouds provided good cover for aircraft and the German fighter elements were out in force. In heavy fighting the RAF lost thirty-six aircraft during the day from I and III Brigades alone.²⁶

The bulk of the damage was done by a formation of *Jagdgeschwader 3*, thirty strong, which claimed twenty-six victories during the morning in the course of two confused and prolonged engagements which began near Marquion about 0930 hrs. Despite their many and increasing logistical problems, the Germans adhered to their fundamental doctrine, keeping their machines well dispersed on the ground but concentrated in the air when they chose to fight. Their basic tactical formation, by this time, was the fighter wing, while the British still predicated their fighter tactics on the flight or squadron grouping. Thus, throughout this fight, and, indeed, on most other occasions when their fighters chose to accept combat in the last weeks of the war, the enemy enjoyed a numerical superiority. An increasing proportion of the German airmen were veteran combat pilots, only the best being sent into action as their air force shrank in terms of men and material. On the

* Canadians flying with 13 Squadron included F. Belway of Richmond, Ont., L.S. Bowker of Granby, Que., C.A. Brown of Montreal, R.F. Browne of Toronto (WIA 8 Oct. 1918), W.G. Campbell of Saint John, NB, J.W.G. Clark of Toronto, R.G. Michaelson of Virden, Man., J.P. McClelland of Arthur, Ont., J.F. Robb of Portage la Prairie, Man., F.P.J. Travis of Saint John, NB (WIA 2 Sept. 1918), W.W. Van Blaricom of Neepawa, Man. (WIA 15 Jan. 1917), and H.W. Wynn of Vancouver (KIA Oct. 1918).

† Canadian pilots serving with 40 Squadron on 1 September included G.C. Dixon of Vancouver (WIA 16 Sept. 1918) and A.R. Whitten of Toronto.

‡ No 22 Squadron's flying personnel included T.J. Birmingham of Jameson, Sask., B.C. Budd of Toronto, L.N. Cople of Vancouver, and G.S. Routhier of Walkerton, Ont.



On the morning of 1 September 1918 a formation of Bristol Fighters from 1 Brigade's 1 Flight (artillery and photo-reconnaissance duties), led by the flight's commanding officer, Capt. B.E. Catchpole, MC, DFC, of Hatzic, BC, made a photo mosaic for 1st Army Headquarters of the Canal de la Sensée from Corbenhem to Arleux, and from there of the Canal du Nord southwards. On nearing Marquion they were interrupted by a dozen Fokker fighters who came from the west a thousand feet below them. One 'Brisfit' was lost when its crew failed to observe the formation turn for the British lines.

During the afternoon Capt. Catchpole returned to the area with a single machine under a strong fighter escort, and completed the photo-mosaic by taking the photographs reproduced here. They show the village of Marquion in the top, right-hand corner and the section of the canal running southwest from the village where the Canadian Corps advanced early on the morning of 27 September. The 14th and 15th Battalions, CEF, on the left of the Canadian line, attacked to the south of the road crossing the canal at the bottom of the mosaic and then, supported by tanks, swung northwards to capture Marquion by the early afternoon.

The flooded area of the canal, due west of Marquion, can be clearly distinguished, with the 'dry' bed of the uncompleted section extending to the south. A number of footbridges over the canal, some wrecked but some still serviceable, cross the unflooded section, while the iron girder bridge which carries the Arras-Cambrai road across the flooded part, at the top of the mosaic, is apparently still intact. British maps of the area, corrected to 20 August 1918, showed it as 'demolished,' however.

other hand, the ever-expanding RAF had many novice flyers in its ranks. These factors, together with the technical excellence of their newest fighters, the Fokker D-VII and Pfalz D-XII,* enabled the enemy to win this particular battle, with the loss of only one machine.²⁷ It was, however, a battle which the British could well afford to lose.

The effect on allied ground troops was very noticeable even though their immediate objectives had already been reached. Late that morning the commanding officer of the 14th Battalion, CEF, reported that 'at one time 30 German aeroplanes swept low along the Canadian front, and harassed the attack with machine-guns.'²⁸ During the afternoon a soldier who knew nothing of the morning's air battle recalled that 'our fighting planes had gone back, after assisting in the attack, and a few observation planes appeared. These were attacked and dispersed by a heavy German formation, four of our airmen being brought down near the Dury cross-roads. Thereafter, the enemy had complete control of the sector from the air, flying low and machine-gunning roads and forward areas.'²⁹ Not until the evening did a patrol of 64 Squadron do something to restore the balance, when it caught a battalion of enemy infantry in close formation on the Palluel-Oisy le Verger road. The Camels came down to three hundred feet and attacked with twenty-eight bombs and some 350 rounds of machine-gun fire, causing troops 'to scatter in all directions.' The amount of ammunition expended was small because the British aircraft were, no doubt, still keeping a wary eye open for the possible re-appearance of the *Jagdgeschwadern*.³⁰

Early next morning the two leading brigades of the 4th Canadian Division resumed their advance as the Canadian Corps set about securing the high ground commanding the Canal du Nord and pushing bridgeheads beyond it. A machine of 5 Squadron reconnoitred the front at three hundred feet and reported that there were now no Germans west of the Canal. No 8 Squadron's Lieutenant W.F.R. Robinson of Round Hill, NS, flying a two-hour tank contact patrol, was able to strafe the enemy from fifty feet without meeting any aerial opposition. C.F. Galbraith and A.T. Sprangle of 5 Squadron, like many of their colleagues, 'sent down a large number of zone calls on hostile batteries. G.F. [Fleeting Target] calls were also sent down on Infantry and Artillery, with good effect.'³¹

On 4 September, however, the German airmen twice more caught the British off-balance. The day bombers of IX Brigade were ordered to attack the railway stations at Douai, Denain, and Cambrai, with escorts provided by 32 (SE5a) and 62 (Bristol Fighter) Squadrons. The mission met a large force of enemy fighters and lost seven of their own aircraft – casualties included Captain J.H.L.W. Flynn of Waterloo, Ont., and Second Lieutenant F.C. Pacey of Selburne, Ont., from 32 Squadron† and Lieutenant W.K. Swayze of Lindsay, Ont., and Second Lieutenant W.E. Hall of Foxwarren, Man., from 62 Squadron – for the claimed destruction of

* By 31 August the Germans had 828 Fokker D-VIIs and 168 Pfalz D-XIIs in service on the Western Front. See Peter M. Grosz, 'First at the Front – Fokker D VII or Pfalz XII?', *Cross & Cockade Journal*, IV, winter 1963, 352.

† Canadian pilots remaining in 32 Squadron after 4 September included A.V. Campbell of Toronto, H.R. Carson of Calgary, C.F. Cawley of St George, NB (POW 27 Sept. 1918), R.E.L. MacBean of Danville, Que., E.C. Spicer of Spencer's Island, NS, and C.W. Thomas of Kingsville, Ont.

nine enemy machines. Only one or two aircraft were actually lost by the Germans. Later that day 70 (Sopwith Camel) Squadron, temporarily detached from 11 Brigade, met an estimated thirty Fokkers over the First Army front and lost eight aircraft, three of them being flown by Canadians, Captain J.H. Forman of Kirkfield, Ont., and Lieutenants J.L. Gower of Toronto and R. McPhee of South Vancouver,* each of whom became a POW.³²

Aircrew morale seems to have remained high but momentum could not be kept up uninterruptedly at the level of the past month, either on the ground or in the air. On 5 September 1918 the activities of the fighter squadrons were curtailed by an important HQ memorandum:

- 1 Orders have been issued to Armies to press the enemy with advanced guards with the object of driving in his outposts and rearguards and ascertaining his dispositions, but to undertake no deliberate operations on a large scale for the present. Troops are to be rested as far as possible and our resources conserved.
- 2 The G.O.C. wishes brigadiers to adopt a similar policy in the case of the RAF which has now been working at high pressure for many months. Should the enemy adopt an aggressive policy in the air,† it will, of course, be necessary to continue a vigorous offensive but, provided he keeps well back at a distance behind his lines, the policy of seeking out and destroying his machines will be less actively pursued and offensive patrol work will be restricted to keeping back his artillery and reconnaissance machines and enabling ours to do their work.
- 3 To carry out the above policy the GOC wishes brigadiers to reduce the number of fighting squadrons working over the lines to a minimum each day, and to take individual squadrons definitely off this work for a day or more at a time, during which they will carry out training only.³³

There was still plenty to do for the bombing and fighter-reconnaissance aircraft, as well as the corps machines. The work of 11 Brigade's 20 (Bristol Fighters) Squadron over the next three days is a case in point. On the day that the above memorandum was issued a high-level offensive patrol led by Captain H.P. Lale, an Englishman who had enlisted in Calgary, with Second Lieutenant H.L. Edwards of Smiths Falls, Ont., as his observer, was surprised by eleven Fokker biplanes which dived out of a cloud a thousand feet above them. Lale turned to meet the enemy and his observer engaged the leading machine with his Lewis guns. At the third burst his target 'broke up in the air, pieces falling from it as it went down.' In the meantime the remainder of the Brisfits were being attacked from the rear and, in the ensuing dogfight, one other Fokker was definitely driven down 'with smoke issuing from it' and a third, fired at by the observer in a machine flown by Second

* Other Canadians serving with 70 Squadron included E.A. Copp of Sackville, NB, K.B. Watson of Malton, Ont., and J.S. Wilson of Edmonton (POW 29 Sept. 1918).

† An unlikely possibility, bearing in mind the logistical situation of the German air force. The German ace Friedrich Noltenius wrote in his diary for the same day that 'Because of the petrol shortage we now flew only once a day, in the evening.' 'War Diary of Friedrich Noltenius,' *Cross & Cockade Journal*, VII, winter 1966, 329

Lieutenant A.B.D. Campbell of Macleod, Alta, went into 'a vertical dive which developed into a spin. It could not be watched to the ground.'³⁴

The next day Lale was leading nine aircraft which, after bombing Roisel, continued north until they got into a fight with seven Fokkers just southeast of Cambrai. Shooting down one enemy machine for certain, with the possibility of a second, the Brisfits then swung south again and saw formations of DH4s, Sopwith Dolphins, and SE5as going towards St Quentin, about two thousand feet below. Following them, the Brisfits caught up just as thirty to forty Fokkers dived on the Dolphins. One German passed less than thirty yards in front of Captain Lale's machine and he 'put about 50 rounds into it and sent it down in flames.' Meanwhile, Edwards, in the rear cockpit, was firing his twin Lewis guns at another enemy aircraft about forty yards away on the left. 'This E.A. first spun, then appeared to gain control, but a few seconds later burst into flames.' Three other German aircraft were credited to the guns of 20 Squadron and Second Lieutenant D.M. Calderwood of Minto, Man., flying as Campbell's observer, was credited with one 'out of control.'* On the 7th, for the third day in succession, Lale and Edwards got at least one victory. Patrolling north of St Quentin they surprised seven Fokkers four thousand feet below them and Lale dived on them, 'getting a good burst' into one which subsequently crashed and opening fire on a second before the ammunition belt of the Vickers broke and allowed the enemy to escape. The other enemy machines 'made off East before the rest of the formation could get to them.' The Bristol Fighters seemed to have less trouble handling the Fokker D-VII than any of the British single-seater fighters and 20 Squadron in particular enjoyed considerable success during September.³⁵

Both British and German air forces reduced their activities through the middle of September, with indifferent weather conditions and the American attack in the south, at St Mihiel, taking much of the pressure off the British front for a while. Only the three top-scoring British fighter pilots still flying on the Western Front – the South African Beauchamp-Proctor of 84 Squadron, Raymond Collishaw, commanding No 203, and Donald MacLaren, now leading a flight of No 46† – were able to record any number of victories during the last half of the month. Collishaw claimed two Fokker D-VIIs over Bourlon Wood on the 24th and two more over Lieu St Amand on the 26th, while MacLaren was credited with his second D-VII on the 15th, a share of two more on the 16th, another on the 26th, and his penultimate victim on 29 September, for a total of forty-seven credited victories in 201 days of service in an operational squadron.³⁶

In the attacks south of Lens the British Third and Fourth Armies had now taken over 53,000 prisoners and 470 guns. After ten days of comparative rest a further attack was launched between Gauzeaucourt and Holnon, designed to bring the

* Campbell became a prisoner on 15 September 1918. Other Canadians flying with 20 Squadron included H.E. Johnston of Winnipeg, S.A. Mowat of Vancouver, and W.M. Thomson of Toronto.

† Other Canadian pilots flying with 46 Squadron included G.E. Dowler of Calgary (KIA 10 Nov. 1918), R.K. McConnell of Victoria, R.F. McRae of Niagara Falls, Ont., H.C. Saunders of Kingston, Ont. (KIA 18 Sept. 1918), L.L. Saunders of Brantford, Ont. (KIA 4 Oct. 1918), J.K. Shook of Tioga, Ont. (POW 2 Oct. 1918), and E.R. Watt of Edmonton.

southern wing of the victorious British armies up against the main defences of the Hindenburg Line. Visibility was poor and little flying could be done as the assault began on 18 September. Nevertheless, it went in successfully and another 11,750 prisoners and 100 guns were taken on the 18th and 19th.³⁷

In the air the Germans reappeared in strength on the 20th and there was a furious encounter on the Fourth Army front between twenty D-VIIIs on the one side and seven Brisfits of 20 Squadron and eleven SE5as of 84 Squadron on the other. The fight lasted for half-an-hour and reached from 14,000 down to 1500 feet. Eight enemy aircraft were claimed, for the loss of two machines. Only one Canadian, D.M. Calderwood, was flying with the Brisfits on this occasion and he was one of those killed, but one flight of the SE5as was led by Captain C.F. Falkenberg of Quebec City, who claimed two Fokkers.* At one point in the fight, Falkenberg reported, a number of enemy aircraft which had a distinct height advantage 'were afraid to come down,' which suggests that the German side of such battles was more than ever being carried by the hard core of veterans among the German pilots, while replacements were held out of the fighting as long as possible.³⁸

As a result of this and earlier combats instructions were issued to III Brigade on 22 September that 'offensive patrols will normally consist of two or more fighting squadrons ... the patrol should be comprised of an SE5 or "Dolphin"† squadron above, with one or more Camel squadrons below it.' This was an advance in British tactical doctrine which was now long overdue. Nevertheless, the rising total of British losses had done nothing to affect seriously the overall British supremacy in the air. The vast majority of reconnaissance, artillery spotting, and bombing patrols went about their duties without any interference other than that caused by ground fire. As an example, 13 Squadron's Lieutenants J.P. McClelland (pilot) of Arthur, Ont., and J.W.G. Clark (observer)‡ of Toronto, who had begun to establish a high reputation as experts in their unspectacular business, were able to conduct a very elaborate artillery shoot lasting some four hours on 20 September. The guns they ranged 'thoroughly smashed' two enemy batteries and a number of other gun positions were knocked about without any interruption by enemy aircraft, while the next day another four-hour shoot ranged by them brought a report that 'Enemy Air activity [was] slight.'³⁹

Artillery co-operation, which had developed almost wholly in response to the conditions of static warfare and the procedure for which had been standardized most recently in December 1917, underwent significant changes during the more fluid fighting of 1918. For much of this period the counter-battery staff officer of the Canadian Corps was Lieutenant-Colonel A.G.L. McNaughton. His work,

* Other Canadian pilots flying with 84 Squadron on 20 September 1918 included D. Carruthers of Kingston, Ont., and J.A. Jackson of Toronto.

† The Sopwith Dolphin 5F1, first issued to Western Front squadrons in January 1918, was the successor to the Camel. Slightly faster than the Camel, it was still no match – in speed, rate of climb, or ceiling – for the Fokker D-VII.

‡ Clark, who was to win the DFC in October, was on his second tour of operations. In the Second World War he was to be Director of Public Relations for the RCAF. McClelland, in contrast, was a novice on the Western Front. No 13 Squadron was his first operational posting and he had only joined the squadron on 12 August.

followed up by his successor, Lieutenant-Colonel H.D.G. Crerar, was decidedly innovative in character and attests to the importance of the role of the RAF. A postwar report, prepared over Crerar's signature, recorded the procedures of the Counter Battery Office and outlined the importance of airpower in mobile operations. According to the report, the Counter Battery Office, handling the vital calls – 'N' ('guns in position at ...'), 'NF' ('guns firing in position at ...'), 'WPNF' ('many batteries active at ...'), and 'GF' ('fleeting target at ...') – transmitted from the reconnaissance and spotting aircraft through the Central Wireless Station nearby, was of 'increasing importance' as an intelligence centre once open warfare replaced the positional deadlock of the past three years.* Air photographs, written reports dropped from contact patrol machines, wireless messages from their own artillery aircraft and intercepts from the enemy's, sound-ranging and ground observers' reports were all funnelled through the Counter Battery Office, so that 'During a battle it has been found necessary to maintain constantly on duty at the Counter Battery Office one officer whose sole responsibility is the reception of Intelligence and, whenever required, its further transmission to the Headquarters of formations which it may affect.'⁴⁰ It is clear from Crerar's account that among the varied sources of information reaching the Counter Battery Office and formation headquarters the data provided by the corps squadrons was the most valuable and usually the most reliable in conditions of open warfare.

In the last months of the war the Canadians had also worked out a procedure for using the tactical day-bombing squadrons of the appropriate army wing under the direction of the Counter Battery Office: 'Important Targets, such as large bodies of enemy infantry, artillery on the move, convoys of motor transport which were either beyond the effective range of the Artillery, or which, by reason of their extreme importance required a very intense bombardment, were engaged by the Army Bombing Squadrons in response to "LL" ["all available batteries to open fire (sudden attack or very favourable target)"] or "GF" calls sent from the Counter Battery Office and outlined the importance of airpower in mobile operations. The Counter Battery Office during a battle is considered to be of the very greatest importance.'⁴¹

No such procedure was possible for the night bombers, but their reports show them to have been doing good work as well. On the night of 20/21 September eight FE2bs of 83 Squadron bombed Bazuel aerodrome, dropping six 230-lb, eight 112-lb, two 40-lb, and fifty-three 25-lb bombs from 4000 feet. Visibility was poor and little damage was done but the only opposition encountered came from anti-aircraft fire over Cambrai and Le Cateau. Two other machines of the squadron were flying reconnaissance missions that night and one, flown by Major D.A. McRae of Aylesbury, Sask., was brought down by a shot from the ground which went through the fuel tank. The second, piloted by Captain G.E. Race of Montreal,[†] saw no movement of troops or transport and came back from a three-hour

* 'The "NF" call ... is very often the only reliable source of information and the effective neutralizing of hostile artillery fire at critical moments may depend upon the work of the Corps Squadrons,' wrote Lt-Col. H.D.G. Crerar in his postwar report on the 'Organization and Procedure of Counter Battery Office, Canadian Corps Artillery,' 25 Jan. 1919, DHist 72/13.

† Other Canadian flying officers with the squadron on 21 September included K. de W. Cleveland of Kingston, NS, N.S. Jones of Toronto, and C.S. Stonehouse of Wallaceburg, Ont.

patrol having done nothing more violent than firing some three hundred rounds of small arms ammunition at searchlights and machine-gunners on the ground.⁴²

On the following night an FE2b of 102 Squadron, flown by Lieutenant G.L. Shephard of Kingston, Ont., checked roads and railways in the vicinity of Cambrai for enemy troop or transport movement and found only one train, on the line east of Sancourt, going towards Cambrai. Two 112-lb and six 25-lb bombs were dropped but 'Searchlights prevented observation of result.' A second machine, with Second Lieutenant E.J. Clark of Montreal as observer, patrolled between Gauzeaucourt and Cambrai and reported 'all roads closely watched and appeared quite clear,' although when flying over Rumilly they were fired on by ground machine-guns and 'hit in several places.'⁴³

Massed German fighter sweeps, already infrequent, were becoming more rare as the British went about their multitudinous duties in support of their ground forces. 'I returned to France in September,' testified Captain R.T.C. Hoidge, who was posted to IX Brigade's 1 Squadron,* on 25 September; '... there weren't very many Huns in the sky, they were pretty well thinned out.' Hoidge, a Torontonion, had spent ten months with 56 Squadron during the desperate days of 1917 and was well qualified to make the comparison. His judgment is confirmed by the experience of Josef Raesch, a pilot of *Jasta 43*, who was shot down on 25 July and parachuted to safety within the German lines. After two weeks' leave Raesch returned to his squadron, but there was no machine available for him until 3 September and, on the 5th, the squadron's fuel ration was cut to two thousand litres of benzine per month. 'It is getting worse all the time,' he wrote. 'The British are superior to us, not only in numbers but in their tactics and organization.'⁴⁴

With Ludendorff pressed back against his prepared defensive lines all along the front, the British began an assault on the Wotan and Hindenburg Lines simultaneously on 27 September. The Second Army, in co-operation with the Belgians, attacked from St Eloi north to Dixmude; the First, Third, and Fourth Armies moved on the St Quentin-Cambrai front. The southern attack covered a wider frontage and faced more serious obstacles, but it also offered more decisive possibilities since an advance of some twenty miles at one point would bring the British to the western edge of the Ardennes and thus virtually split the German armies on the Western Front in two. It was here, on the Canal du Nord sector of the Hindenburg Line, that the attack was therefore most strongly pressed and most stubbornly resisted.

Long stretches of the Canal du Nord, which had been under construction at the outbreak of war, were still dry. It was, in fact, more in the nature of a gigantic ditch than a canal. It varied from thirty-six to fifty feet wide at the bottom and was twelve feet deep; and the Germans had strengthened its defensive potential by cutting back the eastern bank into a vertical wall of some nine feet at the places where an attack seemed likeliest. Both banks were studded with concrete strong-points and deep dug-outs and the whole structure formed the core of a defensive line about five miles thick. To assault it the RAF provided the three Armies

* Other Canadians in 1 Squadron when he arrived included L.H. Phinney of Winnipeg and F.M. Squires of Toronto.

involved with more than a thousand aircraft in the squadrons of I, III, V, and IX Brigades.⁴⁵

The battle opened along a thirteen-mile front between Sauchy Lestrée and Gauzeaucourt, with the Canadian Corps again assigned to spearhead the attack. No 8 Squadron, still being used for tank support, contact patrols, and artillery observation, was working with the Canadians. A machine flown by Lieutenant S.B. Trites of Salisbury, NB, was in the air by 0600 hrs and back again by 0640 hrs with a bullet hole in its fuel tank. The tank was changed and Trites was airborne again in half-an-hour, charged with bombing enemy trenches, noting those areas where they were *not* fired at from the ground, and recording the intensity of the rolling artillery barrage that preceded the infantry assault. While 'Prisoners were noticed coming back along the road going S[outh]. W[est],' he reported 'No sign of E[nemy]. A[ircraft].' Before Trites returned Lieutenant W. Spriggs of Port Williams, NS, was over the front, bombing and machine-gunning enemy troops and transport and reporting tank locations, casualties, and the presence of British infantry in Bournon Wood by 1100 hrs.⁴⁶

No 73 Squadron, led by Captain W.H. Hubbard of Toronto, who won a Bar to his DFC for the day's work, showed how thoroughly the counter anti-tank gun role had been mastered. In November 1917, during the First Battle of Cambrai, the tanks had 'suffered heavy casualties' from anti-tank guns sited behind Flesquières Ridge. Ten months later the tanks were attacking again over the same ground with Sopwith Camels keeping the ridge under close observation all the time. The losses were minimal. Hubbard alone, coming in at heights as low as two hundred feet, 'engaged and silenced many anti-tank guns,' and 'Countless instances could be recounted of German gunners being chased away from their guns and then prevented from working them until captured by the tanks.' It was a measure of their success that, of the sixteen Mark IV tanks working with the Canadian Corps, fifteen successfully crossed the Canal du Nord near Moeuvres and only three were subsequently put out of action during the day, one by a mine and two by artillery.⁴⁷

On the First Army front there were now five squadrons allocated exclusively to the ground support function under Major Smythies, 40 Squadron having been added to the old hands of 54, 64, and 209 Squadrons, and No 203 having replaced 208. Their main objectives were the crossings over the Sensée and L'Escaut canals and 'in many cases large numbers of troops, mechanical and horse transport, were seen on the bridges and heavily engaged with machine gun fire and 25-lb bombs. Many direct hits were made and numerous casualties observed.' Seven hundred bombs were dropped and 26,000 rounds fired by the five squadrons during the day.⁴⁸

Further south, only 201 squadron was allocated exclusively to a ground support role in III Brigade. Its pilots were not given particular tactical objectives but told to choose targets of opportunity when not responding to specific wireless calls from the Central Information Bureau. Lieutenant W.A.W. Carter of Fredericton*

* Other Canadians flying with 201 Squadron on 27 September 1918 included J.M. MacKay of Vancouver, C.M.K. Morrison of Wapella, Sask., E.F. Nicholson of Morganston, Ont., and F.T.S. Sehl of Victoria.

found that '... smoke from barrage caused thick mist over [ground] objectives, so returned and followed up our advancing infantry and tanks, helping infantry at points where held up by firing bursts into machine-gun emplacements and trenches from very low altitude. Dropped bombs on machine-gun emplacements offering particularly strong resistance to our advance; and then saw our infantry capture the point. Fired remainder of ammunition into trenches in front of our tanks.'⁴⁹ Lieutenant Carter was frequently under intense machine-gun and small arms fire from the ground and finally his fuel pipe was ruptured by a bullet. He crashed right in the middle of the British artillery barrage but escaped uninjured from the wreck of his Camel; he began to run westwards until he stumbled across a wounded British infantryman. Carrying him, Carter kept on until he met two unescorted German prisoners whom he requisitioned to carry the wounded man back into the British lines.⁵⁰

The weather closed in during the night, although the night-bombing squadrons had been in action early on. Before dawn, rain and low cloud made flying impossible, and it was not until the afternoon of the following day that the RAF could get into the air again. The low-flying attacks on the First Army front were confined to the three Sopwith Camel squadrons – Nos 54, 203, and 209 – on the afternoon of the 28th, the SE5a squadrons being diverted to offensive patrols with orders to pay special attention to enemy observation balloons. Since the German air arm remained quiescent these patrols were made uneventful. The Camels, in contrast, had an exciting time attacking troops and transport in the neighbourhood of the canal crossings, including a 'large column' that the pilots of 209 Squadron found on the Cambrai-Le Cateau road. 'The pilots concentrated on their attacks upon the column from a low height, dropping thirty-six bombs and firing some thousands of rounds of machine-gun ammunition, as a result of which the column was thrown into confusion.'⁵¹

The weather was again bad for flying on the 29th – indeed, it continued to be poor until 1 October – but air support was hardly necessary any more. Crown Prince Rupprecht recorded, on 28 September, that 'the [German] troops will no longer stand up to a serious attack' and the Reichstag party leaders were told that the war was lost and 'that every twenty-four hours can only make the situation worse.' Ludendorff sent a message that a peace offer must be made at once. Even as the Kaiser's Chief of Staff was admitting defeat, the 61st Infantry Regiment, in line just north of Cambrai, found that 'there was little cover. It was important to burrow into the ground quickly and to be seen as little as possible because numerous enemy aircraft soon fired on any unit that was incautious.' The 176th Infantry Regiment, moving up to Esware for a local counter-attack, recorded that 'on the way enemy bombing cause the loss of 25 men from the small remnants of the regiment.' The next day the 119th Reserve Regiment, fighting to hold Tilloy, observed bitterly that 'during the entire day enemy aircraft were cavorting above the positions without any hindrance.'⁵²

Victory was a monotonous affair, were reliance to be placed solely on the summaries of work produced daily by RAF brigades. In the confined vocabulary of military reporting these summaries repeated, day after day, the same story as RAF machines bombed and strafed the enemy ground forces, knocking out transport, immobilizing artillery, scattering infantry, and reporting the remorseless

advance of their front line. But to individual airmen the experience of victory was enormously exhilarating. On 1 October Carl Falkenburg, leading a patrol of 84 Squadron over the Fourth Army front, saw 'our infantry and tanks advancing towards Estrées and several hundred of the enemy running in front of them; he thereupon dived on the enemy with his flight as they crossed the open, inflicting heavy casualties.' The measured phrases of the official RAF *communiqué* reporting Falkenburg's work contrast with the disorganization and chaos into which the German ground forces were now falling.⁵³

By 5 October 1918 the British line in the south had advanced to the outskirts of Montbrehain and Ponchaux, the Third Army was in Crevecoeur and Proville, and the First Army through Tilloy, so that Cambrai was now threatened from both flanks. The RAF reported that 'all enemy airfields west of the railway St Quentin-Bohain-Busigny-Le Cateau were evacuated and that the great ammunition dumps at Fresnoy le Grand and Brancourt-le-Grand were empty.'⁵⁴ In the north, where the Second Army's attack in front of Ypres had met with less resolute resistance, the British had taken Dadizeele, were through the Gheluwe switch line, and in Comines and Armentières by 3 October. The Germans, who had already pulled back from the Lys salient, won at such cost in April, were now left with the beginnings of a new and far larger salient between Ledeghem and Aubencheul, more than forty miles across and deepening every day.

They were also threatened on a strategic scale west of Verdun, where the French Fourth and American First Armies were pushing slowly northwards on each side of the Argonne Forest and were now poised to strike at the key railway which ran along the southwestern flank of the Ardennes from Metz and Thionville to Mezières. Since the middle of July the German armies on the Western Front had lost nearly 4000 artillery pieces, 25,000 machine-guns, and over a quarter of a million men as prisoners, in addition to their killed and wounded. On 8 October the three southern British armies resumed their offensive, pushing through Cambrai on the 9th and reaching Busigny on the 10th and Le Cateau on the 11th.⁵⁵

In the air tactical and technological evolution went on apace, if rather informally, unhindered by any aerial opposition. The SE5as of 84 Squadron took up ultra-low-level reconnaissance duties during one spell of poor weather during the middle of the month.

The line had been advancing very rapidly, communications from the front were bad and General Rawlinson was often uncertain as to the position of his advanced troops. At this time No 84 Squadron was carrying out a series of low-flying attacks on the retreating enemy so that the pilots became very familiar with the lie of the land over which our troops were advancing ... About the middle of October there came a week of foggy weather, when ... reconnaissance became almost impossible. It then occurred to someone to ask No 84 Squadron to try and discover the position of our own and the enemy's advanced troops ... The method employed was as follows ... From Le Cateau half a dozen roads radiated eastwards, and led through the enemy's front line. Making Le Cateau one's base one flew out along each road in turn at twenty to thirty feet until either one saw enemy troops or was fired on. One then turned, and flew back to Le Cateau, marked on the map the point where the enemy's troops were encountered, and set off eastward again along another road. Each

road was thus prospected in turn, and by this means half-a-dozen points were obtained which if joined gave roughly the enemy's front line.⁵⁶

According to a German historian, the close-support Camel squadrons devised new weapons with which to harass the retreating Germans: '... the enemy pilots were contriving new ways of harassment. Bombs and machine-guns seemed no longer to inflict sufficient devastation, and they invented a new instrument of destruction by joining together 20-30 hand-grenades which fell on the troops and caused terrible devastation. I was a witness when an enemy air formation carried out an attack on a firing battery. The battery commander recognized the danger immediately and tried to save the battery by moving off the guns, but it was too late. The entire crew and all horses were wiped out ...'⁵⁷

Even the corps squadrons were becoming rather venturesome, with artillery patrols, finding their normal duties impossible because of mist and cloud at five hundred feet, beginning to indulge themselves in ground strafing roles. After a while they ceased to need even the excuse of poor visibility and, on 22 October, a slow old RE8 of 16 Squadron, piloted by Captain H.L. Tracy of Toronto and with Captain J.E. Purslow, address unknown, as observer, noticed a forty-coach passenger train passing through Callenelle while flying an artillery patrol. Despite heavy ground fire, they strafed it from 1500 feet, 'after which the train stopped.' They then went on to 'engage a body of hostile troops on road with their M[achine] G[uns] and succeeded in inflicting some casualties while the remaining hostile infantry rushed for cover.' Their actions were out of the ordinary, but not, perhaps, quite as unusual as those of 4 Squadron's Lieutenant R.H. Schroeder of New Westminster, BC, on 22 October, who, when 'flying at low height well in advance of infantry was forced to land at Wasquelles [sic], which had only been vacated by the enemy two hours previously. He was the first British officer to enter Roubaix.'⁵⁸

The enemy was falling back not only in the areas under direct attack, but also from the huge salient which had developed in the centre, evacuating an area nearly forty miles square during the second half of the month. German infantry in the Catillon area, facing the Fourth Army some four miles southeast of Cambrai, noted despondently that 'During these days enemy aircraft participated with special intensity in the enemy infantry attacks. Flying along the front at extremely low levels, they fired on the German troops in their positions and shell-holes, dropped bombs and even hand-grenades, which was particularly depressing because no German planes could be seen and help or support from them was no longer to be expected.'⁵⁹ The author, a regimental runner with the 413th Infantry Regiment, found himself under personal attack by a British machine shortly afterwards as he carried orders from the regimental headquarters to the battalions: 'At first I believed that the hits around me were coincidental, but as the enemy aircraft turned around and fired on me from the front, I realised that the ammunition waste was meant for me ... this game lasted for quite some time. What a superabundance of men and materiel the enemy must have had that he could permit himself to hunt a single man from the air.'⁶⁰

The British 'superabundance' of men and materiel was now well established, but in the Fokker D-VII the Germans had retained a technological supremacy

which had gone some way to make up for their logistical difficulties and increasing shortage of adequately trained pilots. British airmen often gave better than they got in combat, a fine example being 46 Squadron's action on 26 September, when two flights of Camels, led by Donald MacLaren and including A.M. Allan of Toronto and R.F. McRae of Niagara Falls, Ont., met 22 Fokkers near Havrincourt. MacLaren, with the lower flight, immediately attacked the lower level of Fokkers and brought down one enemy machine. Outnumbered and with some novices in their ranks (Allan had been flying operationally only since 5 September 1918), No 46 still had the better of this exchange.⁶¹ Usually, however, the Germans had the best of it, and it was not the Fokker D-VII alone which gave them the upper hand. Normally they chose to fight in large formations, and since their appearances were irregular they were able to achieve both surprise and a strong, if brief, local superiority. In August the RAF had lost 215 machines, the highest monthly total of the war to date. In September the figure rose again, to 235, and although it dropped substantially to 164 in October, their combat/loss ratio was probably at least as high as in September since the enemy was accepting battle less and less often.⁶²

When he did choose to fight neither technological nor numerical superiority was of much avail against the finely pitched tactical skills of the RAF pilots. On one occasion a pair of Camels from 65 Squadron, led by Captain J.L.M. White of Halifax who had won a DFC earlier in the summer, dived on a formation of fourteen enemy scouts and White shot down two of them before making off unharmed with his wing-man. White led twelve offensive patrols during the month: on the 14th one of the flights encountered eleven D-VIIs over Courtrai:

He got a burst at one E.A. from 20 feet range and the machine went down in a spin but came out of it and went gliding East. He then attacked another which was on the tail of a Camel and fired about 100 rounds into it as he approached, observing his tracers to be hitting the nose of the E.A. The enemy machine went down vertically, black smoke coming out of the fuselage and was last seen diving vertically and was burning. He then attacked another Fokker biplane from behind and, after having fired three bursts into it, the machine turned over on its back and a piece of the tailplane folded over. The E.A. righted itself and Capt. White put another burst into it, after which it went down completely out of control.⁶³

In November White was awarded a Bar to his DFC and in December a Croix de Guerre was added to his decorations.

What was still needed, however, was a British aircraft to match the capabilities of the Fokker D-VII. During October such a machine began to appear on the Western Front. The Sopwith Snipe was a lineal descendant of the Sopwith Camel and the Dolphin. Although it could not challenge the operational ceiling or the rate of climb of the D-VII and was fractionally slower in level flight, it was as well armed (with twin Vickers firing through the airscrew), it provided just as stable a gun-platform, and it could turn more tightly than the D-VII, an immense advantage in the tangled, twisting dogfights which characterized air combats of the era. Nos 43, 208, and 4 (Australian Flying Corps) were the first squadrons to be

equipped with the Snipe. On 17 October 1918, however, one more Snipe arrived in France, flown by a man who was worth a squadron in himself.

Major William George Barker of Dauphin, Man., was now twenty-three years old, with two aerial victories officially credited to him for every year of his life. The threads of his career to this point have already been woven into earlier chapters of this book. After serving as an observer and pilot with the RFC for a year-and-a-half on the Western Front in 1916 and 1917, he had commanded 28 Squadron in Italy for almost a year before being posted to the UK to take command of an air-fighting school at Hounslow. But recognizing that the air war in France had become tactically very different from that which he had known earlier on the Western Front and had been experiencing more recently in Italy, Barker applied for a refresher course before taking up his new appointment. He was promptly attached to 201 Squadron (Sopwith Camels) at La Targette for ten days.

Barker saw no enemy aircraft during his stay with 201, however, and when he took off on 27 October he was *en route* to the UK and his non-operational posting. One last look at the front seemed in order. He climbed to 21,000 feet over the Forêt de Mormal. There he spotted a Rumpler two-seater reconnoitring the lines, attacked it, and set off an air fight against sixty Fokkers which won him the Victoria Cross, the third and last Canadian airman to be so decorated in the First World War.

Barker's fire broke up the Rumpler in the air. He then found his own machine peppered by a Fokker biplane, climbing in a near stall, almost a thousand feet below him. Wounded in the right thigh, Barker threw his Snipe into a spin and spiralled down two thousand feet, only to find himself in the midst of fifteen more D-VIIs. He fired at two which disappeared and then got a burst into a third from ten yards' range and set it on fire. The other Fokkers were now milling around him, firing from all angles; wounded again in the other thigh, he fainted and the Snipe went into another spin, dropping to 15,000 feet before he recovered consciousness in the middle of a lower echelon of the enemy formation. The Canadian got behind one of them and opened fire, while another Fokker got on his tail. The machine in front soon burst into flames, but the one behind was riddling the Snipe with bullets and Barker was hit once more and his left elbow shattered. Again he fainted and again the Snipe went into a spin and lost its immediate pursuer. At 12,000 feet Barker came to, this time to find himself in the midst of a third echelon of enemy fighters whirling in to the attack from all directions. With the Snipe's airframe punctured by innumerable bullet holes and its engine smoking, Barker picked out one more D-VII and flew straight for it, firing as he went. The Fokker disintegrated and the Snipe suffered further damage as Barker hurtled through, fragments of the German machine tearing the punctured remnants of its fabric. Yet the Snipe kept flying and Barker, momentarily in the clear, dived westwards and raced for the British lines, dodging a fourth enemy formation as he did so. He crossed the lines at tree-top height and finally crashed into the barbed-wire entanglements which protected a British balloon site, with four more aircraft added to his roll of victories. One of the many witnesses to this spectacular episode – he termed it a 'stimulating incident' – was A.G.L. McNaughton, now the commander of the Canadian Corps Heavy Artillery, who watched from his

advanced headquarters between Bellevue and Valenciennes. The encounter took place in full view of many thousands of British and Canadian soldiers in the trenches. 'The hoarse shout, or rather the prolonged roar, which greeted the triumph of the British fighter, and which echoed across the battle front, was never matched ... on any other occasion,' McNaughton later wrote. 'By Jove, I was a foolish boy, but anyhow I taught them a lesson,' Barker exulted from a hospital bed in Rouen, ten days later. 'The only thing that bucks me up is to look back and see them going down in flames.'⁶⁴

As Barker lay in hospital recovering from his wounds, the war was drawing to a close. Yet there was much bitter fighting remaining; on 30 October the British admitted losing forty-one aircraft while claiming a record number of sixty-seven Germans shot down. The heavy fighting was precipitated by the attempts of the RAF day-bomber squadrons to interdict the railway system which supplied the northern group of German armies and constituted the primary means by which they might be withdrawn from northern France and Belgium. The DH9as of 205 Squadron were given Namur as their objective.* On 28, 29, and 30 October they reached their target and bombed without loss. The DH9 squadrons, however, were not quite so fast and their operational ceiling was only 13,000 feet. They were scheduled to attack slightly closer junctions at La Louvière, Charleroi, and Mariembourg. On the 28th and 29th they were driven back by enemy fighter concentrations; on the 30th only ten of thirteen machines from 107 Squadron were able to reach Mariembourg.⁶⁵

The bomber leader on that occasion, Captain F.M. Carter of Orillia, Ont., with Lieutenant A.W.H. Arundell of Montreal as his observer, reported two direct hits on Mariembourg junction with his 112-lb bombs and claimed an enemy fighter shot down on the return trip. His deputy, flying with Second Lieutenant F.C. King of Ottawa as his observer, also claimed two direct hits; a third machine, with Second Lieutenant H. Wittup of Calgary as observer, reported success as well. One of the aircraft which failed to reach the assigned target, flown by Second Lieutenant J.H. Grahame of Stony Mountain, Man., developed engine trouble on the way out but dropped its bombs on Landrecies railway junction instead. The bombers of 107 Squadron were escorted over the lines by Sopwith Snipes of 43 Squadron; its pilots claimed five victories during the operation, including one by Lieutenant G.R. Howsam of Port Perry, Ont.[†] On the same day the DH9s of I Brigade's 98 Squadron, on a short-range mission against Mons, were intercepted by 'a large formation of E.A. Scouts, chiefly Fokker Biplanes,' their escort of Sopwith Dolphins from 19 Squadron having to fight desperately hard to protect them. Five Dolphins and four DH9s were lost and nine German fighters were claimed destroyed and two others driven down out of control. Lieutenant W.F.

* Canadians flying in 205 Squadron at this time included W.B. Esplen of Pense, Sask., F.O. McDonald of Penticton, B.C., and K.G. Nairn of Winnipeg.

† Other Canadians in 107 Squadron included L. Ashton of Mairkirk, Ont., I.H. Christie of Toronto, S.L. Dunlop of Calgary, and A.B. Holden of Victoria. In 43 Squadron the Canadians included J.P. Bernigand of Montreal, G.F. Geiger of Brockville, Ont., W.G. Holden of Indian Head, Sask., R.L. Houlding of Brantford, Ont., L.N. Mitchell of Liverpool, NS, J.K. Pickard of Ridgeway, Ont., and W.H. Temple of Toronto.

Hendershot of Kingsville, Ont., claimed one shot down and one out of control, while Lieutenant C.M. Moore* reported shooting down a D-VII in flames.⁶⁶

The strong German reaction to these raids prompted another heavy attack by the RAF. At last Trenchard's war of attrition was paying substantial dividends even if the benefits were accruing under his successor, Salmond, and this was no time to be easing the pressure. During the morning a reconnaissance by pilots of the Australian squadrons in X Brigade had revealed that many of the enemy fighters were operating out of Rebaix, just north of Ath. All the squadrons of the brigade were therefore detailed to make a low-level attack on the aerodrome during the early afternoon. Sixty-two British aircraft, bombing from heights as low as twenty feet, completely destroyed two hangars and their contents, wrecked two machines parked in the open, and systematically shot up miscellaneous ground targets on or near the airfield. 'Horses were stampeded in all directions, M[otor] T[ransport] attacked with machine gun fire, trains and motor cars damaged and casualties caused to personnel,' as the result of bombing and machine-gunning by 2(AFC), 54 and 103 Squadrons, while 4(AFC) and 88 Squadrons supplied top cover.⁶⁷

The whole attacking force had to fight its way to and from Rebaix. During the course of the flight two DH9s and a Snipe were lost while nine enemy aircraft were claimed destroyed, one of them by 88 Squadron's Lieutenant K.B. Conn of Almonte, Ont., as well as two out of control, one of which was credited to Lieutenant J. Deslauriers of Montreal.[†] Taken as a whole, 30 October was the most intensive day of air fighting during the war, and although the bombing attacks which set it off had little effect, the damage done to the German fighter force during the ensuing combats was irreparable. There were to be further brief flurries of fighting, but deteriorating weather and the progressive collapse of German resistance on the ground[‡] brought a general reduction in air fighting.

On 1 November the Canadian Corps attacked Valenciennes in their last major assault of the war. When the infantry moved forward early that morning without any preliminary bombardment the German artillery was quick to open a heavy fire on them, 'but its fire rapidly dwindled under the accurate counter-bombardment of the Canadian guns.' On this occasion the Canadians' Counter Battery Office also had operational direction of the day bombers from 1 Brigade's 10 (Army) Wing 'in engaging suitable targets on which it is impossible to develop a sufficient volume of artillery fire.' These were the DH9s of 98 Squadron commanded by Major Percy

* Moore was born in Quebec City, but was living in Bermuda before the outbreak of war. Other Canadians serving in 19 Squadron on 30 October included W.H. Barlow of Montreal (WIA 29 May 1918), F.H. Hall of Saint John, NB, J.S. Hewson of Amherst, NS, L.H. Ray of Toronto, W.C. Seymour of Niagara Falls, Ont., and N.A. Weir of Elbow, Sask.

† Canadians in 54 Squadron included H.R. Abey of Kaslo, BC (WIA and POW 2 Nov. 1918), J.V. Dallin of Peterborough, Ont., M.A. Genest of Trois Rivières, Que., H.T.B. Lockwood of Long Branch, Ont., G.M. Saunders of Toronto, J.M. Stevenson of Charlottetown, and S.B. Taylor of Chester, NS. With 88 Squadron were C.E. Lacoste of Montreal, F.A. Lewis of Toronto, J.L. Marshall of Vancouver, C.E. Mitchell of Victoria, and J. Thibaudeau of Montreal.

‡ 'The enemy's main line ... in some cases retired 10,000 yards in a single night, and ... had in many cases retired so far as to be beyond the range of our guns.' G. Knight, 'Canadian Corps War Records; No. 5 Squadron's Work under Command of Major C.H. Gardner, from July 1918 to November 11th 1918,' 12 Jan. 1919, PAC RG 9 III, vol. 4611, folder 11, file 5

Clark Sherran* of Crapaud, PEI, which bombed the key railway junction southwest of Mons during the day. The fighter squadrons of I Brigade also found 'very good targets.' On the Valenciennes-Mons road 64 Squadron strafed transport columns, though Second Lieutenant G.W. Graham† of Shuswap, BC, lost his life during the action. Meanwhile 209 Squadron‡ punished troops and transport just north of Jenlain where a body of German troops 'who were apparently releasing gas' were scattered.⁶⁸

In the last ten days of the war such scenes became numerous as the RAF strafed the fleeing enemy undisturbed by hostile aircraft. The diarist of 8 Squadron recorded: 'The German retreat now became general and was so rapid that tanks were unable to keep in touch with the enemy's rearguards. The squadron therefore became purely a harassing patrol unit. By low flying along highways and diving on transport, infantry columns and artillery on the march they caused great disorder in the enemy line of communications and inflicted enormous casualties.'⁶⁹ No 5 Squadron found that 'this was the easiest period we had. Our scouts appeared to hold the mastery of the air, the hostile anti-aircraft guns were rarely in action, and no defence appeared to have been organized against our aircraft.' Lieutenant N. Butt of Vancouver, observing the German retreat from an RE8 of 5 Squadron as the Canadians swept towards Mons on 9 November, reported that 'There was no shelling observed on [the] Front ... No enemy troops seen west of Mons. Civilians and Belgian flags seen in all towns as far east as Jemappes ...'⁷⁰

The triumph of the Allies, and the collapse of their own air force, spelled horror for the retreating Germans. An American who had flown with 46 Squadron recalled, forty-three years later, his unit's last operation on 10 November:

We went out on a squadron sweep of trench strafing, and I might say that trench strafing was about the bloodiest work we had to do. We found a long straight road filled with retreating German supply trains. We saw horse drawn artillery, motor trucks, infantry and other military equipment of one kind or another. We formed a big circle and dropped our 25-lb bombs. When we got through with that road it was one unbelievable scene of chaos, with dead horses, lorries and dead soldiers all over the road. As I went down the last time to use up what was left of my ammunition and bombs, the two planes in front of me collided. In one of them was a chap by the name of Dowler, who had been a school teacher in Calgary. We had joined up the same day in Canada, but he came to the squadron later than I did. He was a damned good pilot.⁷¹

* Sherran had joined the RFC on 30 July 1916, had been awarded the MC and a Bar to it in June 1917, and had taken command of the squadron on 28 August. After the war he remained in the RAF and rose to the rank of wing commander, losing his life in the King's Cup Air Race of 1937. Other Canadians serving in 98 Squadron on 1 November 1918 included G.H. Gillis of Halifax (WIA 23 Oct. 1918) and N.C. MacDonald of Tugaskie, Sask.

† Graham's real name was Hoffman, but he had enlisted under his mother's maiden name to disguise his German parentage. Other Canadians in 64 Squadron at this time included J.W. Bell of Charlottetown (WIA 11 March 1918) and B.J. Forester of Vernon, BC.

‡ In 209 Squadron were E.W. Mills of Hamilton, G.T. Porter of Montreal, J.B. Saer of Toronto, and J. Shaw of St Catharines, Ont.

Second Lieutenant George Emerson Dowler and the pilot of the machine which collided with him on 10 November appear to be the last RAF flyers to have been killed in action during the First World War. On the same day 84 Squadron's Lieutenant F.H. Taylor of Toronto was credited with bringing down an enemy machine, scoring the last victory of the war to be recorded in the RAF *communiqué*.^{*} At 1100 hrs the next morning, as the ground forces ceased firing, history's first air war also came to an end.⁷²

In his penultimate despatch, dated 21 December 1918, Sir Douglas Haig paid formal tribute to 'the work of our airmen in close co-operation with all fighting branches of the Army' during the last year of the war:

Some idea of the magnitude of the operations carried out can be gathered from the fact that from the beginning of January, 1918, to the end of November, nearly 5,500 tons of bombs were dropped by us, 2,953 hostile aeroplanes were destroyed, in addition to 1,178 others driven down out of control, 241 German observation balloons were shot down in flames, and an area of over 4,000 square miles of country has been photographed, not once but many times.

The assistance given to the infantry by our low-flying aeroplanes during the battles of March and April was repeated during the German offensives on the Aisne and Marne ... During our own attacks, hostile troops and transport have been constantly and heavily attacked with most excellent results.

Both by day and night our bombing squadrons have continually attacked the enemy's railway junctions and centres of activity, reconnaissance machines have supplied valuable information from both far and near, while artillery machines have been indefatigable in their watch over German batteries and in accurate observation for our own guns.⁷³

Haig's appreciation was the just and necessary official recognition of the gallant work of the air arm, but was, despite its statistics, hardly an evaluation of the capabilities of the air arm in war. The men who performed so many roles in the air were doubtless equally brave and dedicated, but some elements of the RAF were distinctly more important than others, both in the war effort and for the future of military aviation. There was much to be learnt from the record of the RFC, RNAS, and RAF in the First World War which had to be learnt again, at great cost, in the Second.

By the end of the war on the Western Front every capability of air power had been investigated and employed in actual operations – namely, reconnaissance,

* Canadians were credited with four of the last sixteen air victories recorded in the RAF *communiqué*. The others were credited to 29 Squadron's H.B. Oldham of Yarker, Ont., and two to 210 Squadron's W.S. Jenkins of Montreal (WIA 29 July 1918). Yet another, not recorded in RAF *communiqué* no 32, was the LVG shot down on 10 November by four Camel pilots of 213 Squadron, flying out of Bergues, near Dunkirk. Three of them were Canadians: H.H. Gilbert of London, Ont., G.C. Mackay of Mimico, Ont. (WIA 15 Sept. 1918), and A.B. Rosevear, address unknown. See H.H. Gilbert, 'Memories of the War,' *Cross & Cockade Journal*, XVIII, summer 1977, 132–41.

artillery observation, the use of fighters to achieve air superiority, ground support, tactical and strategic bombing, and intruder operations. The varying capabilities of the aircraft in these roles, however, had not always been properly appreciated. From the beginning it had been clear that the aeroplane had no equal as an instrument of reconnaissance. In this static war, with no prospect of outflanking the enemy in the vital theatre, massive frontal assaults requiring enormous logistical build-ups were highly susceptible to air reconnaissance. Air photography made it possible to study the enemy's defence systems and his back areas in detail and at leisure. Two or three fast machines, flying high over enemy lines and echeloned over his rear areas, could bring back a mosaic of photographs that, subjected to expert analysis, would reveal nearly everything there was to know about the enemy's preparations and immediate resources within a matter of hours.

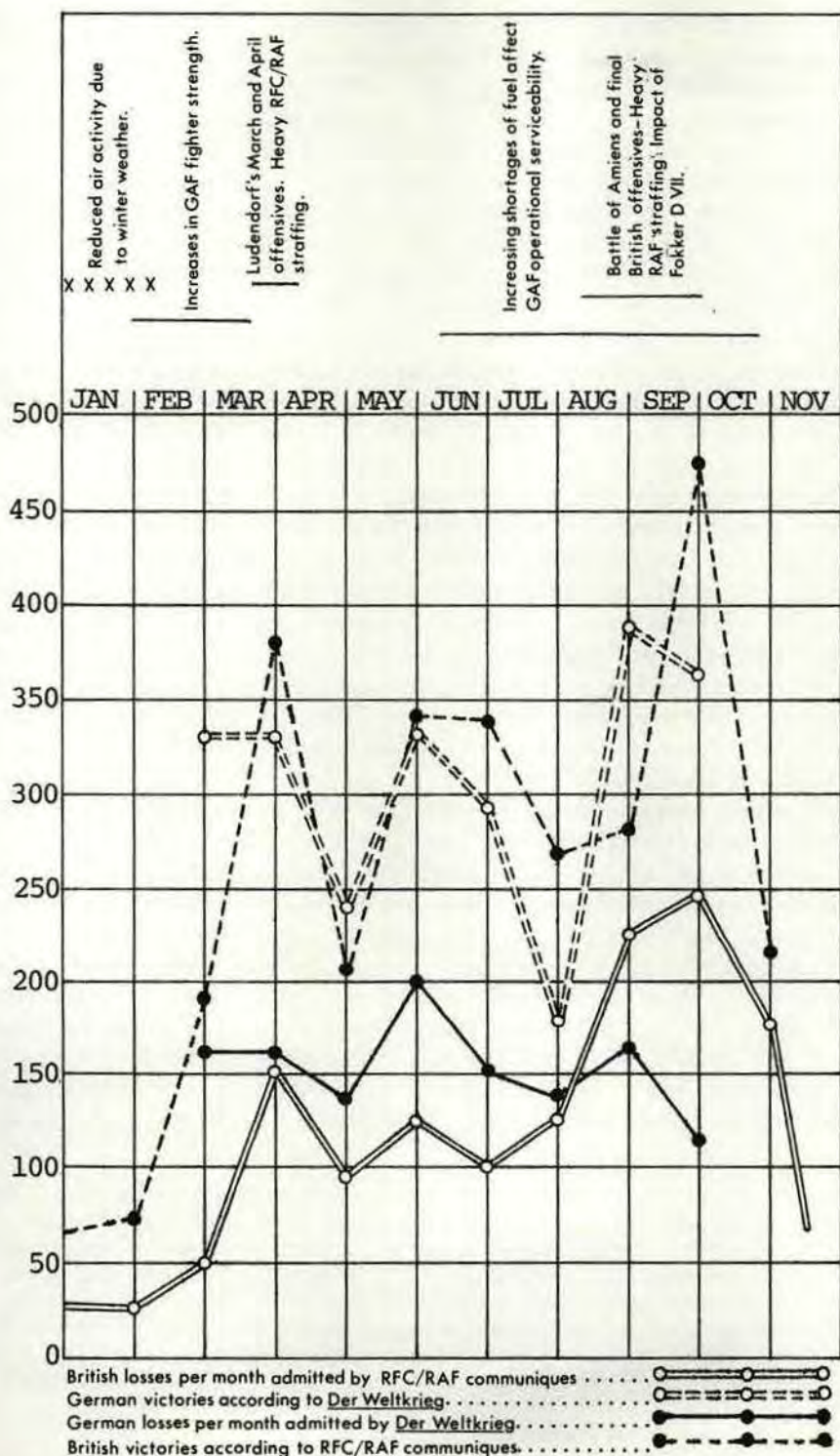
The value of the aircraft as an observation and ranging adjunct of the artillery also won early recognition. By 1917 90 per cent of counter-battery fire, crucial to this war of sieges, was being directed from the air. Artillery was the dominant arm of the war and aircraft had become an essential part of the artillery system. In the case both of reconnaissance and of artillery observation the technical proficiency of the aircrews in carrying out their tasks had reached a high level by 1917. The postwar RAF, however, had only one squadron assigned to army liaison duties – reconnaissance and artillery co-operation – by 1923.*

As the air arm's roles increased in number and importance, air superiority became an essential element in the planning and carrying out of ground operations, a factor first fully recognized in 1916. As a result, the fighter-interceptor aircraft assumed a significance it had not previously had, and which it has not yet lost. Indeed, that significance and the aura of glamour which, for reasons of public relations, came to surround the 'aces' of the air war tended to obscure the equally dangerous and important work performed by the crews of reconnaissance and artillery aircraft.

To a considerable degree both the Germans and the British exaggerated the effectiveness of their fighter forces. The graph on page 573 compares the number of aircraft *claimed* to have been shot down by the British and German air services on the Western Front in 1918 with the number each side actually lost. The figures of claimed victories do not include aircraft alleged to have been driven down out of control but only aircraft considered to have been destroyed in the air.

Because the German official history, *Der Weltkrieg*, lists German victories and losses under each army, and because German army boundaries did not correspond precisely with those of the BEF, it has not been possible to establish an exact relationship between British and German claims and losses. Nevertheless, the representation in the graph is, it is believed, the most accurate possible reconstruction and not far removed from the reality of losses in 1918. The figures incorporated in the graph are derived ultimately from victories credited to individuals; a brief study of claims against losses will show that many an alleged 'ace' could not

* In 1939 the air component of the British Expeditionary Force that went to France included four squadrons of obsolescent Westland Lysanders assigned to army co-operation duties.



have merited the title and, among those who could justly claim it, few can have been entitled to the full number of victories with which they were credited.*

The exaggerated claims of 1917 and 1918 were brought about not by deliberate misrepresentation but by the ever more rigorous exigencies of combat flying. Early in the war, when the air environment was one of relatively low intensity, when aircraft were slower and less manoeuvrable, tactics rudimentary, and the cubic area of combat significantly less due to low operational ceilings, claims were likely to be much more reliable. At that time a victorious pilot could often afford to follow a solitary enemy down, to deliver another burst of fire or two to make sure of his victim and to report the co-ordinates of the point at which he saw the enemy machine crash. By 1918 fighters had an operational ceiling of at least three-and-a-half miles, speeds of well over 150 mph could be reached in a dive, airframes were stronger, fire power was more than doubled, and a cubic mile of air space might contain a hundred weaving, diving, circling aircraft between two cloud layers. The pilot who kept his eyes fixed on a single enemy aircraft for more than a few seconds was likely to be shot down himself.

An increasing divergence between what the airman thought had happened and what really happened was thus inevitable. In the later stages of the war, it is also necessary to observe, both sides exploited the propaganda value of successes in the air battle. It was probably not entirely coincidental that air staffs gradually relaxed the criteria they employed to determine when a combat victory had been won. Nevertheless, as the graph clearly shows, the degree of exaggeration maintained a curiously stable relationship to reality, the most notable exception being the month of September, when the lines of German claims and British losses were briefly on converging paths.

Despite their inflated claims and credits, the 'aces' of the air war – the Vosses, von Richthofens, Bishops, Barkers, and Collishaws – were anything but fakes. They earned and held the respect of their peers as well as that of the public by their flying, shooting, and tactical skills rather than by self-advertisement or the assiduous labours of public relations staffs. But the compilation of lists of scores and the many rankings of allied and German pilots so plentiful in the romantic and sensational literature which has been built up since the First World War often rest upon assumptions which will not bear critical scrutiny. At least as far as 1918 is concerned, claims of air victories by either side should be reduced by at least one-third.

With this qualification in mind, however, there can be no doubt that the fighter aircraft was the crucial instrument in the securing of air superiority. Many ele-

* This was even more true of the French and Americans. The British and Germans divided credits so that each individual who participated in a victory received an appropriate proportion of the credit. The French and Americans, however, gave a full credit to each person involved. If two fighter pilots contributed to bringing down one enemy machine, then each was credited with a victory. If either pilot or observer in a two-seater shot down an enemy machine, each received one credit, and when several pilot/observer teams were involved the results could be absurd. 'In two cases sixteen men (eight pilots and eight observers) were each given credit for the E.A. they all helped to bring down.' USAF Historical Study No 131, *US Air Service Victory Credits, World War I* (Air University 1969)

ments entered into the contest between the German air force and the British flying services for the upper hand in the air. At different stages of the war, technological advantages, as in the appearance of the Fokker E-I or the DH2, were the most important factor. In the long run, superior productive capacity favoured the Allies: they could afford to produce more aircraft and could draw upon larger supplies of pilots, not to speak of fuel, than could the Germans. On the whole, however, despite some fumbling in 1916, the Germans proved more inventive in the development of fighter tactics. It was they who pioneered flight, squadron, and wing formations, and the British who followed behind. The Germans also had a better understanding of the significance of tactical air superiority. As they demonstrated repeatedly, even in the last months of the war, the application of powerful forces at the right place and time was superior to the expensive and inefficient Trenchard doctrine of attempting to be everywhere at the same time.

The expenditure of effort by the RAF on bombing was also scarcely commensurate with the results. Whether tactical or strategic, bombing was limited by technology; bomb-sights were inadequate and bomb-loads were too small. Tactical bombing, especially at low levels, frequently achieved good results, but even here there was a tendency to exaggerate its effects. Strategic bombing was vastly overrated; there was an enormous gap between the state of the art and the objectives sought. Nevertheless, the concept was seized upon by politicians as a cheap method of winning the war, and by senior air officers because it gave airpower an independent role. The illusion that airpower can win wars was created during the First World War but, except for the use of nuclear weapons against Japan in 1945, the results of strategic air assault have consistently failed to live up to expectations. Nevertheless, because the concept of strategic bombing as a decisive weapon justified the continued existence and development of a totally independent air force, and because 'tactical' bombing seemed to offer a cheap, cost-effective (and indiscriminate) way to police areas of the empire,* bombing became the *raison d'être* of the postwar RAF.

A very different fate lay in store for the close ground-support role that had come to play such an important and effective part in the ground battle during the last eighteen months of the war. It disappeared quickly and completely from the corpus of doctrine upon which RAF procurement and training was based, so that in May 1940 the British military theorist, Basil Liddell Hart, found it necessary to comment in his diary that 'we have no suitable machines for low-flying attack, and the Air Staff object to the idea of air counter-attack against troops moving up.'⁷⁴ The Germans, like the British, had discovered the value of ground support almost by accident when pilots of low-flying aircraft assigned to other duties found themselves unable to resist the opportunity to swoop down unexpectedly upon an enemy position or column, strafe it, and then zoom up and away leaving chaos on

* Air Commodore L.E.O. Charlton, who had ended the war commanding V Brigade on the Western Front, resigned his post as Chief Staff Officer, Iraq Command, in 1924 over the moral issue involved in this kind of bombing. He was put on half-pay and finally retired from the RAF in 1928. See Andrew Boyle, *Trenchard* (London 1962), 511, and Charlton's autobiography, written in the third person and entitled simply *Charlton* (London 1931).

the ground behind them. The practice became increasingly common on both sides by late 1916, especially when the enemy could be caught off-balance in the open, in course of either attack or retreat. Gradually airmen were assigned to such work, on the British side in conjunction with various other duties. RFC fighter pilots, most of whom disliked the assignment heartily, proved again and again how effective it could be. But it was the Germans who first institutionalized the ground-attack function, establishing specially trained units, the *Schlachtstaffeln*, developing doctrines for their tactical use *en masse*, and designing aircraft for this one particular purpose.*

The British, on the other hand, were late in regarding ground attack as a specialized function, never trained pilots exclusively for it, and were only experimenting with a distinctive aircraft type, the armoured Sopwith Salamander, when the war came to an end. Nor did the RAF ever accept the doctrine of ground attack by massed formations which the Germans used with great effect between July 1917 and July 1918. Although as many as five RAF fighter squadrons were, in effect, brigaded together under the operational control of one individual during the last three months of the war, British machines were still used singly or in pairs. Only in the realm of tank-aircraft co-operation did the RAF lead the way, a leadership that was inevitable by virtue of the fact that the Germans had only a nominal tank arm even by the end of the war.† But the welding of infantry, artillery, tanks, and aircraft into a closely-knit combat team – something the British had experimented with at Cambrai in 1917 and pushed much farther in 1918 – was left to the post-war *Wehrmacht*, which unveiled its mastery of the technique in the whirlwind Polish campaign of 1939.

Although the First World War never saw an exclusively Canadian squadron in action and no Canadian rose to a command above Group level, thousands of Canadians passed through the flying ranks of the RFC, the RNAS, and the RAF during the four years of war. A few of them returned, not to civilian life like most of their brethren, but to join a new Canadian air force. In the very different circumstances of peacetime aviation the principles and prejudices that had been instilled in them during the war had limited relevance, but when Canada began to prepare for war again, less than twenty years later, their background was to be strongly reflected in the expanding, battle-conscious RCAF. It was inescapable that the basic premises and doctrine of the Royal Canadian Air Force during the Second World War should stem directly from Canadian experience in the British flying services during the First World War.

* In retrospect, this specialization of design may have been a mistake. The Ilyushin 11-2, a specialized design, served the Russians well during the Second World War, but the most effective ground-attack machines were probably modifications of heavy fighter designs, the Hawker Typhoon, Curtiss P-40 (Kittyhawk), Focke-Wulf 190, and MIG-3.

† Sixteen tanks of their own design and a small number of salvaged British tanks.

Conclusion



Maj.-Gen. S.C. Mewburn (Minister of Militia), Sir Robert Borden (Prime Minister), and Sir A.E. Kemp (Minister of the Overseas Forces of Canada) in London to attend the Imperial War Conference, July 1918 (PA 5725)



Sir George Perley, Canada's High Commissioner to the UK (and Overseas Minister from November 1916 to November 1917) on a London street (PA 7722)



F/C J.A. Barron, of Stratford, Ont., was one of the four known Canadians who flew with the RNAS airship branch. He was subsequently appointed to the Board which set up the RCNAS in the fall of 1918.



Col. Redford H. Mulock of Winnipeg was a prime mover in the formation of the CAF and could have commanded it. Instead he chose to return to civilian life after the war and became an important figure in Canadian civil aviation. (PMR 71-404)



Brig.-Gen. Alfred Critchley, in 1918 the highest ranking Canadian in the RAF, who supported enthusiastically the concept of a Canadian Air Force. 'We owe it to Canada that the magnificent work of the Canadian Airmen in France is not lost to our country,' he wrote, in April 1918. Critchley, from Calgary, went overseas with the CEF in 1914; in Feb. 1918 he was seconded to the RFC and placed in charge of cadet training in Britain, a brigadier-general at twenty-eight. He settled in England after the war. (AH 443)



Sopwith Dolphins of 1 (Fighter) Squadron, CAF, at Upper Heyford, their UK base, in early 1919. The squadron marking on the side of the fuselage (obscured in this photograph by the lower left plane of each aircraft) was a black '1' inside a white maple leaf. (M 816-R)



The officers of 1 Squadron C.A.F. Standing (l to r): Lt W.L. Rutledge, AFC, MM; Lt P.F. Townley; Lt G.R. Howsam, MC; Lt E.A. Kenny; Lt F.V. Heakes; Lt C.M. McEwen, MC, CFC; Lt H.A. Marshall; Lt J. Whitford; Lt R.W. Ryan. Seated (l to r): Capt. D.R. MacLaren, DSO, MC, DFC; Capt. G.O. Johnson, MC; Maj. A.E. McKeever, DSO, MC (CO of Squadron, killed in car accident in 1919); Lt J.F. Verner; Capt. C.F. Falkenberg, DFC. Four of them – Howsam, Heakes, McEwen, and Johnson – subsequently achieved Air rank. (RE 17474)



Maj. A.D. Carter, subsequently the commanding officer of 2 Squadron, CAF, with fellow POWs in the summer of 1918. Carter, with 31 victories to his credit when he was taken prisoner in May 1918, was killed when 'stunting' with a Fokker D-VIII which fell apart in the air shortly after taking command. (RE 24067)



Groundcrew of 1 and 2 Squadron, CAF, awaiting inspection in a hangar at Upper Heyford. Late in 1918 tradesmen for the CAF were recruited from Canadians in the RAF and from members of the CEF with the appropriate civilian experience. (PA 6037)

Towards the Establishment of a Canadian Air Force

In 1917-18, for the first time in her national history, Canada was in the vanguard of world events, and the accomplishments of her soldiers, as well as their heavy casualties, inspired a more assertive and powerful national feeling. The work of Canadian airmen helped to stimulate the rise of Canadian nationalism, but for the most part it was Vimy Ridge and the other great hammer blows dealt by the Canadian Expeditionary Force which reverberated in the public consciousness. The existence of a distinct army corps, commanded by a Canadian, gave a focus for national sentiment that aviation could not provide. The exploits of individual Canadians, notably W.A. Bishop, were well known and a source of pride, but there were no formations in the British flying services that could be associated with the maple leaf.

By 1917 the public had become more conscious that Canadians were playing an important, if unsung, role in the air war but there was certainly no important movement calling for the creation of a Canadian air service. The Aero Club of Canada requested the government 'to give serious consideration to the matter of eventually establishing a Canadian section of the Royal Flying Corps or a Canadian Flying Service,' but it was scarcely a representative body. Most Canadian newspapers carried feature stories about the war in the air, but these accounts had little Canadian content and were usually sensationalized and ill-informed. Some Toronto newspapers gave consistent support to the idea that Canada should have an air service of its own, the arguments they most commonly employed having to do with national identity and numbers. Why should Canadians not have 'a chance for laurels as distinctively Canadian flyers' when the Australians had? Newspaper estimates of the numbers of Canadian airmen varied from 'thousands' to the Toronto *Star's* gross exaggeration of '35 to 50 percent of the total.'¹ Press handling of aviation in 1917 probably reflected a more general public feeling that a great many Canadians were serving in the air without having received proper credit, and that it was time they were given due recognition.

Canadian airmen shared such feelings, and so did many in the army. Distinguished pilots like Bishop and Mulock were reflecting the views of their countrymen in the flying services when they advocated the formation of a Canadian air force. Their opinions were echoed by such highly-placed officers as Sir Arthur Currie and Sir R.E.W. Turner, who were both nationally-minded and thoroughly

conversant with the importance of air support in army operations. Sentiment in Canada, pressure from within the services, and the very scale of Canadian participation in the air war eventually impelled the government to accept the necessity of an air service. Consequently, in mid-1918 the government decided to bring its aviation policy into line with its established concerns about identity and status in the military and constitutional spheres by the creation of a Canadian air force, but this decision was taken so late and in such a manner that the new service was virtually stillborn.

At the end of 1916, it will be recalled, the government had set its face against a separate air service. Aviation in Canada had been left to the Royal Flying Corps and the Imperial Munitions Board, and overseas to the War Office and the Admiralty. Most of the developments which led to a retreat from this position, a retreat which took many months, occurred in London. When Sir Sam Hughes resigned in late 1916 Sir Robert Borden seized the opportunity to reorganize Canadian military affairs in England. The Prime Minister appointed Sir A.E. Kemp to succeed Hughes as Minister of Militia and Defence, but at the same time removed from the new Minister's control an area of responsibility much prized by his predecessor. Hughes, when distant from the watchful eyes of his officials in Ottawa, had taken a free hand in England. To remedy this, Borden established an Overseas Ministry in London, with Sir George Perley, the Canadian High Commissioner, as its head. To rectify the divided and inefficient administration of Canadian troops in England and of support services for the CEF in France, a headquarters of the Overseas Military Forces of Canada (OMFC) was formed in London, commanded by General Turner. In most ways, this wartime expedient was successful. Perley proved a careful and solid administrator; Turner, thwarted in his hope to succeed to the command of the Canadian Corps, was an effective staff officer.

As the new administration took hold in London, and as its reputation for efficiency spread not only among Canadian formations but also with the various British ministries and agencies having dealings with it, it became a centre and clearing house for information and problems having to do with Canadians in the forces. Perley, Turner, and their aides soon discovered that matters concerning aviation were continually coming their way. One of the first questions with which Perley came to grips in his new ministry was one left over from the Hughes period. In January 1917 Grant Morden asked for an interview with Perley in order to discuss proposals relating to aviation. After cautiously asking to inspect a copy of the order-in-council appointing Morden personal staff officer to Hughes, Sir George agreed to discuss a Canadian air service with him.² Had Perley chosen to act in conformity with the Cabinet's rejection of the idea, he could have given Morden short shrift. Perhaps Morden's political connections influenced him, but it is just as likely that he was swayed by the case Morden had put together, one that was much superior to his earlier submissions.

In late October 1916, on the authority of Hughes, Morden and another Canadian, Captain K.E. Kennedy of Sherbrooke, Que., had visited the RFC on the Western Front. Since that time Morden had been in consultation with Brigadier-General W.S. Brancker, Director of Air Organization, and his staff and had recognized that the new state of affairs in Canada had made irrelevant the scheme

he had proposed to the RFC in August. Yet, as he wrote to Perley, a major question remained: 'whether we are going to have distinct Canadian Squadrons in the field working as part of the Royal Flying Corps, or whether we are going to continue the policy of training and equipping Canadian officers' for the RFC, in which 'they simply become members ... without retaining any Canadian individuality.' Were the army run on the same basis, there would be no Canadian divisions at the front; Canadian troops would have been parcelled out among British battalions.³

Morden did not emphasize 'this possibly somewhat sentimental and political standpoint,' but argued that the war presented a chance for Canada to get in on the ground floor in aviation. It was not enough that a great many Canadians were accumulating experience as pilots and observers. What Canada was missing was the challenge to put together and actually operate a flying organization, so that invaluable executive and administrative experience would be acquired, to be used in the future both for military and civil aviation at home. During his tour of the front, he had found '15% to 20% of the Squadron Officers Canadians, and in most cases they are the pick of the Squadrons.' Only if the hard-won knowledge of these individual airmen were pooled could Canada take full advantage of their service. Four Canadian service squadrons should be formed, recruited both from the veterans already in the RFC and RNAS and from RFC Canada direct entries. 'Even if nothing further is done as regards the formation of distinct Canadian Squadrons,' he told Perley, the Canadian government had to begin to accept some responsibility for the welfare of its citizens in the British flying services. Claiming that 'for a long time past' Canadian officers had been appealing to him for help in their various difficulties with the RFC, he argued for the appointment of a Canadian liaison officer attached to RFC Headquarters. In this he undoubtedly had a strong point.

Perley thought enough of these arguments to talk them over with Sir David Henderson, whom he visited on 15 February in company with his Deputy Minister, Walter Gow, and Morden. The next week Borden arrived in London and Perley became caught up in the Prime Minister's heavy schedule of meetings. It has been suggested that the two discussed the aviation question, though no evidence to that effect has survived, Borden merely recording that during his visit he dealt with 'almost every question connected with the prosecution of the War,' and examined 'an enormous mass of reports and documents.' At any rate, Gow suggested to Morden at a time when the Prime Minister's visit was in its early stages 'that something concrete had better be prepared so that when the subject [of aviation] came up for discussion there would be a proper understanding of what was proposed.'⁴

The document Morden then produced, entitled 'Recommendation for the establishment of Canadian Flying Corps,' owed much to the advice he had received from Brancker. It provided for two administrative headquarters, one in England headed by a director (Morden himself) to handle pay and records and to deal with transfers to the new service from the CEF, the RFC, and the RNAS, and another in Canada under an assistant director with responsibilities for records and recruiting in collaboration with RFC Canada. Morden recommended the creation

of four squadrons, perhaps because together they would constitute a wing, the largest organization he could hope to command in his present rank as lieutenant-colonel, or perhaps because, in the view of the British Air Staff, the creation of more would seriously weaken the RFC by draining too many experienced Canadian personnel from its roster. Most of the flying officers of the four squadrons would come from RFC Canada, and flight and squadron commanders would presumably be obtained from among the experienced pilots with the RFC and RNAS, though Morden was not entirely clear on this point. All officers, however obtained, would be paid by Canada at RFC rates. The British government would be responsible for equipping the squadrons and the RFC would have the right to approve all personnel for the Canadian squadrons and to appoint non-Canadians to command them if no suitable Canadian was available. The RFC command would employ the Canadian squadrons as it thought best.⁵

It was on the basis of this memorandum that Brancker proposed a conference for 9 March, to include both the Canadians and the Australians, who still had a number of details to work out with respect to their squadrons. He made his request to the new Headquarters, Overseas Military Forces of Canada, whose staff, at this stage, knew nothing of the aviation question – their understanding was to be much improved before the year was out – but ultimately Brancker's invitation found its way to Perley. It was refused on the grounds that although the formation of Canadian squadrons was under consideration, 'it is not understood that any proposals regarding the same have as yet been submitted by the Canadian authorities.' With characteristic tenacity Brancker proposed instead a 'really necessary' informal meeting to explore air policy problems, on the understanding that any agreement reached 'would be in no way binding on the Canadian Government.'⁶

Under these ground rules Perley agreed to participate, and a meeting was held at the Air Board office on 29 March. There the minister took a non-committal stand. He refused to be specific about the number of squadrons Canada might conceivably offer, scaled down Morden's elaborate administrative arrangements to a single officer to be attached to HQ OMFC, and opposed outright the recommendation that non-Canadian officers might command Canadian squadrons together with that providing for RFC control over officer selection. The Morden document was merely a talking-point, however, and there was no follow-up to it or to the conference. From the Canadian point of view the chief significance of the episode lies in what it reveals about Perley's position, since he was to play an important part in later debates upon the aviation issue. Perley had been willing enough to consider the aviation issue upon its merits, despite its sponsorship by Morden, whose association with Sir Sam Hughes was no longer a political asset. But there is no evidence that he thought aviation important enough to give it priority among the press of other business. As he wrote in mid-April, in response to a letter from Henderson, meetings of the Imperial War Cabinet were engrossing his time, 'but I will take up the Flying Corps question just as soon as I can and arrive at some decision.'⁷

For Perley the issue was shelved, at least for the time being; for Morden, the failure to enlist the High Commissioner's active support meant the end of his aviation ambitions. Over a period of some weeks a number of his friends urged his

appointment as director of a Canadian air service, or to some other important job, in letters to Perley, Borden, and Hazen. Even Henderson complained that 'a good deal of pressure is being brought on me' to recommend Morden. Perley finally cabled Borden to ask what course he should take: 'Opinion regarding him appears much divided he has ability and some warm friends who consider him capable and straightforward. On other hand general feeling seems against him and understand this is specially so in Canada.' Since Morden's appointment could scarcely be divorced from the issue of a Canadian flying corps, it is noteworthy that Borden submitted the matter to Cabinet. His reply, that 'Majority of Council consider that Morden's appointment would not be well received in Canada,' closed what may be termed the entrepreneurial phase in the pre-history of the Royal Canadian Air Force.⁸

With the end of the Morden episode the question of a Canadian flying corps seemed to be at rest, at least for the immediate future. Perley was up to his neck in his responsibilities, and in any case was giving the matter no priority. The British authorities had been helpful and co-operative, but had no reason to push the question of Canadian squadrons. At home, Borden and his colleagues were embarked upon 'the exceedingly stormy political sea' whipped up by the Prime Minister's decision in favour of compulsory military service. The matter of a Canadian flying service might have slumbered indefinitely, had it not been for an extraordinary reversal of opinion by Sir Robert himself. Both in England and upon his return to Canada he had received a number of complaints from Canadian officers serving in the RFC. They were of such a nature as to cause the Prime Minister to explode with anger in a cable to Perley:

Since returning to Canada representations have been placed before me which indicate that Canadians in Flying Service are not receiving reasonably fair play or adequate recognition. There seems to have been a disposition from the first to assign them to subordinate positions and to sink their identity. They were forbidden to wear any distinguishing badge to indicate that they were Canadians. They have been discriminated against in promotion. One of the clearest evidences of this is the fact that the officer sent out to command the British Flying School in Canada was taught by a Canadian pilot now at the front and that the officer under whom the pilot served is still a subordinate officer after two years active service at the front. This is a typical illustration. I am afraid this is only another indication of a certain tendency which I took pains to correct in other matters during my recent visit to England. The question of establishing a Canadian Flying Corps demands immediate and attentive consideration. I am determined that Canadians shall not continue in any such position of unmerited subordination. Please give that subject immediate and attentive consideration and make such thorough inquiries through the best independent means available to verify the truth of what has been represented to me. I am inclined to believe that the time for organizing an independent Canadian Air Service has come and that we must ask the Imperial authorities to release all Canadians now in the British Flying Service.⁹

Borden's anger had led him to propose measures far more sweeping than any of those put forward previously. It is of interest that what aroused his feelings were not generalized arguments based upon nationalism or upon the importance of

aviation, but circumstantial detail about injustices suffered by Canadians as a result of their subordinate status within an imperial force.*

The effect of Borden's intervention was to reopen, at Cabinet level, the whole question of Canadian policy with respect to a separate flying service. The investigation of that issue, much more searching than ever before, was to take up the next several months. Of more immediate concern to Perley was the task of assessing the validity of complaints that Canadians had been discriminated against in the RFC. Borden had told him to do this through 'the best independent means available,' but there was no such means. Had Canadian headquarters in London taken the view, from the inception of the war, that the fortunes of Canadian aviators were part of its concern, then some documentation might have been available. But it had not; nor, given government policy, was there any reason why it should. Morden's charge, that once Canadians entered the British flying services they lost their identity as Canadians, was substantially correct. So, although both Perley and General Turner 'quietly made enquiries' where they could, the only real source of information was the RFC itself, and it was to General Henderson that they turned.

When confronted with Borden's charges, Henderson's first response was that 'there is no real ground' for them. He immediately seized upon the specific case cited by Borden to demonstrate this. While it was true that Frederick A. Wanklyn, a Canadian, had been C.G. Hoare's instructor at the Central Flying School in 1913, and that Wanklyn in 1917 was a major while Hoare was a lieutenant-colonel, no real discrimination was involved. In 1913 Hoare had been a captain with twelve years of British and Indian Army service behind him, while Wanklyn was a subaltern who had graduated from the Royal Military College of Canada only in 1909. As Henderson pointed out, there was no relationship whatever between serving as a flying instructor and rapid promotion; the man who had taught Henderson himself to fly in 1911 was still only a flight commander. When Henderson had had the task of building the RFC from nothing in the prewar period, he had sought, not superlative pilots, but experienced regular officers like Hoare, and 'those of them who have justified expectations have been promoted in the Corps much more rapidly than the young and inexperienced gentlemen who were merely gallant soldiers and good fliers.'[†] Canadians, he assured Perley, were in exactly the same position as their young British counterparts: 'The statement that there is a prejudice against Canadians in the Corps, because of their nationality, I believe to be absolutely unfounded ... When a boy is a failure, it is very natural for him to try to

* It is very likely that one of the complainants was Capt Kennedy. Borden's language is close to that employed by Kennedy in a letter to Hazen of 1 June, and in interviews with the Chief of the General Staff and with the secretary to the Minister of Militia, in which Kennedy raised the same grievances of which Borden complained and cited 'various injustices' and the lack of 'equitable treatment.' Kennedy to Hazen, 1 June 1917, P-5-94, PAC RG 25, vol. 267; Bristol to Gwatkin, 15 June 1917, Gwatkin to Bristol, 18 June 1917, OS 10-9-27, PAC RG 9 III, vol. 80.

[†] Wanklyn himself assured Perley that he harboured no resentment over the fact that Hoare outranked him. 'With regard to alleged unfairness in promotion of Canadian officers, I have never heard of a single case, nor cause for complaint in this matter, and, as a Canadian officer, I have no hesitation in stating that this is of no foundation.' Wanklyn to Perley, 29 May 1917, P-5-94, PAC RG 25, vol. 267.

excuse it by alleging an unwarranted prejudice of some kind on the part of his superiors.¹⁰ With respect to distinctive badges that would identify Canadians within the Corps, Henderson was not disposed to be accommodating. Canadians commissioned in the RFC (as distinct from those seconded from Canadian units, who still were entitled to wear their own uniform with an RFC badge) had to wear the RFC uniform 'without any distinctive badge to show their nationality, just as they would if they joined the British Artillery or the North Stafford Regiment.' While he agreed to put the question of a distinctive badge before the Army Council, he doubted if 'such permission would be welcomed by the Canadian Officers of the Royal Flying Corps.'¹¹

Henderson followed up his initial reaction with a statistical table, compiled by Colonel W.W. Warner of his staff, which showed that for the 525 Canadians upon whom the RFC possessed reliable information there was no significant difference in the amount of time they had to wait for promotion in comparison to the average for the whole of the RFC's officer corps. While this table demonstrated that the RFC lacked even a rough estimate of the actual number of Canadians in the Corps, so, for that matter, did Perley. Nor could he challenge Henderson's statement that 'nearly all the Canadian officers joined the Royal Flying Corps with very little, if any, military experience, and they had to be turned into soldiers as well as fliers. A considerable proportion of those who joined from the United Kingdom were regular officers of experience, and naturally these filled a considerable proportion of the appointments of Squadron and Wing Commanders, which, to my mind, is just as it should be.'¹² How, indeed, could it be otherwise? So long as Canadians remained members of a corps of the British Army, subject to the conditions upon which promotion within that service was based, they had little legitimate reason to anticipate senior appointments within it. As Henderson's table showed, the root of the Canadian complaints was psychological, not statistical, and Perley had no option but to report to Borden that while he and Turner had encountered some general feeling 'that our men have not been given fair play in promotions,' he was compelled to conclude that there was 'no serious foundation' for such a belief.¹³ But the last words upon RFC promotion policy and upon the identification of Canadians in the RFC had not been spoken.

* Canadians had a genuine problem in securing promotion in the RFC that neither Perley nor Henderson referred to, possibly because it was one over which the RFC had no control. Officers seconded to the RFC from the CEF remained on the establishment and rolls of their units, but in order that replacements for them could be demanded, they were considered as having been struck off strength. Nevertheless, they could only be promoted on their own unit's establishment. This awkward situation gave rise to frequent complaints. The RFC solution was to give them temporary rank while they waited for a vacancy to occur in their original unit. In mid-1917 definite procedures governing seconded officers were finally established, but confusion and complaints continued. The new procedures remained in effect until the end of the war, although their fairness to both seconded and unit officers was improved somewhat by a provision of 20 March 1918 laying down that seconded officers were to be promoted on their regimental list and not on the list of their field unit. Bristol to CGS, 15 June 1917, OS 10-2-27, PAC RG 9 III, vol. 80; letter to Turner, 20 Feb. 1917, Montague to HQ Canadian Corps, 21 March 1918, OS 10-12-24, *ibid.*, vol. 91; AG to War Office, 27 Dec. 1916, War Office to [AG], 20 Jan. 1917, AG to Shoreham, 8 May 1917, HQ OMFC 0-130-33, *ibid.*, vol. 2890; letters to Hughes, 17 May and 28 Sept. 1916, Spry to Carson, 29 May 1916, OS 2-2-38, *ibid.*, vol. 4

Following the Prime Minister's directive of 22 May, both the Minister of Militia and Defence and the Overseas Minister embarked on enquiries to determine whether the time had come to establish a Canadian flying corps. Kemp had no option but to rely upon the advice of Gwatkin, and the Chief of the General Staff, in an interim report, once more made clear that he was 'strongly opposed to the formation, while war lasts, of a Canadian Flying Corps in Canada.' The last two words were an important modification of his earlier views. Gwatkin was convinced that any Canadian formation employed on operations must have a training and reinforcement pool at home, but this would needlessly duplicate what the RFC was doing in Canada, would involve heavy outlays for site and equipment, would 'set up friction' with the Army Council in Britain because experienced Canadian officers would have to be recalled, and might produce no worthwhile results before the war ended. RFC Canada had therefore become a new weapon in his armoury of arguments against a Canadian flying corps.¹⁴

Gwatkin was at pains to point out that he believed that a Canadian flying corps ought to be formed, but only as part of Canada's postwar defence arrangements. At that time the country could build upon its experienced airmen and upon the facilities the RFC had established in Ontario. With some prescience Gwatkin argued that the kind of air force Canada needed had to be something more than a unit of the militia. To some extent it would have to be 'commercialized' and have to work 'with the Topographical Surveys, Geographer's and Forestry Branches of the Department of the Interior, perhaps with the Post Office Department, certainly with the Department of the Naval Service.' He implied, therefore, that a war-born force might be irretrievably biased against the special needs of the country.

Having said all this, Gwatkin then made a proposal which went well beyond his previous position and a long way towards meeting the feelings of Canadians for some form of recognition: 'Meanwhile, there being so many Canadians in both Wings of the R.F.C., I think the time has come when the Canadian Government might reasonably propose the organization of units exclusively Canadian; and that such units, if organized, should be allotted to the Canadian Corps now serving in France, or to the Army of which the Canadian Corps forms part ... I see no reason why the units in question, if formed and allotted as proposed, should cease to belong to the R.F.C. If they were transferred to the C.E.F., the cost of maintenance would fall, of course, on the Canadian Government.'¹⁵ The only qualification he placed upon this important suggestion was that, 'should the proposal embarrass the Army Council, I hope it will not be pressed.'

Gwatkin's suggestion was soon watered down as the result of consultation with Colonel Hoare of RFC Canada. There would be no difficulty, Hoare agreed, in forming squadrons with an officer complement that was exclusively Canadian, but the situation was by no means simple with respect to other ranks. Both the Director General of National Service and the Imperial Munitions Board had objected to the idea of sending mechanics out of Canada. As far as RFC Canada was concerned, 'we have had sufficient difficulty in getting men for our training scheme here, and only few of them would pass medically fit for overseas.' He was also dubious about the idea of attaching Canadian squadrons to the CEF. 'Squadrons, especially the Artillery Squadrons, are kept for long periods, years in some cases,

on the same portion of the line,' he wrote, 'and I doubt whether for the sake of putting Canadian Squadrons in their place, it would be considered worth moving them.' Though this observation had some validity, Hoare's objection was by no means insuperable, whether with respect to corps squadrons or fighter squadrons, but Gwatkin had no means of assessing the argument. Nevertheless, Hoare agreed that 'if men were available I might be able to train Canadian Squadrons over here in the same way that I am training American Squadrons,' a statement that unwittingly summarized the consequences of the government's timid air policy. Hoare added that if the government were seriously contemplating forming Canadian squadrons, it ought to be aware that the cost of maintaining a single front-line squadron was about \$2.5 million for six months.¹⁶

Hoare's observations weighed heavily on Kemp when, on 11 August, the militia minister submitted his recommendations (drafted by Gwatkin) to the Prime Minister. It would be 'folly,' he thought, to start a Canadian flying corps in Canada, and the questions of cost and the unavailability of groundcrew turned him against overseas squadrons that were exclusively Canadian. Instead, he thought that 'it might be suggested to the War Office that a certain number should be officered exclusively by Canadians, and so far as the exigencies of war permit, employed in conjunction with the Canadian Divisions.'¹⁷

Sir George Perley, however, was not prepared to go even this far. In making up his mind he had gone over the question with many knowledgeable people within the air services and outside. His most notable Canadian advisers were Lieutenant-General R.E.W. Turner, Chief of the General Staff of OMFC, and Wing Commander R.H. Mulock of the Royal Naval Air Service.

Turner had become an enthusiast for the idea of a Canadian air service. As early as December 1916, on returning from France to take over his new appointment, he had declared to the press that he intended to take up vigorously the question of a Canadian flying corps. On the Western Front he had become aware of the large number of Canadians 'merged' into the RFC. As a result, little was heard of their work.¹⁸ Early in 1917 he had set his staff to work compiling a list of Canadian aviators. By mid-1917 they had already found substantially more than Henderson's estimate and had acquired evidence to show that there were at least 1200 in the RFC and RNAS combined. On 13 July Turner passed his list of Canadians to Perley.

I consider that as Canada is supplying such a proportion of the personnel, that we should proceed with the organization of a Canadian Flying Corps. This would enable the Canadians to take their rightful place in the Imperial Forces, to receive the full credit for the work being done by them, and to provide an organization of experienced personnel to carry on the flying service after the war.

I would propose the Canadian squadrons be organized as rapidly as conditions would allow with the ultimate object of having, if possible, a Canadian Brigade in the Field, together with the necessary reserve formations in this country and in Canada.¹⁹

He was confident that groundcrew could be obtained by remustering other ranks from Canadians stationed in England, and giving them trades training in British

schools. His suggestion that the objective should be a flying corps of brigade strength arose from his knowledge that only at that level would all branches of military aviation be covered, and Canadian officers be given an opportunity for staff experience.²⁰

Turner's proposal for a Canadian brigade reflected his familiarity with the evolution of the RFC. In a subsequent letter to Perley, after explaining the growth of the RFC in terms of its increasingly vital role in ground operations, he raised a second point with which, as a former divisional commander, he was well acquainted. This was the fact that a great many of the Canadians in the RFC had arrived there not through enrolment in Canada but by transfer from the CEF. This fact, at that point unappreciated in Canada, meant a constant drain of able soldiers from the Canadian forces. In view of this, Turner was led to appeal to Perley in the strongest fashion:

There continues to be a large and insistent demand for Canadian personnel, and we are sending a large number of our best young men to fill these demands. The distinguished service which these young men are rendering the Empire reflects only indirect credit on Canada, as there is no official organization which protects their interests and ensures their proper promotion. We are supplying a large part of the personnel of the Flying Services, and we have to content ourselves with the junior positions and no control over the policy or administration of the Canadian personnel.

I feel very strongly that we should at once proceed with the organization of a Canadian Flying Corps ... I feel that it is humiliating that a nation taking such a share in the war as is Canada, should not have an organization in this arm of the Service when she is supplying such an important proportion of the manpower in the Imperial Services.²¹

This renewed plea was too late. Perley had already made his submission to the Prime Minister, and it was the converse of Turner's position.

In making his recommendations Perley had been influenced chiefly by information obtained from Mulock, whom he had been strongly advised to consult. With the co-operation of Commodore Payne at the Admiralty, Mulock came over from Dunkirk in July for interviews with Perley, Turner, and the OMFC staff. Having been instructed by his commanding officer to put nothing in writing, Mulock made no report, but assured Perley that Turner and Colonel H.F. McDonald knew his mind and his sympathies. 'Anything I can do in connection with this matter,' he told Perley, 'I will consider a favour both to our Country and to all the Canadians serving both in the Royal Naval Air Service and the Royal Flying Corps.'²²

The memorandum, prepared by McDonald, which summarized Mulock's views reveals his intelligence and his ready grasp of the problems inherent in the formation of a Canadian flying service. His was by far the most considered statement yet made on the question, being based on technical knowledge, operational experience, and sound judgment. He began by assuming that 'it was desired to obtain for the proposed Canadian organization as wide experience of the duties and activities of the Flying Services as possible, with the view to such experience being available for future use in Canada.' He carefully outlined the composition of the basic flying units, using as his model the organization of the Royal Flying Corps, rather than

that of his own service, the RNAS. With force and clarity he emphasized that the key to an understanding of that organization was the principle of specialization of function. The distinct tasks of fighting, reconnaissance, photography, artillery co-operation, bombing, close support of ground forces, and balloon observation required distinct units, distinct tactics and training, and specialized aircraft. By these functions squadrons were grouped into army and corps wings; a brigade, consisting of two such wings, had 'in no way fixed Establishments,' being elastic enough to meet the requirements of any situation.²³

If, Mulock argued, his assumption about the desirable nature of a Canadian flying corps were correct, then what was required was not the four squadrons which apparently Perley had mentioned to him, but the creation of a full brigade of at least eight squadrons together with air staff, supply and equipment detachments, and kite balloon establishment that together made up the range of functions carried out by an RFC brigade. Such a formation, he thought, should be built up squadron by squadron as opportunity and the exigencies of the service dictated; as the Canadian organization neared wing and brigade strength, senior officers and staff could be prepared for their duties by attachment for experience to comparable RFC formations.

Thus Mulock's opinions were in accord with General Turner's. There was one issue, however, to which he attached prime importance, and which had not to this time received serious attention. That was aircraft supply. His view, which was to influence Perley decisively, reflected his understanding of the crucial interrelationship of technological improvement, operational effectiveness, and political control:

The efficiency ... in the Field of any Flying Organization depends almost entirely upon the machines with which it is equipped. There is a constant and rapid improvement in such machines, and those in use become out-of-date very quickly. The supply of machines is absolutely controlled by the Air Board, and any Canadian organization would be absolutely subject to it in regard to the supply required. The Canadian Authorities, however, would be held responsible to the people at home for any mis-adventure which might occur to the personnel on account of inferior equipment, and yet the only control which they would have over such equipment would be by means of such representations as the Overseas Minister might make to the War Office.²⁴

With the authority of direct experience, Mulock stated that the interval between the introduction of a new aircraft and its operational obsolescence might be as little as three months and that when the latter stage was reached, a squadron so equipped was 'at the mercy of the enemy.'^{*} Through McDonald, Mulock therefore summed up his conclusions as follows:

* Corroborative if less polished testimony was given to Perley by Capt G.C.O. Osborne, a Canadian originally from Arnprior, Ont., who had been with the RFC since 1915 and in 1917 was a flight commander with 40 Squadron. He had been recommended by Henderson as an officer who could 'help you with the Canadian F.C.' Like Mulock, he favoured the creation of a Canadian force covering all aspects of aerial operations: 'unless we do the whole thing complete we are under Sir David Henderson's thumb and would get most of the dirty work without the

From the point of view of securing to Canada the Canadian Officers and other ranks concerned, it would be extremely desirable to have an organization which would be Canadian in name and fact, and there would be no great difficulty in securing sufficient personnel to man such an organization.

It would further be of value to Canada in the development of a permanent Flying Service after the war.

On the other hand, it would be a matter of great difficulty to ensure that such Canadian Flying Units as might be organized and placed on active service, would receive their just proportion of the most up-to-date and efficient equipment which is placed in service.²⁵

To Sir George Perley the last paragraph of Mulock's conclusions and his earlier remarks about political accountability for inferior equipment were warning flags and their sober implications determined the advice he furnished to the Prime Minister. 'National pride,' he told Borden, was his first consideration; it was 'a perfectly natural feeling with which I thoroughly sympathize, if there are no practical arguments against it.' It had been a revelation to him 'that 35% of the Royal Flying Corps are Canadians.*' Moreover, he believed that Canadians, because of 'temperament and training,' had an instinctive bent for flying, though the conclusion he drew from this belief was somewhat odd. Since Canadians made such superior pilots, they naturally wished for 'fast scout machines' rather than 'comparatively slow machines for observation work.' They would probably resist service upon such aircraft in a Canadian flying corps. It is plain that Sir George's information about the work of Canadians in the flying services was not yet complete, but this was a minor objection. A major one was his view that although a Canadian air service during the war was essential to the development of postwar civil and military aviation in Canada, he saw no reason why Canada could not draw upon the knowledge being acquired by the RFC and RNAS. He believed, optimistically, that Canadians were bound to occupy senior positions in those services before the war ended.²⁶

Nevertheless, he foresaw no real difficulty in raising a Canadian service and would so recommend, were it not for the problem of aircraft supply. Though Henderson had assured him that Canada would get its 'fair share' of the best machines, Perley was not prepared to take the risk. 'I should be in favour of doing it, except for the difficulty of obtaining the latest type of machines but I consider that vital and am therefore of opinion that we had better continue as we are doing, without establishing squadrons of our own, and help to supply both the British Air

other side.' As a fighter pilot he knew that a supply of first-rate aircraft was essential: 'It isn't a case of pluck and clever flying, it's simply a case of a man who can climb the fastest and dive the fastest.' Henderson to Perley, 14 April 1917, Osborne memorandum, May 1917, P-5-94, PAC RG 25, vol. 267

* 'I have not asked for the figures,' Perley told Borden; even if he had, it is certain that the RFC would have been unable to supply them. The figure of 35 per cent gained currency at about this time, and Perley was merely repeating the general belief to that effect. Even if it were applied only to pilots, observers, and air gunners the figure is probably much too high, although it is true that in particular squadrons at certain stages in their operational life the proportion of Canadians was frequently as high as 35 per cent and occasionally substantially more than 50 per cent.