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21st Army Group in Normandy Towards a New Balance Sheet

Terry Copp

The purpose of this article is to offer further evidence in support of the view that the combat performance of the Anglo-Canadian armies in Normandy has been greatly underrated and the effectiveness of the German forces vastly overrated. This argument informs my study of the Canadians in Normandy, published under the title *Fields of Fire*,¹ but the intention here is to consider questions about combat between British and German units in Normandy.

My views on this subject were influenced by my long association with the late Robert Vogel and the work we shared in researching and writing a basic narrative of the campaign in Northwest Europe published in the 1980s. When we began our decade long project, I had little knowledge of military history. Vogel, who was a military historian, introduced me to Clausewitz and other theoreticians but I soon decided that a social historian escaping a world dominated by Marxists was entitled to be suspicious of yet another 19th century authority figure.

We agreed that history at the battalion, brigade and divisional level might best be understood by a careful reading of the primary sources and my first visits to Normandy convinced me that one of the most neglected sources was the actual ground, especially when supplemented by 1944 maps and air photos.² The study of the Normandy battlefields suggested to me that the basic question to answer was how the Allied soldiers overcame a powerful enemy, defending ground of its own choosing, in just 76 days. Other historians had answered the question by referring to the decisive role of air power and the application of brute force to the battlefield but few of them seemed to know very much about

what actually happened at the operational and tactical levels.

When our five-volume narrative was complete I began to work on three separate but related subjects: a study of a single infantry brigade, an inquiry into battle exhaustion and an analysis of the role played by tactical air power in Normandy. The later project led to an interest in operational research in both the air force and army and I was able to interview a number of the most important OR specialists.³

By the mid 1990s, I was convinced that the Allied campaign in Normandy required re-examination. It was evident that air power, strategic or tactical, had not been the decisive factor in Normandy or elsewhere. Evidence from operational research had also demonstrated that the anecdotal evidence on the vulnerability of Allied armour and the limited effectiveness of Allied tank gunnery was all too true. It was equally apparent that the principal Allied weapon systems, field and medium artillery, were rarely able to inflict damage on prepared enemy positions and were not always able to achieve temporary neutralization.⁴

These severe limitations in Allied weapons technology helped to explain why the battle of Normandy produced so many physical and mental casualties but brought us no closer to understanding why the enemy was so quickly defeated. The Overlord planners prepared for a campaign that would proceed in a series of managed phases. After the invading troops were ashore they were to establish and defend a bridgehead, defeating the German counter-attacks with naval, air, and artillery fire. The



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"It was evident that air power, strategic or tactical, had not been the decisive factor in Normandy or elsewhere."

Left: Lancaster heavy bombers of RAF Bomber Command attack the Norman village of Villers-Bocage on 30 June 1944 in an effort to interdict roads junctions and forestall a planned German offensive that night.

broad concept that proved to have little operational significance except that it focused attention on Brittany.⁵

If 21 Army Group could be maintained at full strength, there would be ten infantry and five armoured divisions available to wage war against the German forces on the eastern flank. Even with five additional armoured brigades available to support the infantry divisions, the prospects of achieving the force ratios necessary to overcome the enemy in this vital sector were bleak. The presence of three or four German armoured divisions and a like number of infantry divisions would make it impossible to achieve the 3:1 ratio thought to be necessary for successful attacks on well-defended positions. The planners hoped

bridgehead was, if possible, to include the city of Caen, the centre of the road and rail network in Normandy. If Caen could not be captured before German reinforcements arrived, the city was to be masked until the build-up of Allied forces was sufficient for a set-piece attack.

South of Caen, the country was open, with good roads leading to the Seine River and Paris. The planners assumed that the enemy would defend this area in strength, as a breakthrough here would cut off German forces in the west and bring a quick conclusion to the Battle of Normandy. If the enemy behaved rationally, there would be a fighting withdrawal to a new defensive line at the Seine, with the ground south of Caen sector held as a pivot.

The Overlord plan called for the American army to capture Cherbourg and then fight its way south, turning west into Brittany to capture Brest and create a new port at Quiberon Bay. With the Brittany ports and Cherbourg available, the Allied forces would complete the build-up necessary to liberate France by the autumn of 1944. All of this was the basis of Montgomery's "master plan," a

to compensate for this weakness by fighting on Allied, not German, terms. This meant employing the largest possible amount of artillery in the bridgehead. Each corps was to be supported by an Army Group Royal Artillery (AGRA) with 4.5- or 5.5-inch medium guns. Air observation pilots flying light aircraft were to direct this fire, and there were to be abundant allotments of ammunition for both the medium and field artillery. Fully 18 percent of the men in 21 Army Group were gunners; just 15 per cent were to be wearing infantry flashes. If the allocation of ancillary services is taken into account fully a third of the army's manpower was committed to the artillery.⁶

This approach to war required commanders to emphasize logistics, elaborate fire plans, and centralized command and control. If shells were to be substituted for men's lives, they had to be delivered to the right places at the right times. Little attention has been paid to the pre-Normandy investment in survey regiments, air photo interpretation, meteorological reports, sound ranging, flash spotting, and other elements of the gunner's war, but these efforts were an

essential part of the preparations for victory at a blood price the Allies could afford. The gunner's war deserves much more attention than it has received.⁷

While the assault divisions prepared for an attack on the beaches of the Calvados coast, the divisions committed to the follow-up role prepared to "attack, wear down and destroy German troops who would fight a series of defensive battles on ground of their own choosing."⁸ There was broad agreement on how this was to be accomplished and when Lieutenant-General Guy Simonds, commander of 2nd Canadian Corps, decided to issue a directive on operational policy to his inexperienced Canadian divisions he sent copies to Lieutenant-General Miles Dempsey, the commander of 2nd British Army, and to Montgomery, both of whom read it with "complete agreement."⁹ British senior officers were a bit puzzled by the Canadian tendency to prepare written papers outlining the obvious but the Canadians with their earnest staff officers and abundant supply of typewriters, clerk typists and duplicating machines produced a written record of considerable value to soldiers and historians.

Simonds' statement of Allied operational doctrine called for centralized control of virtually every aspect of the battle. The enemy was to be overcome by attacks that were "carefully organized and strongly supported by all available artillery." The Germans forward defences "are not thickly held in terms of men, but are strong in automatic weapons and well supported by mortars sited up to three or four thousand yards" behind forward lines. The essence of the German system of defence was the counterattack, and "as long as fresh reserves are available the Germans will counterattack continuously, supported by self-propelled guns brought up to close-range. The success of the offensive

"Fully 18 percent of the men in 21 Army Group were gunners; just 15 per cent were to be wearing infantry flashes. If the allocation of ancillary services is taken into account fully a third of the army's manpower was committed to the artillery."

Right: The British crew of a 7.2-inch howitzer fuse a shell during an action to support the 9th Canadian Infantry Brigade in Normandy, 28 June 1944.

battle hinged on the defeat of the German counterattacks," and everyone was trained to deal with this reality. The preferred solution was to stage divisional attacks "on a single thrust line, disposed in depth on a one-brigade front." Brigades would be passed through one another to maintain momentum, with the frontage of the attack "limited to that on which really heavy support can be given." When the enemy concentrated its strength across the thrust line, a reserve brigade could be "thrown wide of the leading brigade" to dissipate the enemy's strength. The weight of artillery support would then be shifted to the reserve brigade.

The infantry division, always and only when supported by the artillery, was the "sledge hammer" in the Allied arsenal. The armoured division was "a weapon of opportunity," capable of dealing with enemy rearguard positions and developing a breakout, but it was too weak in infantry to carry out an attack in depth. Everything experienced in Italy suggested that Allied armour could not be used to lead attacks against prepared German positions given the effective range of their tank and anti tank guns.

There was no similar doctrine on the tactics to be employed in carrying out his "operational

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“The principal Allied weapon systems, field and medium artillery, were rarely able to inflict damage on prepared enemy positions and were not always able to achieve temporary neutralization.”

Left: A 25-pounder field gun of the 49th West Riding Division in action in Normandy.

Top: A 5.5-inch gun of the Royal Canadian Artillery in action south of Caen, 23 July 1944.

artillery fire capable of concentrating the guns of a regiment, division, or corps on a specific area. This technique provided the best possible answer to the enemy’s doctrinal commitment to immediate and continuous counterattacks and to German technical superiority in infantry weapons and armoured vehicles.

An artillery-based battle doctrine required the infantry to move forward at a steady pace, leaning into the barrage, so as

policy,” partly because such training was carried out in divisional battle schools and partly because the operational doctrine left little room for traditional platoon or section tactics. By 1944, experienced Allied commanders knew that the one certain way of defeating the Germans was to find, fix, and then neutralize the enemy with overwhelming firepower. This would allow the infantry to assault and occupy vital ground, which the enemy would then counterattack. This “bite and hold” doctrine depended on the development of centrally controlled, indirect

to be on the objective before the enemy could engage the attackers. Rifle companies, supported by tanks, would clear and consolidate, bring the anti-tank guns forward, and dig in to meet counterattacks from enemy infantry, who would be advancing behind tanks or self-propelled assault guns. Success depended largely on the ability of Forward Observation Officers (FOOs) to direct the fire of the field and medium regiments at observed targets. This procedure, rehearsed in countless exercises, did not require the infantry to practise the fire-and-movement skills learned

in battle schools. It did, however, raise questions about other aspects of infantry training. These issues were widely debated within the army, and on 20 April 1944 a four-day conference was held at the School of Infantry to exchange ideas and information.¹⁰

One of the most contentious questions was raised by a staff officer from 2nd British Army, who noted that present teaching placed too much emphasis on the use of infantry weapons in the attack, especially the Bren. Experience had shown that the ammunition problem was acute in the counterattack phase. Ammunition fired in the attack was seldom aimed and was therefore wasted. The same officer insisted that though the rifleman used his weapon in defending a position, in the attack he was “mostly employed as an ammunition carrier for the Bren.”

This realistic view of the impact of operational doctrine on tactics directly challenged the traditional emphasis on teaching the infantry to fight their way forward, with their own weapons, by fire and movement. This approach was evident in a discussion of the implications of the decision that all troops should carry a shovel and a pick into battle. Obviously, the additional weight would limit the ability of the soldier to fight his way forward; yet without entrenching tools, no position could be held against enemy counterattacks and mortar fire.

The critics of 21 Army Group’s pre-invasion training are quite right when they argue that the army’s leadership “failed to enforce a coherent and effective tactical doctrine.”¹¹ But was this a weakness or a strength? There was agreement on operational doctrine, and a flexible approach to tactical problems encouraged officers to seek solutions based on specific battlefield conditions, especially analysis of the terrain using air photographs. A problem-solving approach to combat has little

Lieutenant-General Guy Simonds’ “statement of Allied operational doctrine called for centralized control of virtually every aspect of the battle.”

appeal to military theorists, but it proved to be an effective method of dealing with the enemy.

The discussions at the Infantry School barely touched on the role of the armoured regiments assigned to work with infantry battalions. This was the result of an earlier decision that the armoured commander, at the regimental, squadron, or troop level, “is the sole arbitrator of how he can best employ his resources.” This meant that the armoured commander decided where to employ his tanks in support of an infantry attack, which was itself largely determined by the artillery fire plan created at division and corps. Although “the primary role” of tanks cooperating with infantry was “to close with the enemy,” armoured doctrine permitted indirect support “on account of the unsuitability of the ground” or for other reasons. Armoured officers were also reminded that “everyone, and particularly the infantry, should understand that the tank is designed with the primary object of destroying or neutralizing enemy unarmoured troops.”¹²

Again, it is clear that those who criticize the Commonwealth forces for failing to develop the kind of integrated tank-infantry battlegroup doctrine practiced by the German army are correct. The British approach, as it was understood in May 1944, allowed everything and forbade nothing. It was up to individual commanders to develop methods of employing their tanks effectively and, as we shall see, they did so.



The Anglo-Canadian army that fought the Battle of Normandy was well prepared for the kind of warfare they encountered. The only real surprise was the enemy’s stubborn, almost mindless, persistence in continuing to mount counterattacks after it was evident that the Allies were well prepared to deal with them. Willing soldiers led by courageous leaders were repeatedly sacrificed in obedience to a doctrine that the German Army ought to have abandoned. In Normandy it was



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the Allies, not the Germans, who worked out new ways of carrying out the intent of their orders.

This approach to the Normandy battle was developed during 20 years of research on the Canadian rather than British Army, but the Canadians were a small part of a larger force so it was necessary to analyse specific British operations at corps, divisional and battalion level. Canadians have a special interest in the British divisions that served in First Canadian Army as well as 53rd Welsh and 59th Staffordshire Divisions, formations that fought alongside the Canadians.

Let us begin with some comments on the performance of 51st Highland Division in Normandy. The Highland Division's record in North Africa and Sicily has won universal praise but there is near-universal agreement that it failed to function effectively in Normandy. I had the opportunity to present a contrary view in Edinburgh in 1996.¹³ The audience included a number of veterans who had retired holding senior rank but who were platoon or company commanders in 1944. They were familiar with the negative view of the division recently highlighted by Carlo D'Este and Max Hastings and curious to know what a Canadian might have to say.

"The Anglo-Canadian army that fought the Battle of Normandy was well prepared for the kind of warfare they encountered."

Left: A group of British infantry at work in Normandy. They are well equipped for their tasks. The soldier of the left carries a Sten gun, while the soldier in the centre holds a captured German MP 40. He also carries a PIAT anti-tank weapon as well as a shovel - both items were crucial in dealing with the inevitable German counterattacks.

We reviewed the historiography and then focused on Montgomery's much quoted letter to Alanbrooke dated 15 July 1944 in which an exasperated Monty wrote,

Regret to report it is considered opinion of Crocker, Dempsey and myself that 51st Division is at present not battle worthy...and had failed in every operation it has been given to do.¹⁴

Montgomery's solution was to remove Major-General Bullen-Smith and replace him with a veteran jock, Tom Rennie. Few of the veterans present accepted the idea that Bullen-Smith had failed and that Rennie transformed the division, but there was agreement that getting away from Crocker's I British Corps and being given an operational level task - participation in Operation Totalize - had a powerful effect on morale.

The orders given to the division in June and July required the defence of the vital Orne bridgehead coupled with limited battalion-level actions to secure additional ground. This was a difficult and costly business for anyone, Allied or enemy. The discussion then focused on two such actions: the battle for Ste. Honorine-le-Chardonnerette on 23 June and the attempt to secure Colombelles on 11 July.

Ste. Honorine, or what was left of it, had been attacked, captured and lost during a bloody encounter in mid-June. The village was counterattacked by a large force from 21st Panzer Division and Bullen-Smith had wisely decided to withdraw and allow his artillery to deal with the enemy.¹⁵ On 23 June, 152nd Brigade (2nd and 5th Seaforths and 5th Camerons) organized a carefully-staged night attack which won them complete control of the village.¹⁶ The inevitable

counterattacks began with first light – company size battlegroups with tanks and self-propelled guns. This time the 13/18 Hussars provided a squadron including Firefly 17-pounders and the FOOs never lost contact with the field and medium artillery. The Cameron's War Diary¹⁷ contains a detailed account of their part in this very successful action which devastated Panzer Group Luck, forcing Luck to “rebuild the entire formation.”¹⁸ This battle, marked by careful preparation, limited objectives, close infantry-tank cooperation and a fire plan designed to inflict maximum damage on an enemy whose patterned response was easy to prepare for, is one of scores of examples of successful brigade-level actions in Normandy that need to be studied.

A different fate awaited 153rd Brigade (5th Battalion, The Black Watch; 1st and 5th/7th Battalion, The Gordon Highlanders) on the night of 10/11 July when Montgomery ordered Crocker to stage an attack on Colombelles, an industrial suburb of Caen. The object of the action was to destroy the tall chimney stacks that provided the enemy with an unobstructed view of the Orne bridgehead. No detailed account of the battle is possible here but since this was the action that prompted Montgomery's letter to Alanbrooke, we need to at least note that both division and brigade, not to mention the 5th Battalion of the Black Watch, who were to carry out the first phase of the attack, knew that the Germans had reinforced their defences after Operation Charnwood forced a withdrawal from Caen.¹⁹

The limited fire plan laid on by Corps and patrol reports of dug-in tanks and anti-tank guns added to everyone's concern. Lieutenant-Colonel Thompson, the Black Watch commanding officer wrote an account of the battle which is appended to the war diary. He described the efforts to dig-in on the first phase objectives

“The British approach [to tank-infantry cooperation]...allowed everything and forbade nothing. It was up to individual commanders to develop methods of employing their tanks effectively and, as we shall see, they did so.”

Right: Soldiers from Le Fusiliers de Mont-Royal work with a Canadian Sherman tank to hunt snipers in Falaise, 17 August 1944.

under constant, accurate mortar and Nebelwerfer fire. The news that the 1st Gordons had been unable to reach all of their objectives explained the heavy fire coming from the battalion's right flank but Brigade promised a new attack would begin at first light. Enemy infantry attacks were readily repulsed but German armour, including at least two Tigers, dealt a devastating blow to 148 Regiment RAC Shermans destroying 10 of their 11 tanks. The available 17-pounders had either been blinded by enemy defensive fire or destroyed and played no role in the battle. Thompson concludes,

I spoke to the Brigadier and told him that to hold the positions of my leading companies would result in their destruction piecemeal as the anti-tank defence had collapsed and my own 6-pounders could not be brought to bear. He then ordered me at about 0800 hours to withdraw to St. Honorine and this move was completed under continuous smoke by 0930 hours.²⁰

Bullen-Smith supported this decision infuriating Crocker and prompting Montgomery to claim that the division “cannot fight the Germans successfully.” Montgomery was wrong. The Black Watch withdrawal from Colombelles was not a failure but a rational response to the realities of the battlefield.

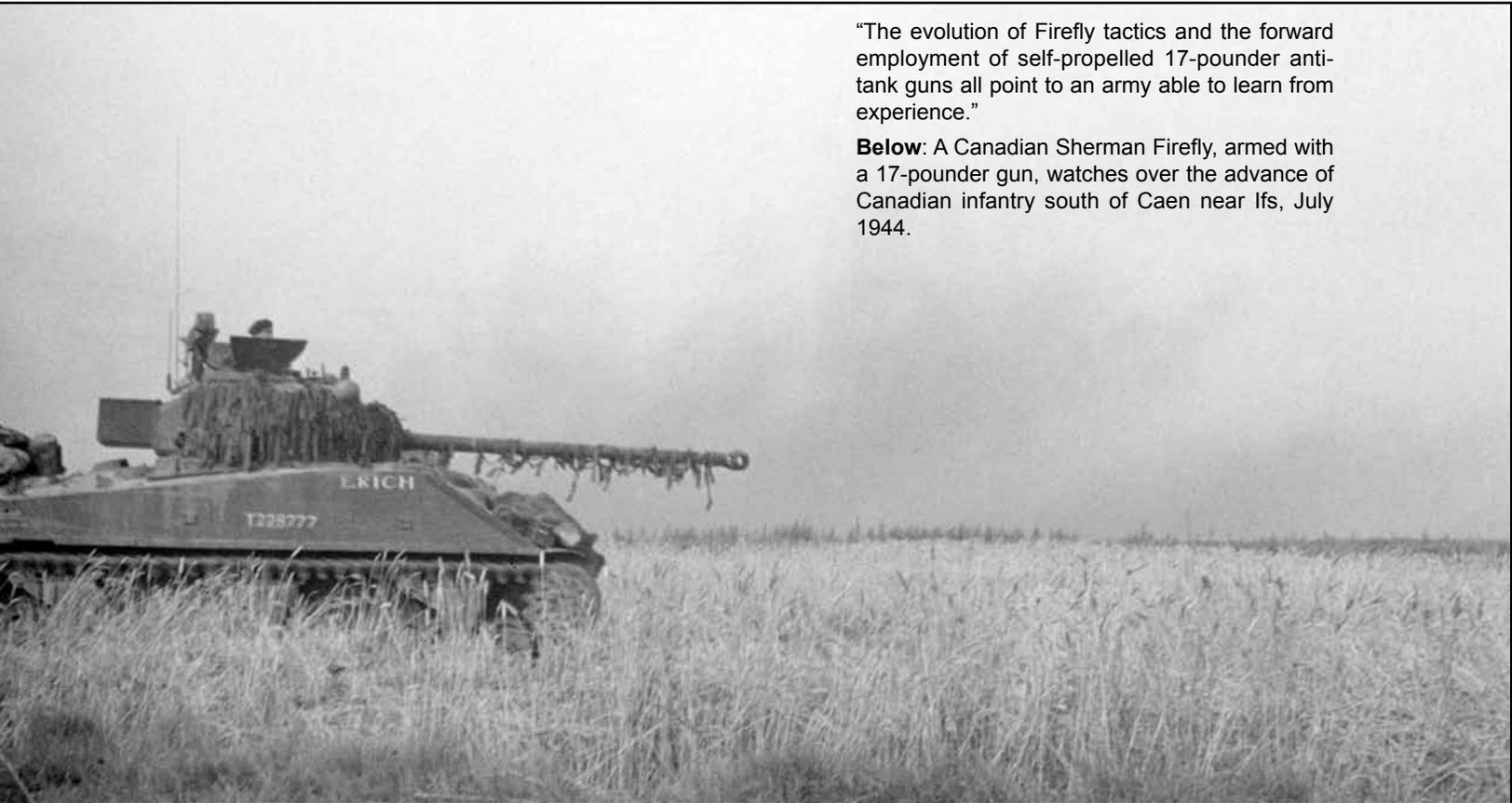
Men in combat continually engage in cost-benefit analysis. Orders are ignored, amended

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or renegotiated as decision-makers engage in calculations of risk versus gain. This reality offends senior commanders whose plans are not carried out and military historians who seem to believe that actions that do not go as planned “fail.” But the primary responsibility of the commander is to advance the goal of winning the war while the historian’s job is to explain what happened, not to issue pass/fail grades.

Ross quickly adapted to this limited role, ordering each battalion to thin out their forward positions and create large left out of battle (LOB) parties. Faced with heavy casualties from constant mortar fire, Ross re-organized his counter-mortar organization and used his heavy mortar platoons to strike enemy locations. He also insisted on detailed preparation for company-level night raids designed to kill the



“The evolution of Firefly tactics and the forward employment of self-propelled 17-pounder anti-tank guns all point to an army able to learn from experience.”

Below: A Canadian Sherman Firefly, armed with a 17-pounder gun, watches over the advance of Canadian infantry south of Caen near Iles, July 1944.

The experience of the 53rd Welsh Division has attracted little attention and even less is known about Major-General R.K. Ross who commanded it throughout the war. My interest was sparked by the close co-operation between 2nd Canadian and 53rd Welsh during the advance to Falaise but the divisional war diaries offer other insights into other operations in Normandy. The division took up positions west of the Orne in early July and one of its brigades fought under 15th Scottish during the battle for the Evrecy spur but for the rest of the month the Welsh Division fought a series of battalion-level engagements with elements of 10th SS Panzer Division and the 277nd Infantry Division.

enemy and prevent his own troops from becoming browned-off by having to sit in slit trenches, being mortared and shelled without retaliation. The raids appear to have accomplished their primary purpose and to have provoked the kind of enemy counterattacks the divisional artillery and anti-tank regiments planned and prepared for. One such counter-attack on 22 July resulted in 10th SS regaining control of the Bon Repas-Evrecy road a clear victory in a win-lose narrative but a typical German defeat in any cost-benefit analysis. The Welsh division losses in July (over 250 killed and close to 2,500 wounded) speak to the character of the Normandy battle even when no major offensive operations were underway.²¹

Let us turn to the curious case of 49th West Riding Division. The 49th was part of First Canadian Army for most of the campaign and their commitment to the long left flank meant that the division experienced prolonged periods of limited action. Patrick Delaforce's recent history, *The Polar Bears*,²² has helped to rescue the division from obscurity but many questions about the division's performance in combat remain. Brigadier Trevor Hart Dyke, the author of one of the very best memoirs of the campaign in Northwest Europe, *Normandy to Arnhem: a Story of the Infantry*,²³ provided some answers in a 1982 interview.

Brigadier Hart Dyke found the notion of German battlefield superiority curious. He had read Hastings and D'Este but was quite certain that the Hallams and their sister battalions in 146th Brigade had been consistently effective in combat against well-regarded German formations. He drew particular attention to the success of the Hallams and indeed the brigade at Fontenay-le-Pesnel and Tessel Woods. These actions, part of 49th Division's Operation Martlet, an attack in support of Epsom, created a three-kilometre deep penetration in the seam between 12th SS and Panzer Lehr Divisions.²⁴

Martlet was designed to accomplish two purposes, distraction and attrition. The division carried it out with considerable skill. Those who insist that the British army never mastered the art of infantry-tank co-operation should examine the role of the 24th Lancers (8th Armoured Brigade) at Tessel Wood. After assisting the assault battalions into Fontenay they reformed and worked closely with the 1/4th King's Own Yorkshire Light Infantry (KOYLI) employing all three squadrons in a close support role. With darkness falling, one squadron remained on the western edge of the woods to protect the right flank and later sent a troop to a threatened sector forcing three Panthers to withdraw. The next morning the Lancers flushed snipers from the hedgerows helping the infantry to consolidate.²⁵ The later phases of this battle, involving major German counterattacks on 70th Brigade's positions at Rauray are described in detail in Kevin Baverstock's superb book *Breaking the Panzers*,²⁶ This account of the Tyneside Scottish in action offers a classic account of courage and skill in defeating powerful enemy counterattacks.

It should serve as a model for studies of other battles in Normandy and beyond.

Brigadier Hart Dyke's comments on battalion and brigade level operations prompted a discussion of the Hargest Report,²⁷ one of the key documents used by authors critical of the combat effectiveness of the British soldier. His first reaction was to note that Hargest's one reference to a 49th Division battalion, the Lincolns, was laudatory. He insisted that there were no problems of poor morale in his battalion or the brigade and was surprised by the bitter tone of Hargest's comments on the armoured regiments which he had thought superb.²⁸ Could 50th Division's experience have really been so different? Hart Dyke was also puzzled by the New Zealander's stereotype of aggressive self-sufficient Dominion soldiers whom he claimed were very different than the "hesitant Tommies." Perhaps the report by Brigadier James Hargest, written by a brave soldier of the Great War, who had made a series of disastrous command decisions in Crete before his capture and imprisonment in Italy was not an entirely dispassionate document. The Hargest Report along with the propaganda on the inferiority of Allied soldiers routinely produced by German staff officers needs to be examined critically as David French began to do in *Raising Churchill's Army*.²⁹

If we are to revise the balance sheet on the performance of the British army in Normandy. A great deal of work needs to be done. When *Fields of Fire* appeared in 2003 an American colleague asked, "when will you Canadians stop endlessly analyzing your three division army. No one else," he observed, "knows the names and personalities of divisional, brigade and even battalion commanders. Why don't you look at the larger picture?"

The answer is that before we can really look at the larger picture in 21 Army Group, we need studies of the British army at corps, divisional and brigade level so that we have a firm basis for addressing questions about leadership, command, morale, combat motivation and combat effectiveness. Those who do study the campaign from the ground up will almost certainly come to the conclusion that the officers and men serving in 21 Army Group demonstrated a remarkable ability to apply their doctrine and

training to the battlefield. They also demonstrated an ability to learn and innovate. The British and Canadian response to casualties from mortar fire, 70 percent of total losses, is a case in point. New measures were promptly introduced and a longer term initiative to create Counter-Mortar Radar Batteries quickly approved.³⁰ The development and employment of the Kangaroo armoured personal carrier, the Wasp and Crocodile flame-throwers, the institution of cabrank within the tactical air force, the evolution of Firefly tactics and the forward employment of self-propelled 17-pounder anti-tank guns all point to an army able to learn from experience. It is time for historians to follow their example.

Notes

This article was original published in John Buckley, ed., *The Normandy Campaign 1944: Sixty Years On* (New York: Routledge, 2006).

1. Terry Copp, *Fields of Fire: The Canadians in Normandy* (Toronto: University of Toronto Press, 2003).
2. The Laurier Centre for Military Strategic and Disarmament Studies (LCMSDS), Wilfrid Laurier University, Waterloo, Ontario, Canada holds a large collection of wartime air photos and maps providing coverage of most of the areas of Northwest Europe in which First Canadian Army operated (www.canadianmilitaryhistory.com).
3. Terry Copp and Robert Vogel, *Maple Leaf Route*, 5 volumes (Alma: Maple Leaf Route, 1983-1988); Terry Copp, *The Brigade: the 5th Canadian Infantry Brigade* (Stoney Creek: Fortress Publications, 1992); Terry Copp and Bill McAndrew, *Battle Exhaustion: Soldiers and Psychiatrists in the Canadian Army 1939-1945* (Montreal: McGill University Press, 1990); Terry Copp (ed.), *Montgomery's Scientists: Operational Research in 21 Army Group* (Waterloo: LCMSDS, 2000).
4. "Accuracy of Predicted Fire," in Copp (ed.), *Montgomery's Scientists*, pp. 293-330.
5. The Overlord plan is outlined in L.F. Ellis, *Victory in the West*, (London: HMSO, 1962).
6. *Ibid*, 536.
7. Shelford Bidwell, *Gunners at War* (London: Arms and Armour Press, 1970) is a valuable introduction but a comprehensive study of the development of Anglo-Canadian artillery is yet to be written. The reports of the Army Operational Research Group (AORG), The [British] National Archives [TNA], Public Record Office [PRO] WO 291 are an indispensable source for such a project.
8. The full text of Simonds' Directive on operational policy is reprinted as an appendix in Copp, *Fields of Fire*.
9. The letters from Montgomery and Dempsey are in the Library and Archives of Canada (LAC), Record Group (RG) 24, Volume 10797.
10. "Infantry Training Conference: Record of Discussion," 15 May 1944, LAC RG 24, Volume 13241, Ottawa; TNA PRO WO 204/1895.
11. Timothy Harrison Place, *Military Training in the British Army, 1940-1944* (London: Frank Cass, 2000), p.169.
12. Great Britain, War Office, *The Tactical Handling of Armoured Divisions*, (London: HMSO, 1943).
13. I wish to thank Colonel Diana Henderson, PhD for inviting me to Edinburgh on this occasion.
14. Montgomery Papers, Imperial War Museum.
15. War Diary, 51 Highland Division, 16 June 1944, TNA PRO WO 171/527.
16. See report on operations, 23/24 June in 51 Highland Division Intelligence Summary, 24 June 1944, TNA PRO WO 171/527.
17. War Diary, 5th Battalion the Queen's own Cameron Highlanders, Appendices "A" and "B", TNA PRO WO 171/1270.
18. The quote is from Hans von Luck, *Panzer Commander: the Memories of Colonel Hans von Luck* (New York: Praeger, 1989).
19. 51st Highland Division Intelligence Summaries, 30 June 1944, 10 July 1944, TNA WO 171/527.
20. War Diary, 5th Black Watch, July 1944, TNA PRO WO 171/1266.
21. War Diary, July 1944, 53rd (Welsh) Division, TNA PRO WO 171/553.
22. Patrick Delaforce, *The Polar Bears* (Stroud: Alan Sutton, 1995).
23. Trevor Hart Dyke, *Normandy to Arnhem: A Story of the Infantry*, (Sheffield: Privately Published, 1966).
24. Delaforce, pp.58-102; Lewis Keeble, "A Worm's Eye View: The 1/4 KOYLI in Normandy," *Canadian Military History*, Spring 1994, pp.85-95.
25. War Diary, June 1944, 1/4 King's Own Yorkshire Light Infantry, TNA PRO 171/223; see also Leonard Willis, *None Had Lances: The Story of the 24th Lancers*, (Old Coulsdon: 24th Lancers Old Comrades Association, 1985).
26. Kevin Baverstock, *Breaking the Panzers* (Stroud: Sutton Publishing, 2002).
27. Brigadier James Hargest, "Notes" TNA PRO Cab 106/1060.
28. Letter Brigadier Trevor Hart Dyke to Terry Copp, 1987, Author's Archives.
29. David French, *Raising Churchill's Army* (Oxford: Oxford University Press, 2000).
30. Terry Copp, "Counter-Mortar Operational Research in 21 Army Group," *Canadian Military History*, Vol.3, No.2 (1994), pp.6-21.

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