9th September 2025

Introduction

It's 1630 hrs on 6 June 1944, Captain Foreman just arrived at his company harbour near Colleville. An hour earlier, he and the 11 lorries of C Platoon 90 Company RASC (90 Coy) disembarked the LSTs they had been stuck on for the past six days waiting to cross the English Channel to support Operation Overlord, the Anglo-American invasion of Normandy France.[1] Loaded in these 11 lorries are supplies for 6 Airborne Division currently operating to secure the British left flank over the Orne. These loads consist of 'pet[rol], [ammunition], R[oyal] E[ngineer] stores, and water', stores vital for the paras of 6 Airborne Division to resist a German counter attack.[2] Alas, despite the urgency of these stores, Major Cuthbertson, 90 Company's Officer Commanding has yet to make contact with 6 Airborne so C Platoon has little to do but wait for contact to be established.[3] Thus, doubtless, the men of C Platoon, 90 Coy would have dismounted their lorries and pause. Likely, they would have appreciated being once more on dry land having spent the last few days being bounced up and down in the English Channel. A few kilometres away, the men of the 6th Airborne Division, the 3rd British Infantry Division, and 90 Coy's home brigade, 27th Armoured Brigade were, in the case of 6th Airborne, guarding the British flank, or in the case of 3 Div and 27 Armoured Bde, pushing inland to try to reach Caen.

The men of 90 Coy are perhaps not what you would initially think of when you think of soldier. Whilst the majority of the men in 6 Airborne and the 3rd British Infantry Division

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1. 90 Company RASC War Diary, WO 171/2377, The National Archives UK (TNA), Kew, 1–6 June 1944 (hereafter cited as TNA WO 171/2377).

2. TNA WO 171/2377, S & T Report (June History Report) p 4.

3. TNA WO 171/2377, 6 June 1944.

were infantry, trained to kill the enemy with their enemy with rifles, grenades, and bayonets; and whilst most of the men in the armoured divisions were trained to kill with tanks; the men of 90 Coy consisted mostly of drivers *delivering the goods* wherever and whenever they were needed. Thus, we will follow Major Cuthbertson and 90 Company RASC as they cross the English Channel and land in Normandy. We will their journey through Normandy, not fighting per se, but ensuring those who fought, had what they needed to be able to fight as they attempted to capture Caen and close the Falaise pocket. Along the way, we will examine how the British Army structured logistics at an administrative level, before joining 90 Coy as they support the 27th Armoured Brigade as they partake in the battle for Caen. After 27 Armoured Brigade is broken up at the end of July, we will see how 90 Coy integrated into a larger and longer supply column as they support units through Normandy. Following this , we will have a brief discussion on the historical method and how it applies to military logistics.

Logistics, you may well argue, is boring: all the boxes, cans, crates and barrels filled with the minutiae of war. On top of that, the mountains of paperwork that go into it. The Operations Orders, Routine Orders, Administrative Orders, Standing Orders, waybills, lists, calculations, and forms — so many indeed that they are often referred to by their form number instead of the name. Why bore you with a story regarding this when instead, we could examine the fighting. We could, like many have already, examine the successes and failures (admittedly, mostly failures) of British infantry-armour co-operation. We could examine the aggression — or lack thereof displayed by British troops. We could examine any number of very interesting topics like Allied inadequacies in armour, Montgomery's personality, tactics, the use of firepower, and many other topics that are likely far more

engaging to discuss. Why then discuss the military side show that is logistics — a mere means to an ends?

The reality is that the distance of the combat arms for logisticians as lazy people telling them to sign for x, y, or z is somewhat misplaced as the operational effectiveness of the combat arms is contingent on the skill of the logistician. Take 100 000 of the worlds finest combat troops and cast them against your enemy without logisticians. In a day, they may run out of ammunition, in two or three they will be thirsty and their motor vehicles will be out of fuel, and in a month you will have a famine.

Of course, the vital efforts of the 6th Airborne Division and the other fighting troops of the British Army in Normandy have been fairly well studied. Extensive critiques and justifications have been made on British infantry-armour co-operation, the aggression — or lack thereof — displayed by British troops, Allied inadequacies in armour, Montgomery's personality, tactics, vs firepower, etc. In short, we often discuss what went wrong or how we fought; however, what we often ignore is the critical question of what enabled us to fight. The work done by troops a few kilometres behind the front line is generally ignored as a side-show; yet, the work of ensuring the combat arms are well supplied with all the minutiae of war from ammunition, to food, to water, and other general supplies is what will make or break an army. Thus, in light of this gap, I hope to argue for the centrality of logistics in the British preference to expend firepower rather than lives. The British Army seems quite helpless compared to the might of the Wehrmacht until one looks at this Army from a systems approach. It is however, this systems approach that reveals the British Army's strengths.

To examine the centrality of logistics in British Army operations, we will follow Major Cuthbertson and 90 Company RASC as they work their way across the English channel, landing in Normandy and following them as the units they support attempt to capture the city of Caen, and we will examine their role in the closure of the Falaise Pocket in August. Along the way, we will first examine how the British Army structured logistics administratively, before joining 90 Coy as they support the 27 Armoured Brigade as they partake in the Battle for Caen. After 27 Armoured Brigade is broken up at the end of July, we will see how 90 Coy integrated into a larger and longer supply column as they support infantry units through Normandy. Following this, we will have a brief discussion on historical methods and how they apply to military logistics.

Historiographical Review

The Battle of Normandy is of course, a well studied topic. Much has been written on this battle from books on the Second World War at large to publications that focus squarely on operations and tactics in Normandy. Curiously, there is also a second historiography which discusses logistics at large; however, the precise area of military logistics in Normandy is less well covered.

On WW2

Britain's Other Army: The Story of the ATS
Why the Allies Won

On Normandy

Clash of Arms
Overlord
Fields of Fire: Canadians in Normandy
Montgomery and 'Colossal Cracks': The 21st Army Group in Northwest Europe, 1944-45
The Normandy Campaign 1944
Gators of Neptune: Naval Amphibious Planning for the Normandy Invasions
Neptune: the Allied Invasion of Europe and the D-Day Landings
From the Normandy Beaches to the Baltic Sea: The North West Europe Campaign 1944-1945
Feeding Mars: The Role of Logistics in the German Defeat in Normandy, 1944

On Logistics

Supplying War: Logistics from Wallenstein to Patton
The Lifeblood of War: Logistics in Armed Conflict
A Great Feat of Improvisation
War of Supply: World War II Allied Logistics in the Mediterranean
Supplying the Troops: General Somervell and American Logistics in WWII
Military Logistics and Strategic Performance
The Story of the Royal Army Service Corps
Logistics and Modern War
Logistics Diplomacy at Casablanca: The Anglo-American Failure to Integrate Shipping and Military Strategy
Strategy and Logistics: Allied Allocation of Assault Shipping in the Second World War
The Science of the Soldier's Food
D Day to VE Day with the RASC

Tools of the Trade

A Note on My Sources

Overlord as Planned

Op Overlord was made up of a number of smaller operations. The seaborne landings were part of Op Neptune. This was the operation that established a 50 km wide logistical beachhead in Normandy. Neptune divided this section of Normandy coastline into five discontinuous beaches. The Allied right was anchored by Utah beach on the Cotentin Peninsula and the Allied left was anchored by the River Orne and the Caen Canal at Sword

beach. Between these flank beaches was Omaha, Gold, and Juno beach. The Americans were responsible for Utah and Omaha, whilst Anglo-Canadian forces were responsible for Gold, Juno, and Sword beaches. Each beach was subdivided into a 2 – 4 sub-beaches and assigned a letter from A to R. This study will primarily concern itself with the affairs of the troops of the 3rd British Infantry Division and 27 Armoured Bde that landed at Sword beach, specifically, Queen beach.

This study will also concern itself with the work done by 6th Airborne Division as part of Op Tonga. Their objective was to execute a series of airborne landings East of the River Orne, Caen Canal, and Sword Beach to secure the British left flank. They were also to capture the only bridge crossing these water features North of Caen along a road running between Benouville and Ranville. All this was to be done during the night before the forces of Op Neptune landed. For approximately six hours, the paras of 6th Airborne would be cut off. Once the British landed at Sword beach, they would push inland, to Benouville, cross the bridges if they were still intact, and reinforce and resupply 6th Airborne. That is how the 11 lorries of C Platoon 90 Coy finds itself waiting in Colleville, around 4km away from Benouville waiting for their CO to link up with the Paras so that C Platoon could resupply 6th Airborne who would likely be running low on stores by this point. C Pl would then keep the paras supplied via Queen Beach until 6th Airborne's RASC unit could take over on D + 1 after landing at Juno.[4]

4. S & T History 90 Coy RASC Armd Bde-Assault an account of the work carried out during the first four days of the Invasion, June 1944, WO 171/2377, The National Archives UK (TNA), Kew, 1 (hereafter cited as TNA WO 171/2377 June History Report).

By 1800, C pl made contact with the Paras and, as the Paras had successfully captured the Orne and Caen Canal bridges, C pl was able to replenish the depleting ammunition of 6th Airborne by 2300 hrs on D - Day — a five hour job. As 6th Airborne's area of operations had yet to be fully secured, the drivers of C pl faced sniper fire throughout the day.[5]

Not all of 90 Coy landed on D - Day however, whilst A and D Pls stayed in the UK to be brought across the channel on B Pl landed on D - Day. Their tasking to simply support 27 Armd Bde primarily in terms of their fuel requirements and to otherwise keep the Bde supplied. Their 13 lorries were mainly loaded with fuel for the Bde's Sherman tanks. Alas, Due to the heavy shelling of Queen Beach however, only 9 lorries actually landed by 1200 hrs. The lorries that landed proceeded to the 27 Armd Bde's A Echelon Area in Hermanville-Sur-Mer and would quickly be put to work keeping the Bde supplied with fuel and ammunition.[6] Hermanville, situated along the main road departing Queen Beach — location of the Beach Sector Stores — rapidly became 90 Coy's control point where vehicles would check in before proceeding to the beaches or to the units.

As a point of curiosity, you may have noticed how B Pl was not preloaded with ammunition. This was because the Bde brought their own ammunition ashore firstly with the ammunition they carried in their tanks, but also with the ammunition they towed behind their tanks in *Porpoise* sledges.[7] These sledges would be released shortly after the tanks made

5. TNA WO 171/2377, 6 June 1944.

6. TNA WO 171/2377, 6 June 1944.

7. TNA WO 171/2377 June History Report, 2–3.

it ashore. Collecting the ammunition in these sledges also became one of B Pl's tasks in the first hours of the invasion.

Perhaps as a happy co-incidence, Neptune had failed to meet it's D Day objective of pushing all the way to Caen — an optimistic goal anyway.This meant that supply lines were shorter than planned which doubtless decreased the stress on the 9 lorries of B Pl. It is difficult to understate how heavy the fighting was. Indeed, there were many instances where tanks were replenished with tanks still 'in their forward positions'.[8] This single under strength platoon was trying to keep a whole brigade supplied. Tasks which would ordinarily been reasonably simple tasks were now incredibly onerous. Take for example the task of refuelling and reammunitioning the tanks. What should have been a simple task done at the end of each day to ensure the Brigade was ready for the next day's operations became a night long ordeal requiring the initiative of the 9 lorry drivers of B Pl who had to understand the requirements of their client unit before returning to the beaches to try to obtain the critical stores required by their units. It was paramount that these drivers not only knew what was needed, but the priority of what was needed in the event that there were insufficient stores available to meet an urgent order. This way, lorries were always moving and stores were always flowing. Fortunately, by nightfall on D - Day, a small Brigade supply dump was beginning to form in Hermanville — an act that would logistics chains. Even still, this put a great strain on the men who were worked day and night until D + 4.[9]

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8. TNA WO 171/2377 June History Report, 2.

9. TNA WO 171/2377 June History Report, 2.

Thus was the dispositions 90 Coy on D-Day, two Pls would make their way ashore: one to support their parent unit, 27th Armd Bde and one help the Division to their left — 6th Airborne — until their own RASC unit could make it. Here, one can begin to see the role of 2nd line transport companies such as 90 Coy. They form the final interface between the wider supply system and the fighting units — it is these units that *deliver the goods* — however, how did these 90 Coy interface with the rest of Army?

The Supply Chain in the Field

Whilst admittedly, the supply system on D - Day did appear somewhat improvised and ramshackle, there was good reason for this. Because the British failed to advance as far forward as planned, the supply dumps that were to be set up all along Sword Beach failed to materialize in the same way as planned. Still, the logisticians of the British Army tried to beat a formal planned system into an effective supply chain however much improvised. It is worth recalling that, even without additional planning, the British Army's baseline doctrine included a supply chain. This was after all, an army that could expect to be deployed to not just fight a large, European Army, but also fight small wars across vast stretches of the British Empire. To do so, the British Army already had an organic logistical capacity that Overlord adapted to its use. At it's core

> The principle of supply [in the British Army was] that field units should always have with them, or within reach, two days' rations and forage, and one iron ration, and that these stocks should be replenished by delivery, at a point within reach of the troops, of one day's ration and forage each day.

Moreover, as the British Army was fully mechanized by the Second World War, it was the aim that all vehicles would have full petrol tanks at the end of each day. To enable

operational mobility, 2nd line transport was also to have immediately available, an additional 50 miles of fuel; and 3rd line transport, a further 25 miles instantly available for use.[10] Of course, it is unlikely that this exact fuel holding was available on D - Day; however, this was the standard the British Army would have expected. These principles meant that, at any one point, the British Army was expected to be able to advance independent of it's bases for slightly over 75 mi over the course of three days. Thus, this formed it's maximum operating range.

Of course, it is sub-optimal for an Army to operate for long without access to its supply chain so, to support the Army, the supply chain was broken up into four main areas, ordered from furthest to nearest the front line, the Base Sub-Area(BSA), the Line of Communication Area (LoC), the Corps or GHQ Area, and finally, the Divisional Area. Those depots that 90 Coy went to along the beach? Those were Beach Sub-Areas (BSA).

The Base/Beach Sub-Area and Line of Communication

In the first days at Normandy, it appears that Beach and Base Sub-Areas were treated as one and the same. Whatever the 'B' stands for, BSAs functioned as the British Army's initial interface between sea and land. The BSA had the docks, the base railway marshalling yard, a main supply depot, a petrol sub-depot, field bakery, and detailed issue depot. Cold storage was also available for rations such as sides of meat, etc — of course, it is unlikely that such niceties were available in the first days of the invasion, fresh rations weren't even available for quite some time.

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10. Precis of Lecture No. 12: Petrol No. 27 (Winter) War Course, 2017/7 Box 3 File 7, Directorate of History and Heritage Archives (DHH), Ottawa, s 3.

The BSA would then theoretically interface with the Line of Communication Area (LofC). These were railway networks or truck convoys that transported stores from the BSA to the field army. Now, the supply lines in Normandy were quite short, measuring in the ones or tens of kilometres. It was simply unnecessary to have a strict LofC area per se. The field army could simply draw stores directly from the BSA — the LofC area really is not necessary until the field army is some distance away from the BSA. The LofC would become necessary as the British Army advanced through France and into Germany. As they went deeper, scheduled and intentional convoys to convey the stores would become more useful in relieving the field army of such transport network.

Supplies in the GHQ, Corps, and Divisional Areas

In any case, regardless of whether the Army was drawing stores directly from the BSAs or from the LofC, eventually, Army would have to start drawing stores. To such ends, the Army was divided into two sections the Corps / GHQ Area and the Divisional Area. Typically, the distance — and thus, also depth of the Army — from the LofC area to the delivery points was 30 – 40 mi (50 – 65 km) At the GHQ level, one begins to see how the British Army sorted supplies. POL and other stores were handled in two theoretically separate systems. In either case, it is at the GHQ level that stores were bulk broken.

Let's handle the general stores first. Stores are delivered to the Supply Column (Sup Coln) where stores are bulk broken. Think of this bulk breaking with the analogy of a grocery store. A grocery store may receive it's goods in wholesale, bulk form, but then repackage it into smaller, more usable units to be easier to sell — a retail customer may want 1 lb of almonds, not 1 ton for example. In the case of prepackaged stores, bulk breaking is more

similar to the procedure that occurs when a grocery store receives a palette of cereal which is subsequently unpacked and loaded as single units on a shelf. Thus, the Sup Coln HQ can function as an interface where the Army's bulk handling meets it's piece handing functions.[11]

Petrol, Oil, and Lubricants (POL)

Likewise, fuel could, at times be shipped in bulk initially however fuel for the British Army was never delivered to field units as such. It was always containerized first into tins. There are few modern equivalents to this in our modern world. When we buy fuel at the petrol station, we pump it from a massive underground tank into our cars where it's sold by volume. Rarely do we buy a pre-packed can of fuel. This was however how the British Army preferred to receive it's fuel — in 4 Gal (18L) of petrol per tin.[12]These tins were nicknamed flimsies, and it was not an ironic term of affection. They were meant to be disposable so they were built cheap; however, the design teams were perhaps overzealous. The flimsies had an unfortunate habit of breaking or leaking such that it was quite common for them to arrive damaged leading to fairly severe losses in fuel as well as a notable fire risk. Indeed, the flimsies were of such low quality that the British Army began to simply use captured German (Jerry) petrol cans — hence our modern term jerrycan (a German petrol can). Moreover, by Overlord, jerrycans were plentiful and it appears that flimsies were mostly relegated to

11. Precis on Lecture "Supplies in War", (Part II) No. 27 (Winter) War Course, 3.

12. Precis of Lecture No. 12: Petrol No. 27 (Winter) War Course, 3. For reference, the 2025 Toyota Corolla sedan has an approximately 50 l fuel tank whilst the 2025 Ford F150 Raptor pickup truck has a 136l tank.

carrying water. Even containerized fuel was arriving ashore already loaded in jerrycans and images of POL dumps post D-Day depict stacks of jerrycans and not flimsies.[13]

Nevertheless, despite the questionable durability of flimsies, the British Army had some sound reasons for using containerized, as opposed to than bulk distribution. Firstly, tanker lorries weren't nearly so common in 1940 as the are today. Secondly, containers are compartmentalized. If a bullet pierces a tanker lorry, one may loose thousands of litres of fuel before one notices; however, if a bullet travels through a containerized fuel transport (i.e. lorry full of flimsies), one may loose only a few tins worth of fuel. Moreover, containerized fuel has far fewer mechanical requirements. For bulk fuelling to work, one must have a working petrol pump. This could be quite inconvenient. Imagine having a tanker load of fuel but no simple way to get the fuel out of the tanker. Moreover, using this system, you can only fuel a few vehicles at a time. With containerized fuel, one merely pulls up to the vehicles, unload a few tins at each vehicle, and each crew then subsequently fuels their vehicle with a cheap tin funnel. Of course, this system was quite laborious to use but even so, it was judged by the British Army that the additional labour was worth the cost.

All told, the British POL supply chain was designed, to provide containerized fuel for the Army. As designed, it was intended for the Army to be able to advance the whole army 75 mi (120 km) using only such reserves held by the field army (the GHQ/Corps areas, and the Divisional Areas). 50 mi (80 km) of fuel would be held by the the Divisions, whilst the

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13. Army Film Unit, *The Build-Up of Troops and Matériel in the British Sector of the Normandy Beachhead*, A70 70-1 (6 July 1944), 8:30 – 10:55, https://film.iwmcollections.org.uk/record/_BvsowDHz1rSYs2sdsNsvg1He.

Corps areas would hold the remaining 25 mi for the divisions, plus an additional 75 mi for the corps' organic transport.[14]

Having been bulk broken at the Corps or GHQ levels, it was now up to the 2nd line transport units like 90 Coy to then bring those stores forward into the Divisional areas and deliver them to the end-user units. Depending on operational requirements, this may mean delivering it directly to the individual end-users, or it could mean delivering such stores to the units who could then further distribute stores internally. This formed the basic, theoretical structure of the British Army's supply chain; however, just as how no plan survives first contact with the enemy, the supply chain had to adapt to tactical and operational necessities.

Already, you may have noticed that the 27th Armoured Brigade is a *brigade*. Why does it have it's own 2nd line transport? The answer is fairly simple, 27th Armd Bde's full name was 27th Armoured Brigade (Armoured Assault). The Bde was raised as an independent armoured brigade for Overlord. As such, it needed a way to ensure it could run its own logistics. You may also recall how 90 Coy was, on D-Day, delivering both POL as well as ammunition to 27 Armd Bde. This shows how the supply chain had to remain flexible. Whilst in theory, there was a separate chain for POL and ammunition, in practice, this was impossible. This was the advantage of containerized fuel as fuel could simply be loaded into any available lorry.

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14. Precis on Lecture "Supplies in War", (Part II) No. 27 (Winter) War Course, 3.

Storage and Dumping

Finally, before we carry on with the affairs of 90 Coy, it may be prudent to clarify what is meant by a 'dump' and other forms of storage. In a perfect world, supply chains would be perfectly efficient. Ever single item required by an army would be produced when it's needed, sent to where that item was required without delay, and used immediately on receipt. Alas, hiccups invariably appear. Shipping gets stalled, major operations consume unusually large quantities of supplies, supplies are lost to enemy action, etc. Thus, to ensure first-line units receive a continuous flow of supplies, it was — and remains — necessary to store a reasonable reserve of stores at various points along the supply chain.

Ideally, this would be a large, dry, flat, climate controlled warehouse with good transport networks, but alas, conditions in the field often are not always ideally suited to the logistician. Thus, supplies were often stored by stacking supplies in a field or some woodland and covering them with tarpaulins if they required protection from the weather. The precise requirements of this may seem quite trivial and not terribly important to the profession of fighting wars; however, seemingly trivial tasks such as labelling and organizing are critical. Consider what would happen if there was a German counter attack and the supply officer could not find the 76mm anti-tank shells because their boxes were not properly labelled or because the dump was not given enough land so that the aisles were too narrow. Moreover, what would happen to those same shells if they were dropped and the packaging was inadequate to protect their contents — and honestly, who hasn't dropped a heavy box before. Damage to the shell casing could prevent the casing from ejecting properly after firing leading to a stoppage and possibly leading to the tank being out of action.

Consider also what would happen if one of these these dumps was attacked and caught fire. Aisles do not merely provide access but function as fire breaks. These fire breaks are critical for hazardous material dumps such as POL dumps or ammunition dumps. When these dumps catch fire, it is often too dangerous to attempt to extinguish the fire — POL burns and High Explosives explode. Instead, standard operating procedures tend to relate to containing the fire and letting it burn out on its own.

This may seem small but how do acts like this win wars? Unlike the combat arms, logistics does not win wars by plunging a bayonet into the hearts of the enemy. Instead, logistics wins wars by ensuring the combat arms can act without restrictions. If there is insufficient ammunition or fuel to support an advance, a General cannot order that advance. If reserves are not ready when the enemy attacks, then the combat arms will have few options but to withdraw or fix bayonets. Logistics enables and constrains but achieves nothing on its own but by doing so, is a significant factor in determining if an operation is achievable or foolhardy. Let us return to Normandy in June of 1944 to see this in play.

Return to the moment

By the morning of D+1, the situation for 90 Coy was slowly improving. 90 Coy was still quite overwhelmed, but C Pl's 22, and B Pl's 4 lorries that were used with the rest of the platoon, ferrying stores from the Beach Sector Stores dump to the nascent Bde dump at Hermanville.

C Pl's greater number of lorries takes longer to land with elements being ferried ashore throughout the day. As they landed, they delivered their original preloads to their intended recipients before moving to supply 6 Airborne however, by the afternoon, fears were beginning

to materialize of a German counter attack targeted at the Eastern bridgehead presently held by 6 Para. As such, all available transport in the 3rd British Infantry Area were ordered to assist in preparing for this German counterattack on the British left flank.

C pl simply continued running supplies to 6 Airborne as usual as the stores they were building up would be extremely useful if the Germans attacked. B Pl was however was busy establishing a reserve of critical stores for 27th Armd Bde, running up and down the congested road running between the Beach Sector Stores Dump and the Bde dumps at Hermanville. When the order came through for B Pl transport a Battalion of British infantry 4–5 km East to St Aubin d'Arquenas to meet the feared German counter attack, the Pl was around half way through the process of unloading jerries at the dump. The situation was so urgent however, that the infantry battalion was ordered to mount up on top of the jerries and they were rushed East. After this, B pl switch between continuing to build up the Hermanville dump and delivering stores to the forward elements of 27 Armd Bde. This is perhaps representative of the role of logistics in warfare. Logistics contributes to military success by removing constraints, but it often does so not by reacting to a threat per se, but by ensuring that the Army is ready to receive the enemy by prepositioning assets where they may *foreseeably* be required whether that be by transporting troops or by establishing dumps. This establishment of dumps may seem fairly hum-drum; however, consider this: by D+2, B Pl had been engaged had no more than 1-2 hours of rest over the course of 60 hours. By D+2, B Pl was falling asleep at the wheel!

This is how critical the British Army considered the dumps at Hermanville. The object of these dumps was to have a contingency in case the Beach Sector Stores dumps were attacked — and frankly, Hermanville has better road access than Queen Beach. This

work may seem unimportant compared to combat operations however, so much of logistics is preparing for the next step. Yes, the German counter attack does not materialize nor is the Beach Sector Stores dump lost; however, imagine what would happen if either of these eventualities occurred and the work was not done. What would happen if critical troops or supplies could not be accessed when they were needed? This goes beyond anxiety. As this was happening, along Sword Beach, the Luftwaffe was attacking various Beach Sector Stores and, at 1345, they attacked a POL dump adjacent to the main beach exit. The attack ignited the POL in the dump and the fire spread to near by supply and ammunition dumps. Over the next 3 hours, 60000 gallons of POL and 400 tones of ammunition were consumed in the flames.[15] Efforts to extinguish the flames This was indeed, not the only fire, over the next few days, POL fires dot various Army war diaries and RAF Operations Record Books. We can assume that these fires, from their frequency, rapidly become non-events as these events are increasingly reported as 'P.O.L. Dump hit. . . ' followed by, 'P.O.L. Dump fire extinguished'.[16] Increasingly, a quantified estimate is not recorded in the war diaries or operations record books. Nevertheless, it is highly likely that preparatory actions such as prepositioning firefighting apparatus, stacking POL with a mind to fire breaks, and dispersing the storage locations for these dumps helped to minimize losses. Whilst this may appear mundane, preparations such as this are essential to keep an army mobile. Consider that 90 Coy was, as these fires were raging, running loads of petrol forward for the tanks.

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15. No 1 RAF Beach Unit (Later Squadron) Sept 1943-July 1944 IIn/FJ3/1 and 14 Including No 70 and 71 Beach Units Operations Record Book, AIR 29/438/9, The National Archives UK (TNA), Kew, 8 June 1944 (hereafter cited as TNA AIR 29/438/9).

16. TNA AIR 29/438/9, 10 June 1944.

Once again, it is rare that logistics can win a war, but it can certainly loose it. Without these standard preparations taking place, it is probable that the British Army of 1944 would have simply been unable to fight in Normandy as it would have been much easier for the Germans to simply destroy the buildups the British were making. Whilst these stacking and loading standards are quite mundane, they are important to actually winning wars.

Consider also unforeseen events. The paras 6 Airborne fighting East of the Orne would, due to the general difficulties in providing sustainment from the air, often found itself short of rations or ammunition. Why, you might as was it difficult to ensure the paras were well supplied with rations, is it not a fairly simple affair? You know the strength of a division, you know how many days of rations to provide them and some simple multiplication reveals the number of meals. Take the number of meals, divide by the number of rations in a case, divide that by the number of cases that will fit in a lorry, all all that's left to do is to find the rations, load up the lorries and go. Job done! Nice and easy!

Alas, if only life was so simple! See, dumps had to supply these rations and this math is only accurate if the supply officers knew how many men they had to feed. Typically, this is solved by storing an excess of rations at these dumps to make up for any shortfall; however, in the first days of the invasion, rations were in short supply so these reserves that would have been prudent to build up simply had not had time to amass ashore. Thus, on in the evening of D + 1 when Commander RASC (CRASC) 6 Airborne Division — the officer in charge of supplies for 6 Airborne — found out that they had been reinforced and that these reinforcements were to be fed by him, he would have had his staff check their supplies.

His team would have informed him that they simply did not have the rations available.[17] What would have then likely happened was that he would calculate the rations required, put a message through to Beach Sector Stores and request those rations. This would set into motion several chains of events from clerks and officers nervously eyeing ledgers, making sure that this requisition could actually be met off hand. If it could not, they would be figuring out where they could squeeze from the supply system for a little extra. Maybe transfer stores from a different dump, maybe reduce the size of a shipment for the next morning in hopes that they could fill their evening request, etc.

Whilst all this was happening, transport officers would be liaising with transport units like 90 Company and pushing through orders to arrange for the transport (in this case, three vehicles) to then get those rations from BSS to the end user. CRASC 6 Airborne whilst all this was happening would be ensuring he actually had room to put the rations once they were delivered, figuring out how to ensure his new troops knew where and when draw stores, etc.

This is complicated further when the required stores just don't exist in the quantities available ashore. By the afternoon of D + 2, 6 Airborne was growing of 75 mm Pack Howitzer shells. Thus far, the supply of this 75 mm ammunition had been air dropped; however, it was insufficient to keep the division supplied and it was mainly the paras that used this exact ammunition. As such reserves of these shells simply did not exist ashore. Thus, CRASC 6

17. TNA WO 171/2377 June History Report, 6.

Airborne made some inquires with the Navy and an officer of 90 Coy was sent to the Navy's Command Post to liaise with them as they attempted to locate the stores.[18]

Locating stores in 1944 was difficult. Its not like today where one can search a database for the stores required, find which ship the shells are on, and just ask that ship to expedite that delivery. It required hours going through reams of paperwork trying to locate a single line in a ledger but, until someone worked out which ship these shells had been loaded onto, the paras would not be able to use their artillery.

By the morning of D + 3, these shells were still nowhere to be found and 6 Airborne was beginning to grow desperate. We will discuss the importance of artillery later, but sufficed to say, the British were reliant on their guns. They were so desperate indeed that, that morning, 6 lorries of 90 Coy were held so that instant the shells made it ashore, they could be sped to 6 Airborne's gun lines. To permit this, CRASC 6 Airborne made special arrangements with Beach Control to allow the DUKWs — amphibious lorries — to make an inland delivery (typically the DUKWs are just used as ferries to Beach Sector Stores). Thus, when the ammunition was finally located on the afternoon of D + 3 by 6 Airborne RASC HQ's Ammunition Officer, Navy contacted the reliant ship, the ship unloaded her stores into the DUKWs, and the DUKWs drove directly to 90 Coy's Colleville harbour, the ammunition was cross loaded onto 90 Coy's 3 tonners, and that ammunition was rushed to 6 Airborne's gun lines which were, at the time, stood to and actively engaged with repelling a German attack.[19] The German attack was successfully repulsed by element's of 27 Armd

18. TNA WO 171/2377 June History Report, 7.

19. TNA WO 171/2377 June History Report, 7–8.

Bde — also supported by 90 Coy. It was not until the next day, D + 4, that 6 Airborne's own RASC transport made contact with their parent unit. Until that time, the 46 lorries of 90 Coy (reduced to 20 by D + 4) had been supporting two divisions and one Brigade, a force which would have been undermanned to support even a single Brigade.

Think about what it thus meant that 6 lorries (around 1/4 of 90 Coy's remaining strength) was held, standing by to ferry that 75 mm ammunition instead of delivering other critically needed stores — granted, by this time, some of the 3rd British Infantry Division's own transport had landed as well. What would have happened if those shells were not located? 6 Airborne would have lost much of its artillery support. Moreover, think about how complex it was to locate and deliver even a single load of artillery. Teams involved included at least 6 Airborne's CRASC (at least one officer and a few NCOs), the Navy Command Post (at least one officer, a clerk, and a signaller), at least one officer and six drivers from 90 Company, likely around six DUWK drivers, the teams at sea loading and unloading cargo, the Beach Control point, dozens of MPs controlling traffic, and doubtless more I have yet to think of. Whilst the combat arms rightly gets much of the credit for fighting wars, and the Generals credited for figuring out where to put men, spare a thought to the staff work done by the men keeping ledgers, speaking on the radio, co-coordinating actions and pushing forward supplies. When times are desperate, one not only needs brave men, but highly organized logisticians to ensure that which was needed was obtained. Why else would you have drivers driving almost non-stop for some 60 hours if their work could be ignored?

Operations to Hold Ranville

Based on our impression of the first few days of the invasion, you would be forgiven for thinking that supply in general was quite a ramshackle affair. Thus far, the picture is probably exhausted lorry drivers ferrying materiel and troops this way and that, creating hasty dumps of essential stores, with busy supply officers running this way and that trying to scrape together what resources resources were available to support operations; however, as the situation stabilized in Normandy, supply slowly starts to become more regular and these quick and hasty names I keep bringing up like Hermanville, the 6 Airborne's Dumps, etc. start to become more important. It is thus worth pausing to assess the situation and to put some order to the chaos and really consolidate the supply chain that both we and 90 Coy were working to navigate.

The Supply Chain to Ranville

With the exception of the Paras who were being partly supplied by air, the supply chain supported by 90 Coy — at least, as far as the Coy was concerned — originates at sea on the various transport ships loaded down with any number of stores. These could be landing craft, landing ships, or any other vessel capable of carrying a large volume and tonnage of cargo. If these ships such as the LST could be beached directly ashore, then they were typically beached and their stores discharged via their bow ramps. These supplies were then taken to the Beach Sector Stores where they would be stacked in an organized manner taking into account the need for creating aisles for both access, and fire protection.

If the ships however could not beach themselves, then the stores could be brought ashore either by rhino ferry, or DUKW (pronounced 'duck'). As mentioned before, the

DUKW was an amphibious lorry with a 5000 lbs payload — 2.25 tons — or a tad smaller than the 3 tonners used by 90 Coy. Whilst DUKWs could be driven quite far inland, after lessons at DUKWs were mainly used to transport stores from ship to the supply dumps nearest the beach — any old lorry can drive miles inland but driving into the sea with a common 3 tonner is unwise. Of course, in emergency situations as we have already seen with the shipment of 75 mm pack howitzer shells, occasional exceptions would be made; however, it was generally best to use the DUKWs to fulfill the mission that only a DUKW could achieve.

DUKWs were useful for moving things that would fit in a lorry; however, for transporting vehicles or if there was simply a shortage of DUKWs, then rhino ferries were used. The rhinos were essentially shallow draft barges assembled from pontoon structures that could have a ramp fitted. They were typically moved with rhino tugs going back and forth between from ship to shore and back again. Rhinos had the advantage over DUKWs that they could take several vehicles on board at a time and, once beached, the vehicles could just be driven off and any stores in those vehicles, offloaded at the sector stores dumps as they drove past.

In any case, however the stores were brought from ship to shore, their first port of call in these first days of the invasion would have been the Beach Sector Stores. This would rapidly evolve into the fully fledged Base/Beach Maintenance Area (BMA) Moon controlled by 101 Beach Sub Area.[20] The BMA Moon started along Sword Beach's Peter, Queen, and Roger sectors and extended around 2km inland. The full BMA with it's organized supply

20. See traces in Neptune No. 1 RAF Beach Squadron Operation Order found in TNA AIR 29/438/9.

dumps do not appear to have been fully developed by D + 2; however, those dumps 90 Coy created as a Brigade ammunition dump in the vicinity of Hermanville was likely on the land that became BMA Moon's ammunition dump.[21] From these first dumps, logistics units like 90 Coy would then transfer the necessary stores to dumps further inland essentially forming a chain of operational reserves. For example, take 6 Airborne's Ranville maintenance area mainly drew stores from Hermanville and units working in 6 Airborne's Area of Operations (AO) would then draw stores from the Ranville dump forming smaller, often less formal dumps along the way.

Ranville

How these dumps grow and evolve becomes of interest to the to the historian of logistics; thus, let us return to Ranville. Recall that the Germans were probing the area to see if they can dislodge the British and 6 Airborne of their lodgement North-East of Caen and East of the River Orne and the Caen Canal. The paras had been holding onto a number of disunited pockets surrounding their objectives and drop zones. At the time, the territory held by the paras was still quite disunited and there was no continuous British front line per-se but pockets of British troops securing local perimeters. This is not a problem per se, rifle fire can have quite a long range so there was no strict need to maintain a continuous line. Nevertheless, it did mean that the more weakly held areas in the British zone were subject to German attack or infiltration.

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21. Trace of BMA Moon annexed to Neptune RAF Beach Squadron Operation Order found in TNA AIR 29/438/9, Legend entry 67.

On D + 4 (10 June), exactly this happened in the fields roughly between Ranville, and a town 2 – 3 km to the North East called Breville. The Germans had managed to break into a DZ from Breville but their attempt to cross the DZ was repulsed. Having been repulsed, the Germans contented themselves with holding a a wood near Le Mariquet using around a company of troops. The significance of this position is that it would separate 'the 5th and 3rd Para Bdes, which had not actually made contact at this stage'.[22] In light of this, 7 Para battalion, at the time holding the South-West corner of the drop zone (DZ) was ordered to 'sweep the woods and to clear the enemy out of them' and to do all of this in the pouring rain.[23] The paras, having no organic armoured units, was to be supported by B Sqn, 13/18th Hussars, 27th Armd Bde as well as the 13/18th's Recce (reconnaissance) Troop (Tp).[24]

The plan of attack was simple. The wood was divided into four separate woods named W, X, Y, and Z and, at 1600 hrs, the infantry and armour would work together to sweep the woods. At this stage, we would normally expect to discuss infantry-armour co-operation — it was awful with the paras not even realizing how many tanks would be supporting them.[25] We could then discuss how, despite the loss of 4 Sheramns and 2 Stuarts to German anti-tank guns, the attack was successful in clearing the wood and capturing 'over 100 P[risoners of]

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22. 7th Battalion, The Parachute Regiment War Diary, WO 171/1239, The National Archives UK (TNA), Kew, June, Appendix 2, p 1 (hereafter cited as TNA WO 171/1239).

23. TNA WO 171/1239, June 1944, Appendix 2, p 1.

24. TNA WO 171/1239, June 1944, Appendix 2, p 1; 13/18 Royal Hussars (Queen Mary's Own) War Diary, WO 171/845, The National Archives UK (TNA), Kew, 10 June 1944 (hereafter cited as TNA WO 171/845).

25. TNA WO 171/1239, June 1944, Appendix 2, p 2.

W[ar]' and greatly improving the moral of the Paras.[26] What is far more interesting however, is what came next.

The next day, 11 June, 13/18th Hussars joined the rest of 27 Armd Bde on the ridge north of Periers-sur le Dan; however, B Sqn, the same Sqn that supported the Paras' attack the day earlier, remained with the paras. Next day, 12 June, the balance of 13/18 Hussars join B Sqn and are attached to 6 Airborne but would be supported by 27 Armd Bde. This meant that 90 Coy was now responsible for not only 27 Armd Bde located on the ridge between Hermanville and Periers-sur le Dan, but also for maintaining the 13/18th Hussars operating in the vicinity of Ranville. Over the next few days, the 13/18th Hussars would support a variety of British units in the vicinity of Breville who's effect was to neutralize the threat of a German attack on the Eastern flank of the Allied beachhead.

Meanwhile, for 90 Company, 11 June was fairly quiet. Their activities for the day simply consisted of a mere 5 lorry loads of general supplies for 27 Armd Bde. As such, the under strength Coy took the time to do some maintenance having been worked to the bone since D-Day keeping 27th Armd Bde and 6 Airborne supplied.[27] Given the light day, it is likely that the tired men of 90 Coy also took a moment for them selves and got some more sleep. The next day would also come with some pleasantries for, for the first time since boarding the landing ships from 1-3 June, they company at last received letters from home. There must have been a simple human joy in hearing from one's friends and family. Captains Grey and Foreman must also have been quite pleased for, in this correspondence, they were

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26. TNA WO 171/845, 10 June 1944.

27. TNA WO 171/2377, 11 June 1944.

nominated for recognition (i.e. nominated for a medal) for their actions supporting 27 Armd Bde, and supporting 6 Airborne division respectively only a few days earlier. Finally, L/Cpl Jones — no known relation to the L/Cpl Jones of Dad's Army fame — was nominated for an award after rendering first aid during an air-raid on the night of 9 and 10 June.[28]

It is worth noting that letters did not always bring joy. The mail was how soldiers on active service received news of injuries, illnesses, and deaths from home. Moreover, some letters might be from girl friends ending relations, or spouses recounting the difficulties of live at home in war time. Unfortunately, the sources I had access to included remarkably little personal correspondence; indeed, none between family member's and I am thus not in a position to make significant comment on this aspect of the war. Nevertheless, when, in our modern world, we can usually communicate with our friends and family pulling a smartphone out of our bags and sending a quick text, the situation was not like that in 1944. When the men were sealed in transit camps pending embarkation in advance of the invasion in late May and early June, they were largely cut off from those outside their unit. It is likely why this seemingly insignificant event was included in a war diary entry was a page and a half long, as opposed to the more common several entries per page.

Despite the pleasantries however, there was still work to be done. In light of the 13/18th's attachment to 6 Airborne, 90 Coy begins a dumping program in Ranville to establish ammunition and POL dumps to supply the 13/18th, and, in light of the single point of supply chain failure along the Benouville-Ranville road, to establish a reserve in case the

28. TNA WO 171/2377, 12 June 1944.

13/18th were cut off.[29] The actual process of lorries moving to dumps and collecting stores started at 1800 hrs; however, it is worth also thinking about the volume of work done by officers ahead of time. Doubtless, a number of staff officers at the Company or Brigade would have calculated the required quantities of ammunition, POL, and rations likely prudent to keep on hand at Ranville, making forecasts of ammunition and fuel draw, etc. They would use mathical guidance — fuel consumption is fairly predictable — but doubtless also a level of judgment. After all, on 12 June 1944, six days after the start of the invasion, no-one could be certain how much ammunition would actually be consumed in this theatre of war.

Having made such a judgment, these officers would have filed indents with the BMA. The BMA would then have to see if they could supply the the stores requested on the indents. Just as occurred earlier with the 6th Airborne supplies, if they could prudently supply the materiel, all's well. Simply prepare the stores to be picked up, and arrange a convenient time to draw the stores. If they could not however, there would doubtless have been efforts made across the supply chain to acquire these stores and, only if this was impracticable, would it be likely that the request was denied.

Whilst all this was happening at the BMA, logisticians at 27 Armd Bde or 90 Coy must have been calculating the required number of lorries, the available number for making the shipment, etc. Evidently, the request was approved and 90 Coy decided it could spare 12 lorries for this dumping operation.[30] The operation continued to the next day, 13 June, when the Company's commitment increased to 20 lorries to the dumping operations completing

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29. TNA WO 171/2377, 12 June 1944.

30. TNA WO 171/2377, 12 June 1944.

the dumping program some time that day. The Company managed to get some rest on the 14th where, beyond some small deliveries, the Company had a maintenance day to look after themselves and, more importantly, their lorries.[31]

One now might ask, why all this activity in the area around Ranville? Operations around this time to capture the wood are today remembered as the Battle of Breville; however, this gives the impression of a set-piece battle which this battle was not. Instead, this was a brief period of fighting surrounding this town which turned out to have strategic importance. What started as a firefight to be handled by a unit fighting in their area of operations, evolved into a strategically significant battle involving units drawn in from other divisions. From a fighting standpoint, this has some minor interoperability concerns as well as some chain-of-command issues; however, simple co-operation such as the action that placed the 13/18 Hussars under the command of 6th Airborne.

Sustainment however is a larger issue. Place yourself as a supply officer in this situation. When someone moves an infantry battalion into your area, one moves mouths to feed and rifles to fire. Moving a unit of infantry into an area already dominated by infantry does not cause a fundamental shift in requirements. All that has to happen is that the supply chain must expand to be able to meet the requirements — itself a challenge but less problematic than what happens if you move units with new sustainment requirements. The issue is that a Second World War British infantry division tends not to have organic armour — certainly not the Paras nor 51 Highland division also operating in the vicinity of Ranville. This means that the supply chain must now be prepared not only for increased volumes, but

31. TNA WO 171/2377, 14 June 1944.

also different proportions of stores. An infantry division has lower POL requirements than an armoured division, as is the ammunition requirement — infantry have no use for 75 mm tank rounds. Moreover, tank units are tied to the supply chain in ways the infantry is not. Infantry can forage and men can be put on half rations for short duration without significant consequences; however, a moving tank will always consume the same volume of fuel if driven the same way, on the same terrain.

Thus, if one wishes to use tanks — tanks being quite important in warfare even during the second world war — one must have sound logistics. This is where the flexibility of logistics units come in play. At this point, 90 Coy still has a mere vehicles; however, forethought, contingency planning, and adaptability was doubtlessly helpful. Detaching 13/18 Hussars from 27 Armd Bde was simple for the combat arms but 90 Coy needed to think deeper. It had to think about how to schedule supply runs some five kilometres away from the main body of the Brigade. Moreover, it had to consider contingencies. What would happen if the bridges at Benouville or Ranville were taken out of service and the 13/18th's sector was attacked? Bridging units were available and standing by for such contingencies but building a bridge under active air attack is not an enviable situation. In light of this, the decision was taken to expand the dumps at Ranville so that it could support a few infantry divisions as well as an armoured regiment. Doubtless, it was helpful that 90 Coy and the Paras likely already had a close working relationship seeing as how, just a few days earlier, it was 90 Coy that supplied them; however, it is likely that some significant effort was needed in order to establish and maintain the new dump. In a sense, whereas moving an combat arms unit is akin to moving a body of men, moving the supply chain involves setting up new

infrastructure and it is this infrastructure that is critical for the effective conduct of modern war.

The Arrivals of A & B Pls (14 – 23 June)

The Battle of Breville and establishment of the Breville dump having been completed, both B and C platoons of 90 Coy spend the 14th of June maintaining their vehicles and, doubtless, getting some rest at Coy HQ located in a field, some 500 m NW of Cresserons. Here and there, the Coy do some minor transport details — delivering rations, ammunition, fuel, the usual minutiae of war — but the situation is quiet. The next few days are fairly quiet for the Brigade. Most of its forces are in defensive positions across the 3rd British Infantry Division front north of Caen or in the area East of the Orne. Here and there, the Brigade takes small action defeating German strong points or repelling small attacks but nothing that, from a logistical standpoint, couldn't be managed through the usual supply runs.

Back in England, A, and the part of B platoon 90 Coy RASC that did not land on D-Day are now mounting their lorries and embarking on LSTs for a their channel crossing. The 59 vehicles and 165 personnel of this platoon group arrives and begins disembarking at Queen Beach around 2000 hrs on the 15th. Three hours later, they make the 6-7 km journey to Cresserons to join the rest of the company. Their arrival doubtless involved the greetings of friends, as well as some good natured ribbing experienced by new troops joining old troops. There must have been questions asking about the present situation, the location of latrines, mess arrangements, and the usual questions one asks living in the field; however,

the sporadic bombing likely helped to emphasize the fact that there was indeed *a war on*. In light of this, the Company dig slit trenches to provide some cover against bombardment.

Withe the new intake of vehicles and men, the Coy spend the next few days reorganizing and dewaterproofing their new vehicles and doubtlessly, handling routine supply runs, all whilst being sporadically shelled. Beyond slit trenches there was little to be done beyond spread out the vehicles with 75 yds between them to minimize the damage of a single bomb or shell. One must wonder what a dreadful inconvenience this must have been to have to go possibly hundreds of metres just to get to one's lorry. In addition, one wonders the nature of the earth works in these areas as, with such dispersed vehicles, it must have been dreadfully open to have been caught in the open during a shelling. This harassing fire must have been irritating as the Germans did not do very much heavy shelling. Instead, using 17 June as an example, the Germans would lob a few shells (six in this case) over the course of a day and hope they hit something. One wonders if slit trenches were dug at every vehicle or if you hear the whistle of an incoming shell, if you just lie down and pray. It is likely that sleeping positions were in slit trenches but even a trench was not always enough to protect the men. Every few days, a few men would be evacuated with wounds from shelling.

As an aside, I should note that when I say 'dewaterproof', it's not so much making it so that the vehicles would leak, but that they removed a series of minor modifications made to their lorries to ensure they would not be damaged during the crossing of the English Channel as well as when they waded ashore. Much of this work was done by the Woman's Army Corps.[32] Whilst protected from the ravages of the ocean, these modifications had to

32. Indeed, the role of women in WW2 logistics is an opportunity for developing our understanding of the role of women win the Second World War.

be removed before the vehicles drove too many miles as they prevented the proper cooling of their engines.

Oh Mundanity!

As you can likely begin to infer, late June was not a busy time for 27 Armd Bde. Beyond sporadic fighting, there is little of note to the tactical situation and thus, supply runs were still taking place. However, during this brief stabilization in 27 Armd Bde's AO, one begins to see a return to the normality of military life as captured by the Bde's administrative orders.[33] Indeed, the Brigade's first Admin O was not issued until the start of this period on 14 June likely because the Bde was simply far too busy. Nevertheless, these orders provide a wonderful opportunity to examine daily life for 90 Coy and indeed, the whole of 27 Armd Bde.

It is perhaps revealing that it had to be said that 'Latrine trenches must not be allowed to fill up. Fresh Trenches must be dug and the old sites clearly marked'.[34] Apparently, this was quite a problem as, two days later, the Bde was advised that, 'Attention will be paid not only to properly constituted latrine erections but also to the general sanitary condition of the area, particularly checking failure to use facilities provided' — clearly, there was an issue getting the men to use the latrines provided.[35][Para 1a] 27wd More over, it appears it is indeed true that old habits die hard for, on 14 June, the whole Bde had to be reminded to

33. HQ 27 Armoured Brigade War Diary, WO 171/623, The National Archives UK (TNA), Kew, See end of June diaries (hereafter cited as TNA WO 171/623).

34. June Adm Order No. 3 TNA WO 171/623, Para 10.

35. **June Adm Order No. 4**.

drive on the right side of the road, and to turn on the correct side.[36] It was also with some amusement on reading that 'Any livestock *accidentally* killed by shell or [Small Arms] fire may be cut up and eaten by units if bled fresh and in good condition' (emphasis added); however, one is left wondering just how accidental some of these killings were as, by this time, the men may not have had fresh food for over a week.[37]

Beyond these more humorous examples however, these Admin Os reveal a situation of scarcity. For a start, in the Brigade area, there were only three water points by which units could draw water: Benouville, Colleville Sur Orne, and Hermanville. Thus, along 27 Armd Bde lines, some units or detachments may have been over 2 km away from the nearest water point.[38] Thus, every day, either 90 Coy or the units would have had to drive dozens of water cans to the nearest water point, fill them, then drive all the way back consuming both time and fuel. Ration parties and ordinance stores would also have daily delivery runs which allows us to start to see the baseline problem of sustainment.

Ration requirements are easy to forecast, simply count the number of mouths to feed, multiply by the number of meals between supply runs, divide by the number of meals in a case, and round up to the nearest whole case. General stores such as ordinance stores however were more complicated. 'All demands [were to] be made to [the Brigade Ordinance Officer] at Bde A Ech[lon] by 1600 hrs daily. Available stores will be delivered next day'.[39]

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36. June Adm Order No. 1 TNA WO 171/623, Para 9.

37. June Adm Order No. 1 TNA WO 171/623, Para 10.

38. June Adm Order No. 1 TNA WO 171/623, Para 4.

39. June Admin Order No. 1 TNA WO 171/623, Para 6a.

This thus creates an elastic demand on 90 Coy where any day could have more or fewer stores thus complicating calculations.

The first week of Overlord also saw some real shortages. Almost all vehicles and, not withstanding Lee Enfiled rifles, weapons were in short supply. In addition mine detectors, 'binoculars . . . compasses . . . watches', and surveying equipment used by the Artillery were all in short supply. Even communications equipment was short.[40] What's worse was drivers had a habit of running into communications cables consuming ever more supplies.[41] The situation was so serious that special care had to be taken that, if at all possible, if an officer — someone who would likely have binoculars, compasses, and issued watches — or OR had some of these controlled stores, actions needed to be taken to relieve that individual of the goods.

On top of this, armoured units had special stoves, the No. 2 (tank) cooker, for the tanks so that tankers could heat their meals or boil water in the field. Non-armoured units could usually rely on being well enough connected to the supply chain that they were to stay connected to the Cooks' lorries; however, before the invasion, a number of non-armoured units were issued these No. 2 cookers. By 21 June however, any 'vehicle not entitled to carry them' that had access to a mess, were to return the stove to the Brigade Ordnance Officer so that the stove could be reallocated.[42]

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40. TNA WO 171/623, Appendix A to 27 Armd Bde Adm Order No. 1 (June).

41. June Adm Order No. 2 TNA WO 171/623, Para 3.

42. June Adm Order No. 3 TNA WO 171/623, Para 3a.

All these must seem quite minor. Why should a serious historian concern themselves with something as trivial as the availability of binoculars, compasses, stoves, rations or water? The answer is simple: get these wrong, and you loose the war. The trivial appearance of these stores is by design. The mission of the Services is to When well run, a commander, and thus, the author of most of our sources need not think about logistics but it does not mean it is unimportant. Without these stores, officers cannot see far or navigate and the men will starve and dehydrate. Put yourself in the hobnailed ammo boots of a supply officer and you received that order on redistributing cookers.

All of these requirements would have to be foreseen and prepared well in advance to ensure the required stores were available when needed. This is when the army was simply in stasis; however, by the end of June, the operational tempo for 90 Coy was beginning to once more accelerate.

Operation Mitten 27–28 June 1944

Operation Mitten occurred mostly within a single 24 hour period from 27 – 28 June 1944. It aimed to destroy a German salient around 10 km North of Caen. This salient was anchored by two Chateaux, Chateau de la Londe, and Chateau de la Landel. The assault on the salient was principally attacked by the 8th Brigade of the 3rd British Infantry Division. 27 Armd Bde would provide tank support and 141 Royal Armoured Corps came equipped with Churchill Crocodiles — Churchill tanks who's bow machine gun was replaced with a flame-thrower.

As ever, 90 Coy's tasking was principally to support the armoured units; however, their first job of the operation was to deliver some 30 lorry loads of 105 mm ammunition

to the gun lines several kilometres away from the front lines South of a commune named Plumetot. Here, several Gun Batteries of the Royal Artillery were emplaced in preparation for the upcoming battle.

British Artillery

Artillery is often thought of as a supporting arm; yet, the British Army of the Second World War tended to operate on the principle that it is better to expend firepower rather than manpower. In light of this, when faced with difficulty, the British Army was liable to attempt to crush that obstacle under the weight of artillery. This could be from fire directed by a Forward Observation Officer (FOO) against a specific, observable target (fire for effect), or it could be a preplanned suppressive bombardment such as a creeping barrage where the guns are laid to bombard a moving line in advance of advancing troops.

Artillery was quite an effective and flexible tool. Take the example of Lt Boyle of 17 Field Regiment RA who acted as a FOO for 38 Irish Bde in Sicily. He and an infantry company commander once saw a large number of German troops massing, likely in preparation for a counter attack. Thus, Lt Boyle got on the wireless, adjusted fire onto the German unit, and order '10 rounds gunfire' from an artillery regiment of 24 guns. Soon, '240 shells landed within an area less than a football ground'.[43] The company commander was impressed and asked for another salvo. The FOO simply said the proword 'REPEAT' and another 240 shells once more saturated the target area.[44] It is this ability to rapidly concentrate firepower on

43. Stig H. Moberg, *Gunfire! British Artillery in the Second World War*, OCLC: on1012892375 (Barnsley, S. Yorkshire: Frontline Books, an imprint of Pen & Sword Books Ltd, 2017), 133.

44. Moberg, 133.

any point within range of the batteries by simply making a call on the radio that lies behind the power of the artillery.

Doctrinally, it could be used to kill an opponent, neutralize them (force them to keep their heads down for long enough for friendly infantry to kill or capture that opponent), demoralize them, or 'partially destroy' them (kill or wound 2% of entrenched forces or 20% of troops in the open).[45] Unlike the First World War, by the Second World War, it was relatively uncommon for the British to fire multi-day preparatory bombardments to entirely destroy enemy positions. These bombardments were too wasteful of ammunition, destroyed the ground, and were not terribly effective at destroying an entrenched enemy. Second World War bombardments tended to focus on providing the enemy with a 'short, sharp shock'. Of course, if troops were in the open, FOOs were quite happy to kill them but the usual aim was to suppress them.

Despite these ammunition saving measures however, to do this required a vast expenditure of ammunition. It was assumed that for a unit with 25-pounders[46] to partially destroy enemy unit equipment in a 100x100 yd square, the unit would need to expend 40 rounds of ammunition. Demoralization would require 40 rds/hr over 4 hours (160 rds total) or 100 rds/minute for 15 minutes (1500 rds). Neutralizing the enemy would require 8 – 32 rds/minute for as long as the enemy was to remain neutralized.[47] Whilst batteries would have some ammunition on hand, they were unable to maintain stock of the volumes of am-

45. Moberg, *Gunfire*, 133.

46. Common British field gun

47. Moberg, *Gunfire*, 133.

munition required; thus, the RASC would dump and replenish ammunition for the guns. The stocks required to maintain this instant access to firepower could be enormous. In the lead up to Operation Goodwood, which we will discuss later, each gun was issued with 750 rds of ammunition just to ensure that the RA would be able to meet demand. Without logisticians, the British would likely have had to use more costly, manpower based attacks which come with higher casualties.

On humanitarian grounds, high casualties are not desirable; however, on strategic grounds, this would have been disastrous. Unlike the US or even the Canadians, by 1944, the British were running short on men. The British were unable to replace casualties from drafting more troops from home. The manpower no longer existed. The British could not be wasteful with men for each death or wounded man would mean the army in North-West Europe would shrink. Already the British Army was constraining its operations and being less daring to conceive manpower. This was with ready access to ammunition and firepower. Without regular supplies of ammunition to the guns, it is difficult to imagine the British Army would be able to maintain lower casualties, but it is difficult to see how the British Army would have been able to fight with higher.

Support to Operations
Figure out a name
Operation Aberlour

The Lead up to Charnwood
Pre Goodwood
Goodwood (18-20 Jul 44)
Post Goodwood

Criticality of Supply
Conclusion

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