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BEASTS OF BURDEN: HORSE TRANSPORT ON THE WESTERN FRONT

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PCEMI 39 AD

Maîtrise en études de la défense

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01 August 2014

Word Count: 14, 110

Compte de mots : 14 110

Abstract

The relationship between man and horse is an ancient one, forged through hard work and strength, in both good times and in bad, and despite its longevity is one that man has grown to expect to always be there when required. First World War literature tends to focus on the difference that mechanization made to the army. Despite advances in technology, the horse made a significant, but largely unacknowledged contribution.

A review of the names of present-day Canadian Forces units illustrates the important role that the horse once played in the success of a military campaign. While these units still pay homage to their equine heritage, the dawn of mechanization a century ago caused a significant change in the role of the horse during the war. Due to their vulnerability to machine gun fire horses could no longer be used on the front lines by charging cavalry.

With these changes, the strength and reliability of horses ended up being put to use in the less glamorous but very critical role as beasts of burden hauling supplies to the front. While many books have been written about the combat, very few address the indispensable service rendered by the horses and mules in the Great War, who were routinely exposed to the same hardships as humans, including gas attacks, shelling, and the unrelenting mud of the Western Front. This paper seeks to demonstrate that the horse played a critical logistics role on the Western Front despite advances in motorized transport.

Beasts of Burden: Horse Transport on the Western Front

"As beasts of burden, messengers, protectors, mascots, and friends, the war animals have demonstrated true valour and an enduring partnership with humans. The bond is unbreakable, their sacrifice great – we honour the animals of war."

- *Animals in War Monument, Confederation Park, Ottawa, Ontario, Canada*

Introduction

A century ago the world sat on the precipice of a global conflict that would see a dramatic change in how wars were fought. Great advances in technology had improved how people lived their lives, but it would soon be used to destroy them. A new and more deadly form of warfare would quickly replace the old way of fighting. Mass production methods introduced by industrialization had created deadly new weapon systems that made defending armies practically invulnerable to attack. These new forms of firepower had the direct impact of causing immobility on the battlefield, while the solution of how to get things moving again had not yet been discovered. Developments were slowly being made in machines that would later on provide the answer and bring about a greater degree of mobility. One of these new machines, the internal combustion engine, would lead to the mechanization of military transportation; however the full potential of motor transport (MT) in a combat zone would not be realized for another generation. In the meantime man turned to the horse to fulfill the role that it had always done, moving the army and all of its supplies into battle.

While historical analysis of World War 1 transportation favours mechanization, the horse played a crucial logistical role on the Western Front despite advances in motorized transport. A heavy reliance had to be placed upon horse transport (HT) to consistently provide the primary means to transport supplies the last few miles to the edge of the battlefield. The tendency for analysts to be biased towards what is new instead of the status quo makes sense when we consider that what is new is interesting and that the way things are is generally assumed to be

understood. While the relationship between man and horse is an ancient one, forged through hard work and strength, in both good times and in bad, it is likely that due to the longevity of this association that man assumes that it will always be there when required. “The horse has been man’s most loyal and steadfast ally in battle” while silently providing invaluable service in the face of untold terror and suffering from dreadful mutilations.[1]

A review of present-day Canadian Forces (CF) units illustrates the important role that the horse once played in the success of a military campaign. The names of the Lord Strathcona’s Horse (Royal Canadians), the Governor General’s Horse Guards, the South Alberta Light Horse, the Fort Garry Horse, and the Royal Canadian Horse Artillery, all echo a time long-gone, and point to a history that each unit is proud to perpetuate. While these units pay homage to their equine heritage, the dawn of mechanization eventually ensured that the romantic vision of cavalry leading the charge into battle would be relegated to the past. The importance of the horse did not end with the changing role of the cavalry. Their strength and reliability ended up being refocused on doing the noble and essential work of ensuring that the combat arms got the supplies that they required to survive and fight in “the war to end all wars.”

This paper seeks to demonstrate that the horse played a critical logistics role on the Western Front despite advances in motorized transport. These beasts of burden, specifically those who took on the drudgery of hauling rations, guns, ammunition, food and fodder up to the front lines, often returning with wounded and maimed soldiers, certainly deserve more attention from commentators and historians than they have received in the past. The study of early efforts to mechanize the Army is important, but the work done by horses as a vital link in the daily movement of war materials to the fighting units in the First World War should not be seen as any less important. The roads behind the front lines were often no better than a sea of liquid mud

[1] J.M. Brereton, *The Horse in War* (New York: Arco Publishing, 1976), 6.

making the use of MT impossible, and this put the onus back onto the steady and reliable horse to do the heavy lifting. Despite the development of the internal combustion engine, the prime means of mobility on the frontlines in 1914 remained the horse – the relationship between the two to be forever expressed as a measure of an engine's output in terms of "horse power."[2]

Literature Review

A literature review of the subject of military transportation during World War 1 reveals that a great deal of attention has been given to the railroads and mechanized transport, as illustrated in studies written by Ian Malcolm Brown, A.M. Henniker, and Michael Young. While Brown states that there is a dearth of historical information regarding administration and logistics during the Great War, he writes specifically about the work done to restructure the railroads at the strategic and operational levels. Henniker as well puts a great deal of detail into describing railways, roads, and MT, but other than acknowledging that HT did first-line transport, gives the overall impression that the work done by horses was either taken for granted or deemed to be not as important as the machines that delivered the supplies to them. As Young explains, people overlooked HT because "there is none of the stimulant of speed, no dashing forward, no heart-stirring plunge through the barrage – just the steady plod-plod of the slow strong old horses and the rock and bump of wagons on the rutted, broken roads." [3]

Other writers in the field of logistics such as Martin van Creveld and John Sutton highlight higher level issues and concepts instead of providing detail about how transportation played an important role at the tactical level during the war. In his landmark work *Supplying War: Logistics from Wallenstein to Patton*, Martin van Creveld notes that the demands of modern war made the old mode of transport (horses) inadequate, but the mobility that motorized

[2] John Hughes-Wilson and Nigel Steel, *The First World War in 100 Objects* (Richmond Hill: Firefly Books, 2014), 188.
[3] Michael Young, *Army Service Corps, 1902 - 1918.* 2nd ed, (Nottingham: Partisan Press, 2012), 129.

transport promised had not yet been realized. At the threshold of a new mechanical age, the armies on both sides of the First World War had not adjusted their instruments of control or their thought-processes to take advantage of motor vehicles.[4] As a result, staff planners were unable to quickly adapt this new equipment to meet the changing tactical situation. In the story of the Royal Corps of Transport, Sutton doesn't directly address the work done by horses and mules during the Great War, but instead talks about the gradual mechanization of the Army Service Corps (ASC) as the war progressed.

There are a number of writers who illustrate how the horse played a crucial logistical role on the Western Front despite the desire by others to focus on the advances made in motorized transport. The authors who argued that the critical work done by horses and mules during the war did not get enough attention include Simon Butler, James Robert Johnston, John Singleton, D.S. Tamblyn, J.M. Brereton and Sidney Galtrey. Butler points out that "the study of the fate of men who fought in the First World War has reached industrial proportions" but points out that very little is known about the fate of the horses that were taken into the conflict. Johnston writes in his memoir about the work done by transport animals from his unique perspective as a Canadian HT driver for the Canadian Machine Gun Corps (CMGC). He comments that due to the extreme difficulties in moving supplies to the front lines at Passchendaele, a single horse could be of "more value to the army than a man,"[5] and that "very little has been said about the horses and mules that were used and what they suffered is beyond all description."[6] Singleton states that horses were "as indispensable to the war effort as machine guns, dreadnoughts, railways and heavy artillery" but "because of our fascination with the history of technology we never give

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[4] Martin van Creveld, *Supplying War: Logistics from Wallenstein to Patton. 2nd ed,* (Cambridge: Cambridge University Press, 1977), 126.
[5] James Robert Johnston, *Riding Into War: The Memoir of a Horse Transport Driver, 1916 – 1919* (Fredericton: Goose Lane Editions, 2004), 51-52.
[6] *Ibid.*, 54.

them a second thought."[7] Tamblyn adds that the war would likely have been lost without the important contribution that the horse made to transportation.[8]

Despite the profound impact that the horse has had on the affairs of mankind throughout history, Brereton states that "military history abounds in literature with the mounted arm, but it is sad that all too often the service of its intrinsic component, the horse, receive scant acknowledgment."[9] Before the war ended, Sidney Galtrey wrote that "no nation or assembly of nations could have carried on war on the gigantic scale it now is" without the use of horses and mules. He goes on to say that we have to remember that this is "a unique war of enormous, unparalleled magnitude, and that horses…..must still continue to do what motors cannot do until the time comes when war will be made wholly in the sky and under the earth."[10] And finally, Arnold Warren provides supporting details about the role that horses and mules played transporting supplies, food and ammunition to the Canadian Corps.[11]

Early Expectations

Neither side had a monopoly on the illusion that this would be a "short war." The enthusiasm generated by the many technological advances that greatly improved the standardization and capabilities of modern weapon systems led to the belief that the conflict would be short-lived. The "cult of the offensive" that widely existed at the beginning of the war gave the almost universal perception that the advantage would be with the side that struck first. The euphoria and an over-abundance of misguided optimism that existed created a dangerous situation. A cornerstone of this reliance upon the offensive is the importance of mobilizing forces

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[7] John Singleton, "Britain's Military Use of Horses 1914-1918" *Past & Present*, No. 139 (May 1993), 178.
[8] D.S. Tamblyn, *The Horse in War: Horses & Mules in the Allied Armies During the First World War, 1914 – 1918* (n.p.: Leonaur, 2011), 19.
[9] Brereton, *The Horse in War,* 6.
[10] Sidney Galtrey, *The Horse and the War* (London: Country Life 1918), 85-86.
[11] Arnold Warren, *Wait for the Waggon: The Story of the Royal Canadian Army Service Corps* (Toronto: McClelland and Stewart, 1961), 90-92.

as quickly as possible to avoid being caught on the defensive.[12] Both sides believed that their own offensive advantages were so strong that they would quickly cause the defeat of the other. Many incorrectly believed that the war would be 'over by Christmas,' something that a century later we find hard to comprehend.

Despite facing a much stronger enemy coalition, the Chief of the General Staff, Helmuth von Moltke, believed that the Schlieffen Plan gave Germany its best chance at achieving a quick and decisive victory by endorsing "the principle that the offensive is the best defense."[13] This plan called for the use of speed and surprise to attack to the West to cause a decisive knock out of France, before transferring the bulk of the army to the East to focus on the defeat of Russia. Once the German Army moved across Belgium, the plan called for a fast-moving and massive sweeping advance through Northern France and around Paris, with the ultimate goal of swiftly smashing the French Army.[14] Marshal Ferdinand Foch, the Commander of the French XX Corps on the other side of the battlefield, expressed his confidence by stating that "any improvement of firearms is ultimately bound to add strength to the offense."[15] The belief that attackers would have the advantage in a short and decisive war proved to be entirely inaccurate. The resulting trench warfare demonstrated that the defense had gained the advantage with the invention of rifled and repeating small arms, the machine gun, barbed wire and other weapons.[16]

The power behind these technological changes would very soon manifest itself in the incredible devastation and mass attrition that took place on the Western Front. The advances in firepower quickly led to a loss of mobility that made everyone, man and beast alike, extremely

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[12] Dennis Showalter, "Mass Warfare and the Impact of Technology" In *Great War, Total War: Combat and Mobilization on the Western Front, 1914 – 1918,* Roger Chickering and Stig Förster, eds. (Cambridge: Cambridge University Press, 2000), 78.
[13] Stephen Van Vera, "The Cult of the Offensive and the Origins of the First World War" *International Security* Vol. 9, No. 1, (Summer 1984), 59.
[14] Max Hastings, *Catastrophe: Europe Goes to War 1914* (London: William Collins, 2013), 26.
[15] Van Vera, "The Cult of the Offensive", 61.
[16] *Ibid.*, 58.

vulnerable to the heavy bombardment of artillery shells and accurate gunfire. To protect themselves against these new destructive weapons, soldiers on both sides were forced to construct elaborate trench systems opposing each other all along the front in what would become siege warfare. The resulting long-drawn-out stalemate lasted until new tactics could be developed and advances in mobility could take place to allow for a way to break the deadlock.

The Industrial Revolution

The changes brought about by the industrial revolution would significantly impact the nature of military operations forever by providing a war machine more lethal than anything that the world had ever seen before. Technological change also brought about a new emphasis on control and specialization in what has since been labeled as the "Age of Systems."[17] Technological advances in railroads, steamships, telephones, telegraphs, cables, wireless communication, and aviation were all adopted by the great powers, while at the same time improvements in design and propellants allowed the artillery to become a precise weapon capable of using massive, rapid and accurate fire to destroy enemy targets.[18] Technology provided the mass in terms of sheer firepower which, when combined with the development of expertise on how to master it, allowed the artillery field gun to transform into a lethal weapon. It could not be fully appreciated at the early stages of the war how mechanization could one day further transform the battlefield.[19] The internal combustion engine had not yet been refined enough to play a central role. Bulk, fragility, a lack of power, and low levels of efficiency combined to plague motorized transport during the First World War.[20]

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[17] Martin van Creveld, *Technology and War: From 2000 B.C. to the Present* (New York: Simon and Schuster, 1989), 152.
[18] Showalter, "Mass Warfare and the Impact of Technology", 74-75.
[19] *Ibid.*, 90.
[20] *Ibid*.

The capabilities of the transportation at its disposal have always been a limiting factor to the size of an army.[21] Early motor vehicles had the big disadvantage of being limited by their inability to travel on varied and difficult terrain during the First World War. While the internal combustion engine would one day provide a method to carry more supplies faster and further than horse-drawn wagons could, the challenges faced on the Western Front could only be resolved by the use of HT to traverse the heavily cratered and frequently muddied landscape encountered close to the front lines. It can be argued that the Army had not yet figured out a practical way to adapt MT to take full advantage of its evolving capabilities in a changing and challenging tactical situation, but the technology required further refinement. Over time developments in mechanical technology, including the introduction of tracked vehicles, the development of formal driver training, the creation of mechanical workshops, and significant upgrades made to road surfaces and networks allowed MT to make slow and steady progress towards achieving its potential and become an important mode of ground transportation.[22] The First World War provided the first real test for motor vehicles in a military support role. While they served in a limited role, motor vehicles demonstrated that they would one day make a significant contribution towards improve mobility on the battlefield and assuming the burden of the work that horses had done throughout history.

The industrial revolution introduced the world to a scary new type of war, one that required the complete mobilization of a nation's resources and population. This new 'total war' involved the mobilization of all forms of public, and often private, life towards victory on the battlefield.[23] This complete mobilization, combined with the lethality and magnitude of

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[21] Joseph Sinclair, *Arteries of War: A History of Military Transportation* (Shrewsbury: Airlife, 1992), 6.
[22] *Ibid.*, 6-7.
[23] Stig Förster, "Introduction" In *Great War, Total War: Combat and Mobilization on the Western Front, 1914 – 1918,* Roger Chickering and Stig Förster, eds. (Cambridge: Cambridge University Press, 2000), 2.

destruction brought about by technological innovation, opened up the "prospect of casualties so overwhelming as to make combat impossible and victory meaningless."[24]

A strong interdependence existed between the civilians working in industrial workshops and the soldiers fighting on the battlefield. With nations focusing their industrial energy on the creation of the means for mass destruction, the lines became blurred between soldiers and civilians as both became focused on the pursuit of a common goal: the defeat of the enemy.[25] An insatiable hunger drove up the demand for a wide range of material including ammunition, equipment, food, and fodder to feed the guns, soldiers and animals engaged in the fight. With everyone completely geared towards manufacturing goods for the war effort, industry became a vital link in the supply chain to satisfying the insatiable appetite created on the battlefield.

As the war became more capital intensive due to the demand for industrial output to support it, a corresponding increase took place in the burden placed on military transport services. While ship, rail and road would be used to transport these valuable commodities most of the way to the front, there existed an urgent and immediate demand for large numbers of draught and pack animals to take theses supplies and materials the rest of the way to where they were required.[26] This requirement resulted in a great deal of time, money and effort being spent buying and shipping horses and mules from all over the globe to the battlefields of Europe. While motorized transport slowly improved and became more reliable, there was neither the quality nor quantity of vehicles available to rival the availability and dependability of horses.

Remount Depots

Britain and Germany had different methods of obtaining the required number of horses leading up to 1914. Whereas the British and their allies procured horses from around the world,

[24] Showalter, "Mass Warfare and the Impact of Technology", 77.
[25] Stig Förster, "Introduction", 4.
[26] Singleton, "Britain's Military Use of Horses", 202.

Germany relied upon a national breeding program as their primary source to produce the required animals.[27] The acquisition of horses through the conquest of foreign territory provided a secondary source for Germany, with an estimated 375,000 horses and mules coming from the occupied districts in France.[28] For the Allies the majority of their animals came from North America with a total of 429,000 horses and 275,000 mules provided to the British Army alone during the war.[29] To acquire over 7,000 riding, artillery and draught horses originally authorized for the Canadian Expeditionary Force (CEF), a team of fifty military and five civilian purchasing agents were appointed as Remount Officers by the Director of Veterinary Services at the start of the war.[30] These agents located across Canada promptly procure 8,150 horses in the first month; however 480 of these animals were later found to be unfit for service and were auctioned off.

When selecting horses the overall size of the animal played an important part in determining what role they were best suited for. The height of horses is traditionally measured by using the palm of a hand which is equal to exactly 4 inches (101.6 mm). 'Light draught' horses used in the First World War ranged in height from 15 to 16 hands and weighed up to 1,200 pounds. They were used primarily to pull light artillery limbers, wagons and ambulances, and to carry the bulk of supplies and munitions directly to the front lines.[31] 'Heavy draught' horses which stood at over 16 hands in height and had a weight of over 1,500 pounds were used primarily to haul larger items, specifically the heavy artillery pieces. Mules very often played an important role alongside horses and were categorized into three groups: pack mules used for pack transport (from 14 hand to 15 hands), light draught mules used alongside horses (13 hands

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[27] *Ibid*., 183.
[28] *Ibid*., 189.
[29] *Ibid*., 186.
[30] G.W.L. Nicholson, *Canadian Expeditionary Force 1914-1918: Official History of the Canadian Army in the First World War* (Ottawa: Roger Duhamel, F.R.S.C., 1962), 26.
[31] Firstworldwar.com. "The Forgotten Army." *firstworldwar.com: A Multimedia History of World War One*, http://www.firstworldwar.com/features/forgottenarmy.htm

3 inches to 15 hands and weighing 1,100 pounds) and heavy mules for heavy artillery purposes (16 hands 3 inches and weighing 1,300 pounds).[32] Mules are a cross between a horse and a donkey and were seen as a very valuable complement to the horse. Mules are generally considered to be less obstinate, faster and more intelligent than donkeys, easier to train than horses, and better able to cope with difficult terrain due to their harder hooves.[33]

Two-thirds of the horses and almost all the mules used on the Western Front came from North America, with the first batch of horses arriving in England in October 1914. The British Remount Commission, responsible for providing a steady flow of horses and mules at a rate varying between 10,000 and 25,000 each month, determined that the best draught horses came from the mid-western United States and the Canadian prairies.[34] A great number of the horses that were pressed into service with the Allies were initially sent to the Remount Depot located on the waterfront of Montreal's West Island in what is known today as Lachine.[35] Here that they would be groomed, feed, trained and prepared for both the long ocean journey and the poor conditions on the Western Front.

Due to the "exigencies of the service" horses had to be quickly introduced to some degree of exposure to the elements before embarkation to prepare them for the severe conditions that they would be expected to encounter behind the fighting lines. Not only would horses face harrowing conditions while taking supplies to the front, but they could not escape to safety when they were picketing in the mud and open to every kind of weather imaginable. To test their capacity to deal with crowded conditions and their ability to resist exposure, Remount Depots

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[32] Galtrey, *The Horse and the War*, 34-35.
[33] Hughes-Wilson, *The First World War in 100 Objects*, 191.
[34] *Ibid.*, 27.
[35] Cheryl Cornacchia, "Lachine Has Place in First World War History: Thousands of Horses Sent Overseas from Waterfront Remount Depot" *The Gazette*, January 25, 2012, http://www2.canada.com/montrealgazette/news/westisland/story.html?id=a42bb829-afa8-4037-bd00-c4a8152f1b07

were arranged in long rows of fifty to a hundred stalls completely open to the weather except for having a roof over them. A sudden transition from stable to semi-open lines frequently caused horses to become ill, so a slow and gradual acclimatization was an important requirement.[36] After being detained for a minimum of seven weeks at a Remount Depot, horses and mules that were deemed fit would be prepared for embarkation. The following poem entitled "Canadians" written by W. H. Ogilvie, a renowned Scottish-Australian poet and horseman, colorfully illustrates the arrival of a team of horses that had just arrive in England from Canada.

> With arrow's on their quarters and with numbers on their hoofs,
> With the trampling sound of twenty that re-echoes in the roofs,
> Low of crest and dull of coat, wan and wild of eye,
> Through our English village the Canadians go by.
>
> Shying at a passing cart, swerving from a car,
> Tossing up an anxious head, to flaunt a snowy star,
> Racking at a Yankee gait, reaching at the rein.
> Twenty raw Canadians are tasting life again!
>
> Hollow-necked and hollow-flanked, lean of rib and hip.
> Strained and sick and weary with the wallow of the ship.
> Glad to smell the turf again, hear the robin's call,
> Tread again the country road they lost at Montreal!
>
> Fate may bring them dule and woe; better steeds than they
> Sleep beside the English guns a hundred leagues away;
> But till war hath need of them lightly lie their reins.
> Softly fall the feet of them along the English lanes.[37]

When the German Army deployed to the Western Front in the summer of 1914, they planned to feed their horses by living off of the land. This resulted in a situation where their horses were gradually becoming malnourished and were dying early on in the campaign, while others were so weak that they became a hindrance.[38] German horse casualties were extraordinarily high and the replacement horses, from both the homeland and those obtained from occupied territories, were not enough to cover the losses. The finer breeds of horses did

[36] Galtrey, *The Horse and the War*, 40.
[37] *Ibid.*, 110.
[38] Julian Thompson, *The Lifeblood of War: Logistics in Armed Conflict* (London: Brassey's, 1991), 39.

prove their worth, but it turned out that many of the remaining horses in the German Army had not been properly bred and were not adequately developed for the stresses that they were to encounter during the war.[39]

It can be argued that the lack of prudent logistical planning, in particular the lack of an effective and sustainable food supply for both animals and soldiers, proved to be the biggest and most fatal structural problem that the German Army could not overcome.[40] In hindsight, the failure of the German Army to conquer France in 1914 had a great deal to do with the fact that it favoured strategic considerations over logistical ones.[41] Speed in mobilization, deployment and execution were key to the whole Plan, which had initially allocated a total of only forty-two days to complete.[42] The Plan relied heavily upon the common military practice of the nineteenth century to feed the German Army from the occupied country; however the provision of fodder for horses relied heavily upon the season of the year.[43] At the start of the war the season favoured the Germans. Fodder could frequently be found, often already harvested and neatly stacked in the fields; however this situation did not last long and over time the horses became weak and sick from inadequate feed.[44] This lack of appreciation for logistical matters ended up curtailing the pace of the German advance and had a negative impact on its desire for bold action.

The Changing Role of the Cavalry

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[39] Erich von Ludendorff, *Ludendorff's Own Story, August 1914-November 1918: The Great War from the Siege of Liège to the Signing of the Armistice as Viewed from the Grand Headquarters of the German Army,* Vol. 1, (New York: Harper & Brothers), 457.
[40] Roger Chickering, "World War 1 and the Theory of Total War: Reflections on the British and German Cases, 1914-1915" In *Great War, Total War: Combat and Mobilization on the Western Front 1914-1918,* Roger Chickering and Stig Förster, eds. (Cambridge: Cambridge University Press, 2000), 51.
[41] Van Crevald, *Supplying War*, 114-115.
[42] *Ibid*., 114.
[43] *Ibid*., 118.
[44] *Ibid.*, 125.

The cavalry entered the war with great energy and a strong desire to relive past glories during times of open warfare. They dreamed of charging headlong on horseback into battle to defeat the foe. This would not be the case as it quickly became clear to all that this traditional role was virtually nullified in the face of sustained and well-directed artillery fire.[45] The cavalry on both sides did achieve some initial success in the Fall of 1914, as demonstrated by the charge of the BEF's 9th Lancers at Moncel on 6 September; however the limitations of mounted cavalry would soon make them largely obsolete when the war became trench bound.[46] These short-lived successes were to become the exception to the norm, as barbed wire impeded movement and caused horrible injuries to horses, while their riders' sabres proved futile against enemy bullets.[47]

As a result of these changes the cavalry, in its traditional sense, had essentially no role to play on the Western Front. It didn't take long before it became standard issue for every cavalryman to carry a rifle and to be trained on how to use it effectively as armies increasingly favored using them in a dragoon role as mounted infantry. In this type of role horses were only useful in moving their riders quickly from on part of the line to another to reinforce and fight alongside the infantry.[48] To illustrate how the role of the cavalry had changed during the course of the war, the proportion of cavalry in the overall BEF dropped from a total of 9.28 percent at the start of the war, to only 1.65 percent at the end of the war in November 1918.[49]

The closed nature of the combat zone combined with the bloody result of the horse's vulnerability to machine gun and artillery fire made it very clear that such a moment had passed and that the end of mounted warfare had arrived. The cavalry would still play an important role

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[45] Simon Butler, *The War Horses: The Tragic Fate of a Million Horses Sacrificed in The First World War* (Somerset: Halsgrove, 2011), 82-83.
[46] David Payne, "The Role of the Horse on the Western Front In The Great War and the Ensuing Failed Expectations" *Western Front Association*, http://www.westernfrontassociation.com/great-war-on-land/weapons-equipment-uniform/639-role-of-horse.html
[47] Nicholson, *Canadian Expeditionary Force*, *4*65.
[48] Brereton, *The Horse in War*, 125.
[49] Holmes, *The Western Front* (Reading: BBC Books, 1999), 67.

doing reconnaissance and liaison missions on the ground, but eventually many cavalry soldiers would have to trade in their lances and swords for bayonets and rifles.[50] While the cavalry did not live up to pre-war expectations, it did experience some late success on 30 March 1918. The Lord Strathcona's Horse attacked the Germans at Moreuil Wood and forced them to withdrawal from a stronghold. This allowed the Allies to rapidly close a gap in the British defenses and stop a German breakthrough during their 1918 Spring Offensive in France.[51]

Logistics

Martin van Creveld defines logistics as "the practical art of moving armies and keeping them supplied" including "providing for the successive arrival of convoys of supplies."[52] He noted that the First World War stands out as a turning point in the history of logistics, when as early as 1914 the demand for material to be consumed or expended by machines matched or exceeded those consumed by soldiers and horses.[53] Over 5,253,538 tons of ammunition was shipped to the Western Front during the course of the war, compared to 5,438,603 tons of fodder for the army's horses and mules.[54] This great increase in the consumption of war material was not matched by an equal advance in the available means of transportation to move these commodities forward.[55] Until such time as the quality and quantity of mechanized transportation became available, horse-drawn transport would have to fill the gap even though there were times when it could not keep up with the increasing demand for supplies at the front. As a result the remount departments were forced to try to work even harder to meet the increased demand.

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[50] Nicholson, *Canadian Expeditionary Force*, 77-78.
[51] Payne, "The Role of the Horse".
[52] Van Creveld, *Supplying War,* 1.
[53] Van Creveld, "World War 1 and the Revolution in Logistics" In *Great War, Total War: Combat and Mobilization on the Western Front, 1914 – 1918*. Roger Chickering, and Stig Förster, eds. (Cambridge: Cambridge University Press, 2000), 67.
[54] Holmes, *The Western Front*, 168.
[55] Van Creveld, "World War 1", 67.

Historians have noted that the war created a voracious appetite for an unprecedented quantity and array of military supplies than had ever been experienced before. The provision of artillery ammunition could not keep up with the ever increasing demand. This increase in demand can be illustrated by comparing the First World War to Boer War. During the Boer War the British fired a total of 273,000 shells over the space of two and a half years, while they had already fired over a million in just the first six months of the First World War.[56] The British would go on to regularly fire 500,000 shells per day in the summer of 1917, with one million shell days not uncommon during the Battle of Passchendaele.[57]

The provision of ammunition became a tremendous problem early on in the war and forced many factories, both private and government-owned, to drastically ramp up the manufacture of artillery shells. A shortage of high explosive shells caused the shell crisis of 1915 and put a great deal of pressure onto the supply chain. Some factories were even required to convert their entire operation over to munitions. The British Government issued compulsory contracts to manufacturers to produce ammunition as part of the measure to ensure enough shells were being produced.[58] As the war became more capital intensive, an ever increasing burden was placed upon military transport services. Both the number of wagons available to transport ammunition and the overall tempo of deliveries had to be increased.

The dramatic increase in the amount of shells being sent into the battle zone drove up the demand for even more draught and pack-animals.[59] The soldiers tasked with the delivery of ammunition to the front lines relied heavily upon their horses to handle the bulk of these loads. The men who handled these horses were the forerunners of today's military logisticians who

[56] Holmes, *The Western Front*, 61-62.
[57] *Ibid.*, 168.
[58] Hughes-Wilson, *The First World War in 100 Objects*, 307.
[59] Singleton, "Britain's Military Use of Horses", 202.

strive to continue on the tradition of being the "Cinderella's of warfare" whose efforts to sustain the combat arms typically go unrecognized unless they fall short of expectations.[60]

Prior to the First World War, logistics planning was done in an ad-hoc fashion. The sound selection of officers to fill administration and quartermaster positions proved to be more important than relying upon any specific training or expertise.[61] This left officers to rely upon their own devices to adapt to any given situation, sometimes through trial and error, and to plan and manage the logistical requirements. The challenges faced by these officers would eventually include determining the best ways to prepare, mobilize and sustain a large and evolving military force on a drastically changed battlefield. This approach had the advantage of allowing for innovation to take place, and in the case of the British Army it provided them with the opportunity to be pioneers in the use of MT as a method of moving supplies. While mechanized transport offered the advantage of increased speed it also provided the opportunity to add an additional level of transportation to the supply chain, allowing for a more efficient redistribution and concentration of the available HT. This in turn helped to shorten the time and distance required to get supplies to the front.[62] The drawback to adding another level of transport is the additional time and labor required to do the extra handling of the supplies.

The logistical problems during the First World War have been described as extraordinary. Due to the huge demand for materials and the constant push of commodities to the front lines, HT was forced to share overstretched railroads and overcrowded roads with whole armies headed towards the front. Despite using every means of transport available, it was not always

[60] Holmes, *The Western Front*, 167.
[61] Ian Malcolm Brown, *British Logistics on the Western Front 1914 – 1919* (Westport: Praeger, 1998), 33.
[62] *Ibid.*, 34.

possible to get commodities to the front on time. As a result, both sides were forced during periods of extremely high activity to put units that were not ready into action.[63]

Mobilization

The British declaration of war against Germany on 4 August 1914 immediately brought Canada into the fray. The Canadian government quickly determined in the words of Prime Minister Sir Robert Borden that "we stand shoulder to shoulder with Britain and the other British dominions in this quarrel" and that "while gravely conscious of the tremendous issues involved and of all the sacrifices that they may entail, we do not shrink from them."[64] The nation immediately began the monumental task of quickly building and equipping its army for war.

Prior to the war Canada had focused on enlarging and reorganizing the Canadian Army, known as the Militia, but did not have the funds or the trained personnel to do the time-consuming and detailed work of drawing up full scale mobilization plans.[65] The mobilization of the CEF required a massive undertaking to field a fully equipped and trained force ready to deploy in relatively short notice. In terms of equipment, there was a lot that Canada had to quickly acquire. There were only enough guns (200) to provide artillery for two divisions, practically no motor vehicles or suitable horse-drawn transport wagons, and an insufficient amount clothing for even the Militia's peacetime strength with much of what they had being old and obsolete.[66] The total authorized establishment of the Permanent Active Militia for the fiscal year beginning on 01 April 1914 was only 3,110 all ranks and 684 horses.[67] Fortunately, the soldiers of the Non-Permanent Active Militia (NPAM) with an authorized establishment of

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[63] Peter Hart, *The Great War* (New York: Oxford University Press, 2013), 68.
[64] Sir Robert Borden, Prime Minister of Canada, Speech on August 19, 1914, *House of Commons Debates, 19*, http://www.mta.ca/library/courage/sirrobertbordendeclareswar.html
[65] Nicholson. *Canadian Expeditionary Force*, 14.
[66] *Ibid.*, 11.
[67] *Ibid.*, 7.

74,213 all ranks and 16,726 horses would be heavily drawn upon to provide the required leadership and experience for the contingent that would be hastily formed for overseas duty.[68] A detailed breakdown of the total number of authorized men and horses in each of the arms of service in the Canadian Militia in July 1914 is provided at Appendix 1, Table 1.

The Canadian Army Service Corps

The Government of Canada made the decision to have its own organized army to be ready in the case of a national emergency, and that it would only be possible if it included an efficient Canadian Army Service Corps (CASC). General Order No. 141 issued on 01 November 1901, established this new branch as part of the Canadian Permanent Active Militia in Canada with the authorization for four companies, one each in London, Toronto, Kingston, and Montreal.[69] The Army Service Corps (ASC) that had been formally created in Britain in 1888 provided the model for the CASC. This new Corps had the primary role of providing military transport and supply to the Canadian Army, with the sole means of transportation in the early twentieth century being horse-drawn wagons. While transportation and supply services have evolved over time and are now a major part of modern-day military logistics, the soldiers in the early days of the CASC were commonly referred to as 'administration troops' due to their support roles behind the scenes.

Even in its formative years the CASC had a number of fundamental and related concepts to provide it with a solid foundation. These important concepts helped to focus the Corps and set the stage for it to play a vital role in the sustainment of the CEF. These timeless concepts, or principles of logistics, are still very relevant to combat service support (CSS) units today. The principles start with the understanding that an army is not effective and cannot fight unless it is

[68] *Ibid.*, 12.
[69] Warren, *Wait for the Waggon*, 26.

regularly fed. To deliver rations, along with the ammunition and other supplies at the right time and place required, an efficient system of transport is required. Due to the fact that transport and supply are essentially aspects of the same function, it is very important that they be closely linked. Finally, for an army to survive and be an effective fighting force in war it must have full command and control of the transport and supply elements.[70]

Some traditional supplies, primarily food and fodder, must come from either the country being invaded or from organized shipments from a nations supply base. Prior to the Great War all efforts were made to take advantage of local resources, however due to the vast quantities required and the demand for specialized items the latter became the principal source of supply for the Allies on the Western Front. To effectively and safely move supplies into a theatre of operations, there is a requirement for an uninterrupted connection to be established and maintained between the various supply bases and the units at the front. This vital connection not only brought reinforcements and supplies through, but it also brought back anything that might impair mobility such as broken equipment and personnel. The routes that link a military force with its supply base are called "lines of communications" (LOCs) and typically require a combination of the various modes of transportation available to ship urgently required war commodities by rail, water, air, and road.[71] The scheme of supply from the base to the trenches used by the Allies to move men and material along these LOCs is illustrated in the diagram at Appendix 2, Figure 1. A series of secure ports in France were established to provide a very important link in these LOCs and provide a foothold on the continent. The French port of Boulogne played a key part in sustaining the Canadian Corps throughout the war. This port was

[70] *Ibid*., 3-4.
[71] C.F. Clarke, "Lectures on Staff Duties" 52, In *The Provisioning of the Modern Army in the Field*, Henry G. Sharpe (Kansas City: Franklin Hudson Publishing, 1909), 25.

very well situated on the Northern shore with access to rail lines that ran eastward towards the locations where the fighting was taking place on the Western Front.[72]

Before the end of 1914 a static trench-based front line stretched approximately 475 miles (760 km) along the Western Front. This stalemate resulted in the dense concentration of forces along the front and had the effect of stabilizing the flow of supplies. At its maximum strength in 1918 the BEF had over 3,000,000 men and 500,000 animals that depended on the supply chain and this stability provided an element of predictability in the flow of commodities.[73] Canadian front-line units were resupplied using a multistage supply line. The CASC transported all supplies along the LOCs. Starting from an overseas base or supply depot, commodities would be transported to continental Europe over water to reach the port at Boulogne. From the port, as well as from a series of advanced supply depots that had been established to provide fresh rations and essential raw materials that could be sourced directly in France, all supplies were directed to the regulating station where they were amalgamated and prepared for transport to the railhead. Referred to as the fourth line of supply, this step relied almost solely on the use of rail to take supplies further inland.

CASC units completed the third line of supply mainly by using MT to take goods from the railheads to refilling stations, also referred to as supply dumps, which were located much closer to the front. The CASC's horse-drawn divisional train and ammunition supply columns would then make up the second line of supply which would take these supplies to the quartermasters of the divisions fighting on the front. The first line of supply took place on a daily basis and involving all of the front-line units using their own integral HT assets. Once they had

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[72] Warren, *Wait for the Waggon*, 84.
[73] David Payne, "The British Army Service Corps on The Western Front In The Great War" *Western Front Association*, December 26, 2008, http://westernfrontassociation.com/great-war-on-land/general-interest/79-brit-a-s-c.html.

control of their daily supplies, the Brigades and Regiments would work swiftly to distribute these commodities amongst their own soldiers, often to be consumed as quickly as they were received. They would return to the divisional train to be resupplied each night under the cloak of darkness to ensure that their horses and soldiers would not be easily seen by the enemy.

The term "train" is misleading today as there were no railway trains in a horse-transport unit. A supply train in this context comes from an old term that identifies the series of horse-drawn wagons used to carry a basic load of baggage, supplies, food and ammunition behind an army formation to sustain it while in battle.[74] This supply train operated as a continuous shuttle of goods and material behind each division. In concept it consisted of a lengthy series of wagons that never stopped moving supplies forward along the established LOCs.

The Militia Act of 1904 set out that Canada would provide a military force consisting of one complete infantry division and a cavalry brigade to serve under British high command should a war break out in Europe.[75] This set the stage for the CEF to be modeled after the British Expeditionary Force (BEF), and for the CASC to be organized in the same manner as the ASC. All CASC personnel were formed into two Divisional Trains of HT, with each Train consisting of a Headquarters Company and four transport companies. No. 1 Company would supply the Divisional troops, while each of the other three companies (Nos. 2, 3, and 4) would be responsible for one of the three Infantry Brigades in the Division.[76] Each Divisional supply train typically consisted of approximately 450 men, 375 animals and 200 wagons.[77] The Divisional

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[74] Herbert Stewart, *From Mons to Loos: The Diary of a Supply Officer* (London: William Blackwood and Sons, 1916), viii.
[75] Canada, Department of National Defence, *The Canadian Forces in The Great War 1914-1919*, General Series Vol. 1, From the Outbreak of War to the Formation of the Canadian Corps, August 1914 – September 1915 (Ottawa: J.O. Patenaude I.S.O., 1938), 4.
[76] Warren, *Wait for the Waggon*, 62.
[77] Singleton, “Britain's Military Use of Horses”, 190.

Train rose to the mobility challenge and proved to be so resilient in structure and concept that it remained intact throughout the war.[78]

Prior to the war the British learned from a number of large-scale exercises that it would be impossible to supply an Army Corps made up of three Divisions with only HT, and so they determined that motorized vehicles could be used to create an echelon of fast-moving MT as an extension of the railway system.[79] MT would use its speed advantage to get materials to the refilling points from where HT would cover the remaining distance to supply and maintain the units in the field. In this regard, the CASC would follow the British lead and begin using MT as a means of transport. This change allowed HT to focus on being the primary transportation link for the division during the First World War. Despite public perception as the war progressed that horses had ceased to be used, primarily due to the very rare mention of the cavalry in the news, the horse played a critical logistics role on the Western Front as motor haulage could not displace them in this critical role.[80]

Transportation Challenges

Senior military leaders determined that the artillery would be the key to enabling the advance and sustaining a large offensive. This decision placed a huge demand on transportation to get the increasingly large amounts of ammunition to the front to feed the guns. In an effort to improve the flow of materials into France the BEF hired a civilian transportation expert, Sir Eric Geddes, to take a close look at the transportation system to find ways to restructure it to make it more effective. He focused primarily on the strategic level and how to get supplies into the theatre of operations. Geddes determined that the ocean ports had to become more efficient and

[78] John Conrad, "Wind Without Rain: The Erosion of Canadian Logistics Thought Since The Hundred Days" Joint Command and Staff Course Paper (Canadian Forces College, 2006), 9.
[79] Warren, *Wait for the Waggon*, 63.
[80] Galtrey, *The Horse and the War*, 14.

that improvements were required to the means of transportation to get supplies out of these ports. To get supplies heading into the right direction, he specifically focused much of his efforts on the railroads, which along with docks, canals, light railway, and roads made up his five categories of transportation.[81] The value of each of these methods of transportation is undeniable in moving essential supplies and materials into theatre and near the front lines, however without horses and mules to cover the last few critical miles, where roads often did not exist, these valuable and essential commodities were left tantalizingly just out of reach.

Railways were a very important link in bringing supplies into the theatre of operations. Along with the heavy gauge main line railways, it is important to mention the development of a tactical light railway closer to the front lines. These light railways worked alongside horses bringing supplies to the front as military operations transformed into trench warfare on the Western Front. The German Army already had a high level of success using its own version of light railways. This type of railway typically used small locomotives, and sometimes horses, to pull wagon-like cars on top of steel rails called railway lines or tracks. These tracks were considerably narrower (60 cm compared to 144 mm), and the much lighter rolling stock weighed approximately 3.5 tonnes compared to 60 tonnes for a standard locomotive.[82] This light railway system had one major downfall during times of retreat, as experienced during the German Spring Offensive in 1918, when the rolling stock had to be either abandoned or destroyed to prevent it from falling into the hands of the enemy.[83]

The transition from rail to road took place at the railheads located approximately twelve miles behind the front lines. MT would take the ammunition, supplies, and engineering stores

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[81] Brown, *British Logistics*, 140.
[82] David Payne, *Light Rail on the Western Front*, http://westernfrontassociation.com/great-war-on-land/weapons-equipment-uniform/354-light-rail html
[83] *Ibid*.

directly to the refilling point located even closer to the front at approximately three miles away. The Battle of the Somme in 1916 required an average of 1,934 tons to be shipped on a daily basis for every mile of the front. The battlefield, located in an agricultural area, had roads that were already in very poor shape and were unsuitable for supporting heavy mechanical loads. The volume of traffic on the existing roads at times could be tremendous, and due to a lack of manpower and road stone to do proper repairs, they rapidly began to deteriorate and suffered a great deal of damage. [84] When combined with wet weather and constant shelling these roads were transformed into impassable bogs.[85] Eye witness accounts even claimed that the mud at the Somme swallowed horses alive. Horses and mules weighed down by their heavy loads would sink into the muddy quagmire if they took one wrong step, with some literally being pulled to pieces.[86] British Brigadier Frank Percy Crozier wrote about the devastation that he witnessed at the Somme by stating that "if the times are hard for human beings, on account of the mud and misery which they endure with astounding fortitude, the same may be said of the animals. My heart bleeds for the horses and mules."[87]

While increasing numbers of MT were being used to complement HT, it was never intended to replace it. Despite some initial hesitation on the part of military leaders and planners, MT would eventually prove to be very useful in the rear echelons. Over time MT became a vital link in the daily transportation of supplies and ammunition to the refilling points where everything destined for the units at the front would be made ready for the remainder of the

[84] Canada, *The Canadian Forces*, 487.
[85] Chris Baker, "The Battles of the Somme 1916: The Logistical Preparations Before The Somme" *The Long, Long Trail: The British Army in the Great War of 1914-1918*, http://www.1914-1918.net/bat15D htm
[86] Galtrey, *The Horse and the War*, 78.
[87] Frank Percy Crozier, *A Brass Hat in No Man's Land* (Sussex: The Naval and Military Press, 2011), 134.

journey in horse-drawn wagons or by horseback.[88] A description of the men and animals of the 1st Canadian Divisional Train picking up the supplies at the refilling point is as follows:

> The Divisional Train which, of course, is not a train at all but consists of horses and mules and General Service waggons, comes into action at the Refilling Point…. It is an ordered, efficient, mobile machine which thinks first in terms of food, which is its duty: second, in terms of horses, which it loves: and, third, in terms of itself, which it regards with more or less content according to the cleanliness of its waggons, the health and comfort of its animals, and the rapidity with which it can erect stables and build quarters on muddy wastes.[89]

The distance from the refilling point to the Quartermaster's Stores at the front was normally not very long. While the average trip was approximately two miles one way, it could only be traversed by horse. The flexibility of the horse was demonstrated on a daily basis and allowed it to adapt to a wide range of weather and ground conditions. The only feasible option to traverse this terrain, marked by destroyed roads, bridges and fields dominated by mud and shell holes, was to use HT to haul supplies under these challenging circumstances.[90]

The Somme provided Canada with its first opportunity to be employed in a large offensive operation. The distance to the front along with the ubiquitous mud became a serious obstacle for both the fighting and support soldiers.[91] To address the poor road conditions, railheads out of necessity would sometimes be extended as close as three miles behind the trenches. This allowed supplies to completely bypass motor vehicles and be handled directly by HT. Even then, there were times when even HT could not manage to carry their loads to the front due to poor ground conditions and the shellfire. The prime movers of supplies tended to get more primitive the further away they got from the railheads, and the closer they got to the front.[92] This meant that mostly horses, and in some cases even soldiers, hauled these goods over land that had

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[88] A.M. Henniker, *Transportation on the Western Front, 1914-1918* (Nashville: The Battery Press, 1937), 56-57.
[89] Comments made by Lieutenant-Colonel Fred Eaton, No. 5 Detachment CASC, Esquimalt, In Arnold Warren, *Wait for the Waggon*, 91.
[90] *Ibid*, 86.
[91] F.R. Phalen, "Army Supplies in the Forward Area and the Trumpline System: A First World War Canadian Logistical Innovation" *Canadian Military History*, Vol. 9, No. 1, (Winter 2000): 32.
[92] Van Creveld, "World War 1", 69.

previously been devastated by exploded shells. Wheeled traffic could not make the last few miles as roads that had been there before the war had completely disappeared. The remaining mud claimed horses that fell into the holes and craters at night trying to bring their loads to the front.[93] Sometimes these last few miles had to be performed by manual labor or by using specially built tramways. These tramlines required the use of small trolleys that had to be moved one of three ways: by hand, drawn by mules or pulled by small locomotives.[94]

The Somme placed an unprecedented demand upon logistical preparations. Prior to this operation hundreds of thousands of men and horses were moved to the front along with millions of shells, and the millions of tons of food and stores that were required. A great deal of work had to be done to improve the roads and rail links, to prepare and conceal the gun positions, to dig trenches and tunnels, and lay the thousands of explosive mines that had to be made ready for detonation.[95] The preparatory work done by logisticians was immense. They in turn placed a great deal of reliance on their horses and mules, which were of critical importance in getting the bulk of the materials forward to where they were desperately needed.

Tactical Considerations

Not only were there long lines of guns, limbers, and transports rumbling and rattling along the roads headed to the front, but they shared space with divisions either heading in the same direction or coming off the line for rest.[96] The transportation of supplies to the front lines had to be carried out as much as possible at night to avoid being seen by airplanes, observation balloons, and artillery observation posts.[97] Moving commodities under the cover of darkness was not always practical during periods of extremely high tempo. During these times supplies had to

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[93] Crozier, *A Brass Hat, 135.*
[94] Canada, *The Canadian Forces,* 487.
[95] Hart, *The Great War*, 211.
[96] Galtrey, *The Horse and the War*, 88.
[97] Tamblyn, *The Horse in War*, 35.

be continuously moved up the line even in daylight under the barrage of shells to meet the demand, as a pause in this flow could have a negative impact in the outcome of the battle.[98]

While soldiers could take advantage of trenches, shell holes, or natural features in the land to take shelter from gunfire, horses and their handlers were not as fortunate and were unable to take cover from the enemy. Horses were seen as an attractive target for the enemy who were very aware of their important role in sustaining the Allies, but unlike humans it can be practically impossible to hide them. Due to their size and frequent immobility when harnessed to artillery-guns and transport wagons, they were highly vulnerable to bursting shells and shrapnel that could kill, or seriously wound, large numbers of horses at one time.[99] The Germans would deliberately train their machine guns on horses in an effort to kill them and to ground the guns that they were hauling.[100] Even when horses were tethered or sheltered, steps had to be taken to try to use camouflage in an effort to conceal them. This offered some protection from the dangers of enemy aircraft that would make it a frequent practice to strafe the ground in the dark looking for opportunities to cause damage and disruption to nightly activities behind the lines.[101]

Horses were vulnerable to both direct and indirect fire. Horses stood out boldly as a silhouette against the sky line and offered a clear target to distant gunners.[102] If given a choice the enemy would deliberately target a supply train instead of a trench, given the greater potential to inflict a higher level of hardship. As noted by one observer, "I have seen roads strewn with the debris of wrecked supply wagons and black with the bodies of dead horses."[103] To pull a standard field artillery gun across broken country the only way to do this was to use a team of six

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[98] Johnston, *Riding Into War,* 55.
[99] Payne, The Role of the Horse.
[100] Tim Cook, *Shock Troops: Canadians Fighting The Great War, 1917-1918*, Vol. 2, (Toronto: Viking Canada, 2008), 517.
[101] Galtrey, *The Horse and the War*, 88.
[102] J.F.B. Livesay, *Canada's Hundred Days: With the Canadian Corps from Amiens to Mons, Aug. 8 - Nov. 11, 1918* (Toronto: Thomas Allen, 1919), 29.
[103] Isaac F. Marcosson, *The Business of War* (Toronto: J.M. Dent and Sons, 1918), 69.

strong horses, harnessed in pairs and ridden by the gun-crew members. Medium and heavy guns required eight or twelve horses to pull them, and all guns had their supporting ammunition wagons that had to be pulled by a team of horses.[104] With an estimate of one gun for every ten yards of front, the number of horses required for the artillery alone was practically beyond calculation and presented the enemy with a target rich environment.[105] The sheer numbers of horses required just to keep the artillery moving guaranteed that the casualties amongst artillery horses would be extremely high.[106]

Other tactical concerns with horses on the battlefield included the restrictions that they imposed upon the freedom of manoeuvre due to their large size and slow speed when weighed down with heavy loads. This impacted the ability of an army to quickly react to change, whether it was to defend against an enemy attack or to take advantage of an opportunity.[107] Horses could also pose a health hazard to soldiers due to the difficulty of maintaining a high level of hygiene in the field, especially under fast-moving battle conditions. Under normal conditions horse manure had to be buried, but this was not always possible and ended up attracting disease-carrying insects, including the bacteria responsible for causing tetanus. [108]

Developments in MT

Both Great British and the United States experimented with motor vehicles before the war, but only a limited amount of testing took place under field conditions. The British Army held special-purpose trials for military vehicles in 1901 at their training establishment near

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[104] Brereton, *The Horse in War,* 126.
[105] *Ibid.*, 126.
[106] David Payne, "The Royal Army Veterinary Corps and the Animals Employed By The British Army On The Western Front In The Great War" *The Western Front Association*, 09 September 2008, http://www.westernfrontassociation.com/great-war-on-land/general-interest/357-army-vets html
[107] R.H. Beadon, *The Royal Army Service Corps: A History of Transport and Supply in the British Army*, Vol. 2, (Cambridge: The University Press, 1931), 49.
[108] Elizabeth D. Schafer, "Use of Animals" In The *European Powers in the First World War: An Encyclopedia*, Spencer C. Turner, ed. (New York: Garland Publishing, 1996), 52-53.

Aldershot in England. While all of the competitors except one had entered steam powered vehicles, the one internal combustion engine entered in the trials demonstrated "the great possibilities for military purposes of the internal combustion lorry."[109] Despite it being very early, these trials showed that MT could handle twice the cargo of a wagon drawn by four horses, use less road space, and travel up to four times faster than wagons on good roads without the sanitary issues that come from a high concentration of horses using the same thoroughfare.[110]

Many considered the introduction of motorized transport to the military before the war as more of a curiosity and not very practical due to the lack of good roads and highways to drive them on.[111] In August 1914 the CASC, composed of eighteen NPAM companies spread across the country with an established strength of 106 men each and eight Canadian Permanent Army Service Corps (CPASC) Detachments totaling no more than 131 all ranks each, had virtually no experience with using mechanical transport.[112] This small group of close to 2,000 soldiers entered the First World War taking their establishment of less than 1,000 horses and their wagons overseas with the intent of using them for the bulk of its transportation requirements.

At the dawn of the war, motor vehicles were seen as a complement to the horse rather than as substitutes in military operations. Mechanical transport had been untested in battle conditions so it would have been unprecedented to have placed any dependency upon using them in this manner in 1914.[113] The changing role of motorized transport took place gradually as the war progressed. At the start of the war motorized vehicles were relatively primitive, lacked standardization, and succumbed to regular breakdowns resulting in frequent repairs. By contrast,

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[109] "Report on Trails of Self-Propelled Lorries, Aldershot, 4-19 December 1901" Canadian War Museum, In Andrew Iarocci, "Dangerous Curves: Canadian Drivers and Mechanical Transport in Two World Wars" In *Canada and The Second World War, Essays in Honour of Terry Copp,* Geoffrey Hayes, Mike Bechthold, and Matt Symes, eds. (Waterloo: Wilfrid Laurier University Press, 2012), 117.
[110] *Ibid.*, 117.
[111] Warren, *Wait for the Waggon,* 46.
[112] *Ibid.*, 47.
[113] Singleton, "Britain's Military Use of Horses", 194-195.

the horse had a long track record of being ready to perform a wide array of work under any condition and at any hour both night and day.[114] As a comparison, vehicles lacked the flexibility, reliability and dependability that horses provided. While a horse could run on an empty tank, without food or water for a short period of time, a vehicle that ran out of gas was useless.[115]

Early motor vehicles were simple in design and came in all shapes and sizes. All of the military vehicles of this era lacked rear-view mirrors, had their windshields removed for tactical and safety reasons, used a magneto-ignition system that required hand cranking to start the motor, and relied upon a purely mechanical braking system.[116] The hard rubber tires limited these vehicles. These basic tires would either dig into the soft surfaces of the roads causing damage to them, or had no grip when trying to drive up wet or snowy roads.[117] Along with the fact that they could only be used on road networks, the need for regular maintenance became a major drawback to using motorized transport.[118] The difficulty of supplying spare parts for Canadian vehicles in the field became evident early on. The many different makes of vehicles sourced for overseas duty created a huge demand for spare parts to be shipped over. It has been estimated that there were 32,000 different types of spare parts being kept in stock at mechanical transport depots in France.[119] The lack of standardization would lead to a high number of vehicles (up to 50%) that were broken down at any one time due to problems that required spare parts.[120] The army also had to deal with the related problem of being forced to press civilian

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[114] Olive-Drab.com, "Army Mechanization Before WW II", olive-drab.com, http://olive-drab.com/od_army-horses-mules_mech.php
[115] Henniker, *Transportation on the Western Front,* 460-461.
[116] William Scheck, "World War I: American Expeditionary Forces Get Motorized Transportation" *Military History*, June 1997, http://www.historynet.com/world-war-i-american-expeditionary-forces-get-motorized-transportation.htm
[117] Warren, *Wait for the Waggon*, 109.
[118] Sinclair, *Arteries of War*, 75.
[119] Singleton, "Britain's Military Use of Horses", 194.
[120] Daniel R. Beaver, "Deuce and a Half: Selecting U.S. Army Trucks, 1920-1945" In John Albert Lynn, *Feeding Mars: Logistics in Western Warfare from the Middle Ages to the Present* (Boulder: Westview Press, 1993), 253-254.

pattern vehicles into service, a role for which they were never intended.[121] These vehicles turned out to be wholly unsuitable for the rigors of field work, as they were not capable of withstanding the wear and tear of highly demanding military service.

It didn't take long for criticism to be directed towards the Canadian vehicles, both motor and horse-drawn, that were initially taken overseas. The main objections were primarily due to the difficulty of supplying spare parts in the field and having to ship them from North America. Over time other issues dealing with the suitability of the equipment for the roles that they would be assigned to needed to be addressed. For example, the few vehicles that the CEF had brought to Britain in 1914 would not be taken to the front and were left in England in favor of British lorries.[122] It is interesting to note that Canadian horse-drawn Bain wagons would also be replaced with British general service (GS) wagons which were often referred to as limbers. When compared to the GS wagon, the Bain wagon wasn't as strongly built, it didn't carry as many supplies, the drivers seats often broke, the wood used to build them was inferior, and they were incompatible with the British service pattern harness deemed to be more suitable than the Canadian harness for military purposes.[123] By replacing their wagons before entering the fight on the continent, the CASC matched their British counterparts and improved access to spare parts.

Use of Horses for Logistical Support

Draught and pack animals significantly outnumbered mechanical transport vehicles in the First World War, with an estimated ratio of about six horses to every vehicle in service at the front in 1918.[124] For Canada the ratio of animals to motor vehicles was even greater at a

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[121] Andrew Iarocci, "Dangerous Curves: Canadian Drivers and Mechanical Transport in Two World Wars" In *Canada and The Second World War, Essays in Honour of Terry Copp*, Geoffrey Hayes, Mike Bechthold, and Matt Symes, eds. (Waterloo: Wilfrid Laurier University Press, 2012), 123.
[122] Nicholson, *Canadian Expeditionary Force*, 27.
[123] Canada, *The Canadian Forces*, 153.
[124] Iarocci, "Dangerous Curves", 116.

minimum of eighteen to one with 25,000 animals to 1,300 vehicles. Overall, the growth in the number of MT vehicles brought into service during the course of the war was significant. The British started with only 100 MT vehicles in 1914, but four years later they had over 119,000. Given that Canada started with virtually no MT vehicles the overall growth in the number of self-propelled transport is astounding.

With the avoidance of frontal assaults by mounted units and the establishment of static trench lines, the role of the horse evolved from providing mobility on the offensive to being used behind the lines in service support. The Canadian Corps Commander, General Sir Arthur W. Currie, noted that horses routinely hauled transport wagons "far beyond the point which mechanical transport could reach and over roads they could not travel, dragging guns on long cross country routes, carrying troopers to a fight and messengers to a signal station" and played an essential role in every operation of the Great War.[125] He added that it was the "mundane tasks of fetching and carrying in which the majority of horses were engaged; hauling guns and ammunition, pulling wagons and ambulances, and carrying general stores."[126]

Numerous specialist tasks were routinely assigned to HT units. In addition to hauling artillery and supply wagons, these additional duties included acting as mounts for dispatch riders, being used for reconnaissance missions, and pulling ambulances. While all of these roles were important, the later role was important for directly saving human lives. Each division had the services of three Field Ambulance (FA) units, which consisted of nine Medical Officers, a quartermaster, approximately 40 Army Service Corps drivers, and a combination of some 78 light and heavy draught horses to pull their ambulances.[127] Ammunition and reinforcements moving forward were given the priority over the handling of wounded soldiers coming back

[125] Tamblyn, *The Horse in War,* 13.
[126] Butler, *The War Horses,* 52.
[127] *Ibid.*, 53.

from the front, so it was not always practical to get prompt medical attention. Delays in treatment could mean the difference between life and death, and impacted a soldier's chances of survival.

When soldiers were wounded in battle they would first be required to walk or be taken by stretcher directly to a Regimental Aid Post near the front lines to be medically assessed. A system of triage had to be used for soldiers wounded in battle to determine an order of priority for medical care. The wounded were divided into three groups: soldiers only slightly injured that could be quickly treated and returned to the battlefield, soldiers that could be transported to hospital for treatment, and those deemed to be beyond help.[128] When resources were limited, unfortunately a common occurrence, the last group received the least amount of attention. If the injuries could not be immediately treated in the field the wounded soldier had to be taken to the Advanced Dressing Station of an FA located within the war zone. From here they were typically picked up by horse ambulance at night to avoid being targeted by enemy fire, especially during times of heavy action, and taken to the closest Casualty Clearing Station (CCS) located several miles behind the front line.[129] This journey by horse-drawn ambulance could be a painful one given the poor conditions and the rough ground that had to be covered.

Care and Maintenance of the Horse

Horses require a high level of care and maintenance, especially in challenging conditions like the ones they faced in World War One including the poor weather, the requirement to be constantly on the move hauling heavy equipment and supplies, and having a frequently substandard diet. The unprecedented number of horses used in the war required a large number of people to look after them including drivers, groomers, trainers, and veterinarians. Veterinary

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[128] Science Museum, "Medicine in the War Zone" *Brought to Life: Exploring the History of Medicine*. http://www.sciencemuseum.org.uk/broughttolife/themes/war/warzone.aspx

[129] J. George Adami, *War Story of the Canadian Army Medical Corps. Volume I, The First Contingent (to the Autumn of 1915)*, Canadian War Records (London: Rolls House, 1918), http://digital.library.upenn.edu/women/adami/camc/camc html.

Officers and other experts played important roles in reducing the number of horses lost. A team of dedicated farriers also filled an important role by working very hard to keep the horses moving. Horseshoes lasted for only a few weeks, so they had to be constantly replaced.

Fresh clean water is an essential element in good horse care, a lack of which can cause dehydration which contributes to poor health. The intent was to give horses water four times each day to ensure that they got their daily requirement of 10 gallons, but this was not always possible at the front.[130] One of the difficult challenges, with such a high concentration of horses near the congested front lines, was to find a way to get enough fresh water to them over roads demolished by shell fire.[131] During the Battle of Vimy Ridge the massing of over 50,000 horses within a constrained space necessitated the large-scale construction of six purpose-built reservoirs and pumping installations along with over 45 miles of pipe lines to pump over 600,000 gallons each day.[132] To obtain sufficient water many bore-holes had to be sunk and pumps had to be laid. At the Somme water refilling points had to be established from which horse-drawn water tank wagons would fill up to supply the forward units. In order to conserve water for horses, washing of any type during periods of high activity had to be kept to a bare minimum.[133]

The Commanding Officer for each HT unit was responsible for the care and custody of all of the horses under his command. All members of the unit were answerable for the well-being of the horses in their care which required careful and regular maintenance including handling, rationing, watering, stabling, grooming, and making sure that their feet were properly protected.[134] When conditions did not permit for proper care and maintenance, horses were frequently required to be kept in their harnesses for extended periods of time. This made

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[130] Brereton, *The Horse in War,* 134.
[131] Livesay, *Canada's Hundred Days,* 226.
[132] Nicholson, *Canadian Expeditionary Force,* 249.
[133]Chris Baker, "The Battles of the Somme 1916".
[134] Warren, *Wait for the Waggon,* 92.

grooming very difficult as it could only be done during very brief periods of rest for both men and horses.[135] This labor of love demonstrated how both man and beast became dependent upon one another to be able to accomplish their critical work. The strength of this relationship was formed "riding and reading the [body language of a] horse for months on end, sleeping in the open only a few yards behind the picket lines at night, and suffering the same privations" with the soldier often coming to regard his horse as an extension of his own being.[136]

A horse can eat approximately ten times as much as a human making the supply of fodder to feed them a major consideration. The feeding of the horse proved to be a major logistical challenge given that the shipping of fodder supplies constituted a huge burden on the army's transport services and represented a large percentage of the total load. It has been argued that hay and oats were actually more valuable than petroleum during the Great War.[137] Unlike their mechanical counterparts that require gas to keep their engines going, horses need to eat on average 25 lbs of food each day whether or not they were being used.[138] A single division required 120,000 lbs of oats, hay and bran on a daily basis.[139] If over time horses suffered from insufficient rations to maintain their strength, their overall health would be negatively impacted.[140] In particular the state of the horses in the German Army got progressively worse over time as it became increasingly more difficult to replace them as remounts came forward slowly. Out of necessity, Germany eventually placed a greater emphasis on the manufacture of motor vehicles in an effort to replace the horses that were being lost in battle.[141]

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[135] *Ibid.*, 91.
[136] Brereton, *The Horse in War*, 129.
[137] Singleton, "Britain's Military Use of Horses", 96.
[138] Rachel Duffett, *The Stomach for Fighting: Food and Soldiers of the Great War* (Manchester: Manchester University Press, 2012), 108.
[139] *Ibid.*, 108.
[140] Von Ludendorff, *Ludendorff's Own Story*, 419.
[141] *Ibid.*, 401.

The total number of horses lost due to gunfire and chemical weapons only amounted to less than one-quarter of the casualties. Of the 256,000 horse that the British Empire lost during the war only 58,000 were the direct result of enemy action.[142] The majority of horse deaths were the result of exhaustion and mud-borne and respiratory diseases, although battle casualties could be extremely high during times of crisis.[143] The difficult task of navigating the muddy battlefields contributed to a great number of fatalities for both man and animal. The famously poor state of the ground in Passchendaele in the autumn of 1917 is well illustrated in the following passage:

> The first day I went in, the mud was 6 inches deep everywhere, and in most places half way up to my knees. It would dry up sometimes, but would always rain afterwards and be worse than ever. The surrounding country was literally shot to pieces, looking like a field after trees and stumps have been pulled out, except that the holes are as deep as 10 feet and filled with water. The lips of one shell hole practically touch the lips of another, so that horses and mules could not go across the area. The first lot would get across, but half a dozen following would soon turn the whole thing into a mass of water and mud so that the animals could not make it at all.[144]

Many of the casualties among horses were due to 'debility', a condition brought on by constant exposure to the poor environment that slowly lowered the horse's resistance.[145] Being picketed in the open during the long cold winter months, and having to spend a great deal of time in liquid mud up to the fetlocks, had the slow and debilitating effect of causing many horses to lose physical strength and endurance and to succumb to respiratory and digestive problems.[146] The large number of horses that typically suffered from general debility during a campaign is illustrated by the Somme offensive in 1916 which produced 16,074 cases.[147]

Army regulations required horses to have their coats clipped to prevent undue sweating; however during wartime horses are very frequently tethered outdoors with nothing but a sodden

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[142] Brereton, *The Horse in War*, 126-127.
[143] Singleton, "Britain's Military Use of Horses", 199.
[144] Robert Massie, "The Artillery at Passchendaele" *The Empire Club of Canada Speeches 1917-1918*, Speaker: Robert Massie, Officer, Canadian Artillery, 17 January 1918 (Toronto: The Empire Club of Canada, 1918), 86-96.
[145] Brereton, *The Horse in War*, 127.
[146] *Ibid.*, 127.
[147] Peter Shaw Baker, *Animal War Heroes*, 2nd ed. (London: A & C Black Ltd, 1933), 111.

blanket over them, which exposed them to the elements.[148] This practice alone resulted in the loss of many horses and for many more to lose their physical conditioning. Over time many commanding officers defied this order and forbad clipping altogether to allow their horses coats to grow thick and strong and become naturally waterproof.[149] Grooming still played an important part in horse maintenance; however due to the high tempo and poor conditions it had to be limited to scrapping off the mud and brushing the coat, often with the use of hay or straw.

The gross wastage rate for Canadian horses that were evacuated to veterinary hospitals, reported missing, or died during the war is estimated at around 26 percent, with the overall total number of horses that actually died, were killed, or destroyed at approximately 9.5 percent. The Canadian Army Veterinary Corps (CAVC) did excellent work returning an estimated 80 percent of injured horses back to duty moving soldiers, equipment and commodities into combat.[150] As a comparison, the British army lost an average of 15 per cent of their animals each year, a rate that increased to 17 per cent on the Western Front.[151]

An unfortunate yet inescapable consequence of using horses in warfare was the reality that some had to be destroyed in the event of contracting an incurable disease, suffering mortal wounds, or having been worked to the point of exhaustion.[152] In preparation for this unenviable task written instructions on "How to Kill Horses Humanely" were issued to Canadian cavalrymen prior to being mobilized in 1914. This booklet outlined how to dispatch horses that were injured past recovery in the most 'humane' way possible by the use of a weapon of no less

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[148] *Ibid.*, 128.
[149] *Ibid.*, 128.
[150] Cecil French, *A History of the Canadian Army Veterinary Corps in the Great World War 1914-1919* (Guelph: Crest Books, 1999), 1.
[151] Singleton, "Britain's Military Use of Horses", 199.
[152] Andrew McEwen, "Document of the Week: How to Kill Horses Humanely" *Yesterday's News: Reflections on the Reading and Writing of History* (blog), 06 February 2013, http://blog.hgsucalgary.ca/?p=159

than .38 calibre held at approximately two inches away from the animals head at right angles.[153] These instructions proved useful, especially for soldiers that had very little experience with horses prior to the war. This desire to prevent animal cruelty is reflected in the following sentimental appeal for the humane treatment of horses entitled "The Charger's Prayer":

> Master: I am in your hands, ready and willing to sacrifice myself for you and our country. The forced marches, the lack of proper food, the bursting of shells, the noise of guns, are all very trying for me. Use me as kindly as you can. Do not whip or spur me unless absolutely necessary. I will respond while strength lasts. Your safety depends largely upon my sureness of foot. This can only be had by treating me with kindness at all times and seeing that my feet are taken care of properly.
>
> My courage is dependent upon you. If you are brave, courageous and strong in battle, I will face the cannon's mouth without fear and will carry you in the front line even though it means certain death for both of us. Considerate treatment, a kindly word, a stroke of my neck to calm my shattered nerves may bring you back to friends and safety.
>
> And finally, my master, if I am seriously wounded or injured, I beg of you to end my suffering with a bullet. Do not neglect it. It is the only reward I ask for my services and death in our country's cause.
>
> Your Horse.[154]

The Battle of Vimy Ridge

Combatants on both sides soon realized that they were using up their stocks of ammunition at an alarming ten times faster than their pre-war estimates which put great pressure on the whole supply chain to manufacture and transport ammunition. While any number of battles during the war could be chosen to illustrate the insatiable appetite for artillery ammunition and other combat commodities, there is no battle that is more tied to the Canadian identity than the Battle of Vimy Ridge in April 1917. To illustrate the huge demand for commodities during this battle, the Canadian Corps required eight full railway trains per day during the battle: four for ammunition, one for engineer stores, one for construction materials,

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[153] The American Humane Society, *How to Kill Horses Humanely,* LAC RG 24 Vol. 1267 Folder H.Q. 593-2-18, In Andrew McEwen, *Document of the Week: How to Kill Horses Humanely,* Last modified 06 February 2013, http://blog hgsucalgary.ca/?p=159

[154] *Ibid.*

one for general stores, and the last one for fodder and other miscellaneous goods.[155] The ever increasing demand for ammunition put a greater emphasis upon the CASC to provide the bulk of the transport to get the incredible amount of artillery ammunition moving.[156] Given that MT was still the exception, the Corps had at least 50,000 horse and mules employed during Vimy Ridge with the majority of these animals used to support the artillery during the battle.[157]

The hundreds of guns used around the clock to pound enemy fortifications at Vimy Ridge had a major impact on the outcome of the battle, but they would have been useless if they did not receive their daily shell allotments.[158] The work of hauling the enormous amount of shells through the muck, dissolved roads, and disrupting fire fell upon the horses and mules of the CASC.[159] On a nightly basis ammunition trucks brought thousands of shells to the refilling points so that by the start of the battle over forty-two thousand tons of ammunition was piled up behind the lines.[160] Horse drivers would lead their charges each and every night hauling these shells to feed the hungry guns that would fire continuously. HT also brought forward rations and other supplies each morning that would be quickly sorted by quartermasters and distributed out to the platoons and sections to feed the soldiers.[161]

The poor weather on the first day of the attack started out as cold and rainy, but would later turn into a combination of sleet and snow. These conditions took their toll on everyone including the animals. The awful weather and the appalling muck that surrounded everything including the battery emplacements aggravated the horses' kidneys and livers, and when their deteriorating health was combined with the heavy work load, the sick and exhausted horses were

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[155] Alexander Turner, *Vimy Ridge 1917: Byng's Canadians Triumph at Arrras* (Oxford: Osprey, 2005), 33.
[156] Thompson, *The Lifeblood of War*, 40.
[157] Turner, *Vimy Ridge 1917: Byng's Canadians, 33.*
[158] Tim Cook, "The Gunners at Vimy" In *Vimy Ridge: A Canadian Reassessment*, Geoffrey Hayes, Andrew Iarocci, and Mike Bechthold, eds. (Waterloo: Wilfrid Laurier University Press, 2007), 113.
[159] *Ibid*.
[160] Pierre Berton, *Vimy* (Toronto: Anchor Canada, 1986), 180.
[161] *Ibid*., 87.

dying at an alarming rate.[162] The desperate fight for survival gave no time for rest, and this had the unintended consequence of horses being worked to death. When they were pushed beyond the point of exhaustion and they no longer had any interest in eating their oats, an inordinate number of these horses were "mercifully killed" to end their suffering.[163] The overall death toll inflicting upon horses and mules created a great deal of worry amongst the officers that they would not get enough shells delivered to the guns, with the worst case scenario being the possibility that they would completely run out of ammunition at a crucial moment.[164]

The Canadian victory at Vimy Ridge is a testament to the detailed planning and preparation undertaken prior to the attack and the well-trained and motivated soldiers that executed it. While credit is certainly due to the infantry at the sharp end who did the really difficult work, they had the full support of the artillerymen, machine gunners, engineers and the logisticians behind them. The supporting units, specifically the Artillery and the CASC, relied heavily upon horses and mules to do the heavy lifting to get valuable commodities forward. It is undeniable that these beasts of burden played an important role in the overall success.

The operational details concerning the contribution of HT generally receive very little mention in Canadian books written about the Battle of Vimy Ridge. The following references are noted all of which are brief. Starting with *Vimy* by Pierre Berton, there is a short passage that acknowledges how HT brought supplies forward each morning, and hauled artillery shells at night when "mule-skinners turned the air blue" with their shouts and curses.[165] The remainder of the book talks about the human participants in the war and the fighting that took place. In *Vimy Ridge: A Canadian Reassessment*, edited by Geoffrey Hayes, Andrew Iarocci, and Mike

[162] Andrew Iarocci, "1st Canadian Division", In *Vimy Ridge: A Canadian Reassessment*, Geoffrey Hayes, Andrew Iarocci, and Mike Bechthold, eds. (Waterloo: Wilfrid Laurier University Press, 2007), 163.
[163] Cook, *Shock Troops*, 80.
[164] Iarocci, "1st Canadian Division", 163.
[165] Berton, *Vimy*, 87, 180.

Bechthold, the work of horses hauling shells for the artillery is mentioned in passing. Tim Cook noted that "the logistical system never faltered, with drivers leading their four-legged friends back and forth through sleet and shell fire,"[166] and Andrew Iarocci commented that "the weather and heavy pace were hard on the horses of the gun batteries and ammunition columns."[167] These examples illustrate the importance of the work done by the HT columns of the CASC throughout the war and yet given the cursory mention demonstrates a lack of appreciation of the HT in favour of the soldiers and units that they worked so hard to sustain.

The Overall Impact of the Horse

Approximately 800,000 horses served the British Empire on the Western Front of which some estimates indicate that over half died as a result of their active service.[168] At its overall peak strength in 1917, the BEF had a total of 449,800 horses and mules on strength.[169] The critical role that that horses and mules played in the war, as well as their overall impact, has not been fully acknowledged nearly a century afterwards. It is now time that this deficit be addressed. The horse provided a very important link in the supply chain, especially for short-haul transport and when petroleum was in short supply.[170] Taken from the rolling plains of North America, the light draught horse ended up being forced into a terrible and unfamiliar world along with their conscripted human counterparts.[171] Many factors contributed to the horse playing a critical logistics role: problems associated with motorized vehicles including the number and types available, issues concerned with their maintenance and spare parts, and the adaptability of the horse to handle a wide variety of weather and terrain conditions.

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[166] Cook, "The Gunners at Vimy", 113.
[167] Iarocci, "1st Canadian Division", 163.
[168] Payne, "The British Army Service Corps".
[169] Holmes, *The Western Front*, 168.
[170] Sinclair, *Arteries of War*, 73.
[171] Firstworldwar.com, "The Forgotten Army".

The Hundred Days Offensive between August and November 1918 turned out to be one of the most significant military achievements during the Great War as it finally broke the stalemate and brought an end to the war with the capitulation of Germany.[172] The military supply chain endured great strain during the last hundred days as the demand for men and material would stretch all transportation resources, HT as well as MT, to the limit to support the offensive.[173] In the final weeks of the war as the Allies advanced into enemy territory, MT got bogged down in the craters of the old front lines. As before, HT played an important role maintaining a steady supply of ammunition and food to the forward units.[174]

At the end of the war, the fate of the horses that had provided such noble service was not on an equal footing with the soldiers who gradually returned home to their families. As noted by J.M. Brereton, "this was another of history's examples of the casual and callous way in which man accepts all that a horse has to give and, when his usefulness is over, abandons him."[175] While a lucky few were shipped home, the vast majority were destined to be sold. Limited shipping space and the expense of transportation proved to be too prohibitive and this resulted in almost all of the horses being left behind. Of the many thousands of horses shipped from Canada to the battlefields of Europe, only 110 of them ever came back.[176]

The animals that were selected to be kept in service were the fittest and the best available who could withstand the long journey home; otherwise the 'standard' and 'poor quality' horses were destined to be auctioned off at rock-bottom prices.[177] To allay public concerns, all

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[172] Shane Schreiber, *Shock Army of the British Empire: The Canadian Corps in the Last 100 Days of the Great War* (New York: Praeger, 1997), 2.
[173] John Sutton, *Wait for the Waggon: The Story of the Royal Corps of Transport and Its Predecessors, 1794-1993 (Barnesley: Leo Cooper, 1998),* 86.
[174] Singleton, "Britain's Military Use of Horses", 191.
[175] Brereton, *The Horse in War,* 139.
[176] Art, Montague, *The Canadian Horse: The Fascinating Story of Canada's National Breed* (Toronto: Lorimer, 2010), 98.
[177] Firstworldwar.com, "The Forgotten Army."

potential purchasers of army animals were to be fully investigated to ensure that they were of sound character, even going as far as to have their local mayor sign a letter to this effect.[178] Despite having the Veterinary Corps manage the disposal of all unwanted animals, buyers could not found for all of them and an estimated 45,000 of the least marketable horses suffered the terrible fate or being sold to French butchers as meat.[179]

Prior to the armistice in 1918, the CASC consisted of 400,000 men and 25,000 horses in the European theatre. Recognition of the CASC's outstanding work came in November 1919. Just one year after the war had been won, His Majesty, King George V, authorized the designator "Royal" to the CASC.[180] It is interesting to note that initially this honour was only bestowed upon the permanent component of the CASC. It would take another seventeen years before the NPAM would be included when both elements were finally combined under the same name as the Royal Canadian Army Service Corps (RCASC) in 1936. Without question some of the credit belongs to the horses, unsung heroes throughout the First World War, who played a crucial and central role in earning this well-deserved and honourable designation for the CASC.

Conclusion

The horse made a significant, but at times almost forgotten, contribution in a logistical role during the First World War. Mechanization impacted all aspects of warfare and would cause a significant change in the role of the horse during the war. Due to their vulnerability to machine gun fire horses could no longer be used on the front lines as charging cavalry galloping unflinchingly into the fray, but instead they were used in the much less glamorous but very critical role as workhorses hauling supplies to the front. While many books have been written

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[178] *Ibid.*, 139.
[179] Singleton, “Britain's Military Use of Horses”, 201.
[180] W.E. Campbell, “A Brief History of the Royal Canadian Army Service Corps” *Royal Canadian Army Service Corps*, http://rcasc.org/rcasc_hist_breif.html

about the combat, very few address the indispensable and often tragic service rendered by the horses and mules that served with Canadian units in the Great War. While they were routinely exposed to the same hardships as humans, including gas attacks, shelling, and the unrelenting mud of the Western Front, the contributions made by horses remain overlooked.

Unfortunately the lessons of the First World War were rarely discussed as the country turned inward and focused on domestic issues at the expense of military ones. Everyone wanted to put the war behind them and move forward, rather than spend time reflecting on what had just taken place. While Canada would once again be faced with the requirement to rapidly build up its military forces for mobilization overseas just over twenty years later with the advent of the Second World War, the available technology had greatly improved. Despite large cuts in military spending and little appetite on the part of the general public and the government to maintain a large standing force, all was not lost. Changes in military doctrine combined with further advancements in technology since the end of the First World War led the way for the full motorization of the army, including the provision of a complete fleet of trucks to the RCASC. With the exception of hauling heavy artillery, the horse would be retired from service leaving the heavy lifting to machines. We would never again see the widespread use of horses and mules as an integral part of the Canadian Army. Instead these living and breathing beasts of burden would be replaced by their mechanical counterparts.

Drama and romance were all but invisible in the often overlooked but very important work done by service support units behind the front lines. No glory could be found as “man and beast marched together into battle” in “an endless column of animals bearing heavy loads” toiling through the mud and rain, often working under the cloak of darkness.[181] In this type of environment it is no wonder that the critical role of the horse in logistics has long been

[181] Singleton, “Britain's Military Use of Horses”, 203.

overshadowed. While the horse remains as a symbol of our martial tradition and is still used sparingly in highly decorative ceremonial roles, they are primarily remembered today for their gallant charges into battle as cavalry mounts. The important logistics work done by horses and mules hauling heavy loads during the Great War has not received its fair share of attention. These always reliable beasts of burden played a crucial logistical role on the Western Front despite advances in motorized transport. As we mark the centennial of the start of the First World War, it is high time to pay tribute to the sacrifices made by both man and beast. The crucial role that horses played in sustaining the front lines and allowing the soldiers to continue the fight must never be forgotten.

Appendix 1 – Table 1

Canadian Militia – Authorized Establishments in July 1914

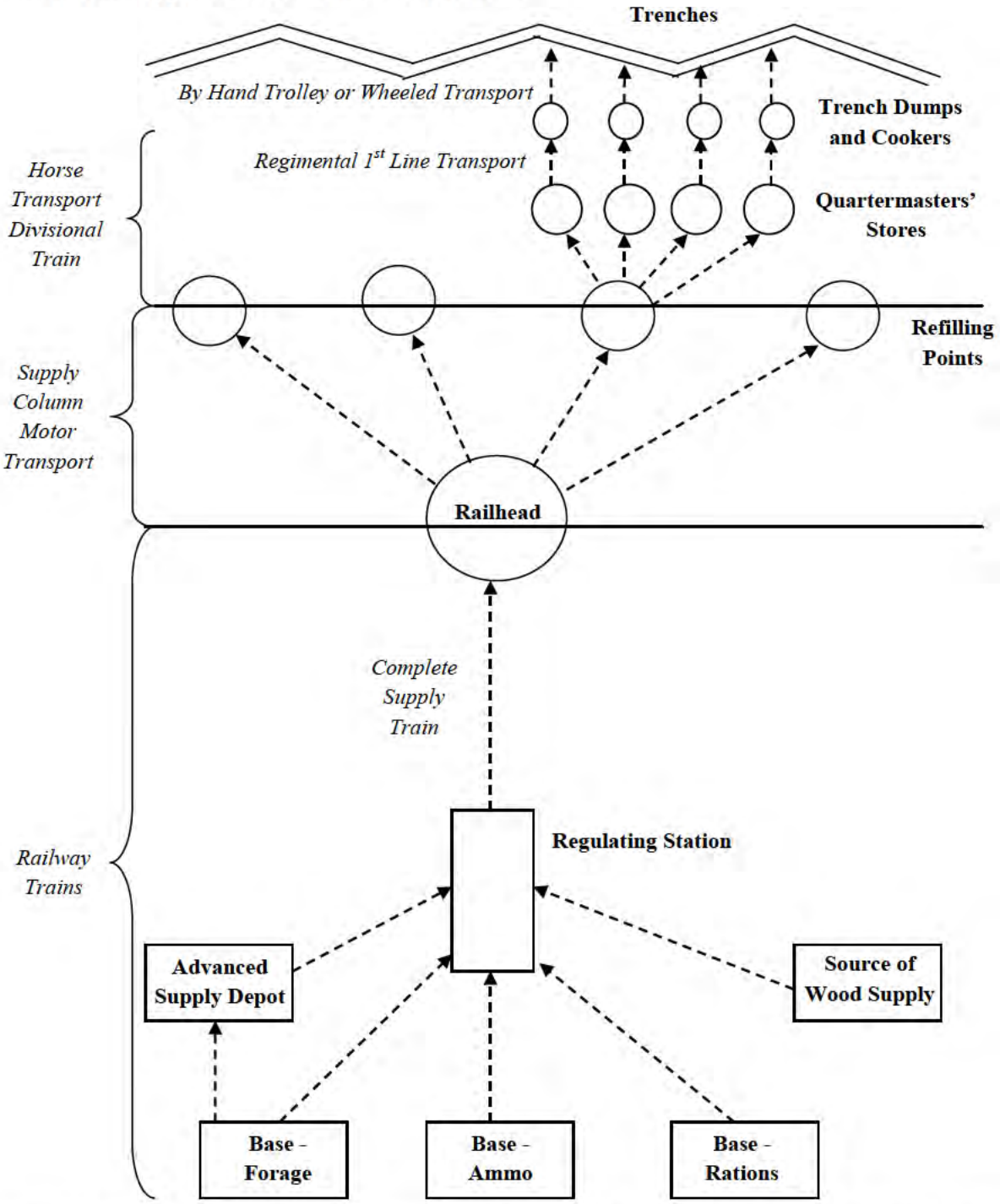
Canadian Militia - Authorized Establishments in July 1914				
	Permanent Active Militia		Non-Permanent Active Militia	
Arm of Service	Personnel	Horses	Personnel	Horses
Cavalry	346	265	12,146	10,615
Artillery, Horse and Field	254	267	4,172	2,481
Artillery, Heavy	-	-	602	388
Artillery, Garrison and Siege	656	53	1,554	6
Engineers and Signals	314	6	2,196	523
Corps of Guides	-	-	499	379
Officers Training Corps	-	-	595	-
Infantry	793	12	47,691	690
Army Service Corps	164	55	1,927	937
Army Medical Corps	101	26	2,136	607
Other Corps and Services*	482		695	100
Totals	3,110	684	74,213	16,726

* Included in the "Other Corps and Services" were veterinary, ordnance, pay and postal personnel, together with a number of miscellaneous detachments employed in instructional and administrative duties.

Source: G.W.L. Nicholson, *Canadian Expeditionary Force 1914-1919*, (Ottawa: Roger Duhamel, 1962), 12.

Appendix 2 – Figure 1

Lines of Communication –
Scheme of Supply from the Base to the Trenches



Source: R.H. Beadon, *The Royal Army Service Corps: A history of Transport and Supply in the British Army. Vol. 2,* (Cambridge: The University Press, 1931), Chapter V, The British Expeditionary Force (continued), diagram on enclosed leaflet located right after page 154.

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