

DELAYED OBSOLESCENCE: THE HORSE IN
EUROPEAN AND AMERICAN WARFARE FROM THE
CRIMEAN WAR TO THE SECOND WORLD WAR

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CHAPTER I

A WORLD IN UPHEAVAL: THE INFLUENCE OF THE INDUSTRIAL REVOLUTION ON MAN'S RELATIONSHIP WITH THE HORSE

The relationship between man and horse developed in tandem with the evolution of human society. In the beginning, the relationship was one of predator and prey; however, as man uncovered the usefulness of the horse, the relationship altered into one of master and servant, remaining that way ever since. The first horse was *Hyracotherium*, the “shrew beast”, or *Eohippus* “the dawn horse” in America. *Hyracotherium* was about twelve inches tall and had three to four toes. It lived during the Eocene epoch or 54 to 38 million years ago.¹ During the Oligocene epoch (38 to 26 million years ago), the first horse developed into a sheep-like mammal with one large middle toe with two smaller side ones. He was known as *Mesohippus*.² At this time, *Mesohippus* vanished from Europe.³ During the Miocene epoch (26 to 12 million years ago), at this time the horse was pony-sized with the middle toe now developed into a cleft hoof while the secondary toes became vestigial. It was known as *Merychippus*.⁴ During the Pliocene epoch (12 to 2 million years ago), the horse was now four feet tall with a

¹ Matthew Kust, *Man and Horse in History* (New York: Advent Books, 1983), 1.

² *Ibid.*, 2-3.

³ *Ibid.*, 3.

⁴ *Ibid.*, 3.

fully developed cleft hoof. *Phliohippus* migrated from North America to Asia and Europe over the land bridge in the Bering Sea.⁵ A million years prior to the Pleistocene epoch (2 million to 10,000 years ago), the modern horse, *Equus Caballus*, appeared throughout the world. *Equus Caballus* was the first horse that humans tamed, in particular the species of the tarpan.⁶ Approximately 10,000 years ago, the horse died out in the Western Hemisphere along with all of the other large mammals, save for bison.⁷ The reasons are unknown; however, scientists theorize that the disappearance could be linked to changes in vegetation or overhunting by humans.⁸ Another theory suggests that both the large fauna and the Clovis people of North America died out due to a comet hitting the Continent around 12,900 years ago, which covered the land in a black layer of sediment and jump started a mini ice age.⁹ The horse did not return to the Western Hemisphere until the exploration of the New World by the Spanish Conquistadors.

Horse breeds are divided into three categories based on general temperament. The “hot bloods” were bred for speed and endurance and possess a spirited disposition. That temperament makes them high-strung and easily frightened. This category includes the Arabian and the Thoroughbred.¹⁰ The second category is known as the “cold bloods.” These horses are heavy draft horses bred for heavy labor and possess a gentle, calm nature. This category includes the Shire, the Clydesdale, and the Friesian.¹¹ The final

⁵ Ibid., 5.

⁶ Ibid., 5.

⁷ Ibid., 6.

⁸ Pita Kelekna, *The Horse in Human History* (Cambridge: Cambridge University Press, 2009), 11.

⁹ R.B. Firestone, et al., “Evidence for an Exterrestrial Impact 12,900 Years Ago that Contributed to the Megafaunal Extinctions and the Younger Dryas Cooling,” *Proceedings of the National Academy of Sciences* 104 (October 2007): 16016.

¹⁰ *Hot Blood Breed Information*, www.horses-and-horse-information.com/articles/horses-hotbloods.shtml. (accessed 01 July 2009), 1-2.

¹¹ *Cold bloods Breed Information*, www.horses-and-horse-information.com/articles/horses-coldbloods.shtml. (accessed 01 July 2009), 2.

category is a combination of the cold and hot breeds, known as the “warm bloods.” This category comprises the largest number of horse breeds. The warm blood has the calmer temperament of the draft horse with the endurance and speed of the hot blood. Most warm bloods were developed in Europe from the mating of European cold bloods with the hot bloods captured in the Middle East during the Crusades. The warm blood has become the most popular category around the world as a pleasure and a working breed. This category includes the American Quarter Horse, the Andalusian, and the Lipizzaner.¹²

The histories of man and horse have been intertwined for tens of thousands of years. Humans first encountered horses as a source of food during the Pleistocene epoch. Because the horse can run upwards of forty miles per hour over sustained distances, man was forced to use ingenuity to capture one of his favorite meats; this included using traps and running them off cliffs.¹³ It is generally believed that the horse was first domesticated for its meat in the grasslands north of the Black Sea in what is now Ukraine by the Scythians and the Sarmatians. The horse then spread south to Asia Minor and onto Northern Africa.¹⁴ Once man understood the potential for the horse’s strength and speed, it was raised less for its meat and hide and more for labor.¹⁵ The idea of using horses as beasts of burden was not a new concept for ancient peoples. Early man harnessed the horse’s strength and speed by hitching it to a cart, much like oxen had been used for hundreds of years.¹⁶ Many civilizations had been using oxen for centuries;

¹² Warmbloods Breed Information, www.horses-and-horse-information.com/articles/horses-warmbloods.shtml. (accessed 01 July 2009), 1-2.

¹³ Kust, *Man and Horse*, 6-7.

¹⁴ *Ibid.*, 10.

¹⁵ Sandra L. Olsen, ed, *Horses Through Time* (Boulder: Roberts Rinehart, 2003), 59.

¹⁶ Kust, *Man and Horse*, 14.

however, the idea of pulling man behind horses into war was novel, leading to the invention of the chariot. Horses were used to pull troops into battle like a taxi system and then later as an actual war machine. Chariots were used as early as 1900 BC in Asia Minor. The chariot became the first war machine and since then the horse was at the forefront of war technology, deemed a necessity rather than a liability during campaigns. Horseback riding was only adopted after centuries of chariot warfare and even then it was reserved for the elite. Cavalries were not used in battle until 850 BC.¹⁷ By this time, the use of the horse was fully entrenched in the logistics and mindset of the ancient military and would remain so for centuries.

The Napoleonic cavalry tradition of *arme blanche* consisted of many separate tactical aspects. Napoleon's cavalry was divided into a light division and a heavy division. The light cavalry was used to pursue the enemy as well as for scouting while the heavy cavalry was reserved for attacks on the enemy's flanks or rear and shock action.¹⁸ Both cavalries were employed in lined charges, usually two deep. Napoleon preferred to use his cavalries as an "instrument for shattering the enemy line."¹⁹ Napoleon's cavalry was armed with a sword, a sabre, a lance, and a firearm; however, they were too large, cumbersome, and could not be reloaded on horseback.²⁰ Napoleon valued his heavy cavalry force the most and, thus, the cavalry charge. Napoleon began deploying the cavalry against the infantry and the artillery with heavy losses.²¹ This trend of continued throughout the nineteenth century.

¹⁷ Olsen, *Horses Through Time*, 61.

¹⁸ Gunther E. Rothenberg, *The Art of Warfare in the Age of Napoleon* (Bloomington: Indiana University Press, 1978), 15.

¹⁹ *Ibid.*, 71.

²⁰ *Ibid.*, 72.

²¹ *Ibid.*, 141.

Beginning in the mid-eighteenth century, the pace of society quickly sped up to a fever pitch with the Industrial Revolution. Prior to the Industrial Revolution, Britain, as well as the rest of the Continent, relied on its own resources rather than on expanded trade to maintain economic prosperity. The Industrial Revolution changed the economic system in the Northern Hemisphere by increasing the amount of goods produced within each country. This abundance of goods allowed the European nations, as well as North America, to expand their trade relations. The Industrial Revolution in Europe and the United States allowed the booming growth in economics and population that led to the advancement of science and technology as well as the creation of enormous mass armies that led to the decline of the war horse in the twentieth century. The Industrial Revolution is a label for the rapid development of heavy weight production and is generally believed to have begun in 1735 in Great Britain, when coal was adopted for industrial use in iron smelting. The invention of smelting iron core with coal gave Britain the ability to rapidly develop and increase its iron production.²² Britain, as well as later other Western nations, was able to rapidly develop many technological innovations that would not have been possible without large amounts of iron products; this includes railways, automobiles, airplanes, tanks, and electricity. Prior to contemporary times, the horse was the greatest asset that both warring and peaceful man possessed. During the Industrial Revolution, new technology required a new term to describe its power. In 1783, James Watt created the term of “horsepower” to describe the power of the new movers. Watt defined one horsepower as the amount of work required from a horse to pull 150 pounds out of a hole that was 220 feet deep. Watts calculated the kinetic energy

²² Sima Lieberman, ed., *Europe and the Industrial Revolution* (Cambridge, MA: Schenkman Pub., 1972), 463-64.

as 33,000 ft-lb per minute. Two horses together produced over thirty hp.²³ By the 1920s, Henry Ford's Model T engine had approximately twenty-five hp.²⁴ By 1950, the average automobile engine possessed 150 hp.²⁵ Even during the Industrial Revolution, modern man depended heavily on horse power until manufacturing times matched the speed of technological development after World War II. The Industrial Revolution swiftly changed the dynamics of warfare with its mechanical inventions and ideas of mass production. Beginning in the 1850s, the horse began to experience a rapid decline in use in warfare as well as on the domestic front. The days of the horse faded into the past with the mechanization of the Western Powers during the Second World War.

Little has been written directly on the history of the horse's decline in warfare. In general, there exist five categories of academic research that pertain to this complex subject matter. The first category of research is economic and agricultural histories such as W. O. Blanchard's *Economic Geography of Europe*, Alexis Antsiferov's *Russian Agriculture during the War*, and Witt Bowden's *An Economic History of Europe since 1750*. These histories examine the effect of economics on the social fabric of nations. The second category is the anthropological history of the horse. This type of research includes such books as Sandra Olsen's *Horses through Time*, Elwyn Edward's *Horses: Their Role in the History of Man*, and Matthew Kust's *Man and Horse in History*. The third category is the history of different cavalries including the Marquess of Anglesey's *The History of the British Cavalry*, Janusz Piekalkiewicz's *The Cavalry of World War II*, and George Hofmann's *Through Mobility We Conquer: the Mechanization of the U.S.*

²³ J. Edward Chamberlin, *Horse: How the Horse has Shaped Civilizations* (New York: BlueBridge, 2006), 108.

²⁴ *A Ford Model T Frequently Asked Questions*, www.modelt.ca/faq.html. (accessed 01 July 2009), 1.

²⁵ Robert Sickels, *American Popular Culture through History: the 1940s*. (New York: Greenwood Pub., 2004), 208.

Cavalry. This type of research examines the individual histories of the various cavalries of different nations. The fourth category is the history of specific wars such as Norman Stone's *The Eastern Front 1914-1917*, Clive Ponting's *The Crimean War*, and John Keegan's *The Second World War*. This area of research is quite diverse and vast and examines the backgrounds and specific histories of individual wars. The final category of research is the history of technology. This includes everything from general histories to the history of individual inventions. As with the previous category, the research of technology is immense and includes such examples as Kenneth Macksey's works *Tank Warfare* and *Technology in War* and the multiple volume work of *The History of Technology*.

The eclipse of the war horse took a mere 100 years from 1850 to 1950 and during that relatively short span of time, the war horse went from a wartime necessity to a wartime oddity. During the Victorian Era and the early twentieth century, technology quickly replaced the horse's wartime responsibilities beginning with the railroad and ending with the motorized vehicles of World War I and World War II. Mechanization removed the need for horses in the areas of transportation, communication, and combat quickly as the decades passed. By the end of the Second World War, the horse was no longer the most valuable asset of an army. From the Crimean War to the end of the Second World War, technology methodically edged the horse out of its traditional roles in warfare and the home front, forcing it into a state of limbo no longer needed in society outside of being a guilty pleasure of times gone by.

The following chapters will progress chronologically from 1850 to 1945. Chapter Two will explore the employment of horses and the progression of modern technology

that began to replace the horse on the battlefield beginning with the Crimean War of 1853-1856, continuing with the American Civil War from 1861-1865, followed by the Franco-Prussian War of 1870-1871, and ending with the Anglo-Boer War of 1899-1902. Chapter Three will examine the effects of modern warfare on the employment of horses during the First World War. This chapter will examine the horse's combat experiences on the Western Front with its more traditional employment on the Eastern Front. It will also look at the development of warfare technology that quickly eclipsed the horse in the war including the automobile, the tank, and the airplane. Chapter Four will explore the swift passing of the horse on the Western Front during the Second World War as well as the resurgence of de-modernized warfare on the Eastern Front by the German and Soviet troop. Chapter Four will discuss the issues that these armies encountered that forced both sides to revert to horse-drawn movement. And finally, Chapter Five will conclude this treatise by briefly examining the complete decline of the horse in warfare as well as on the home front immediately following the war. This Chapter will also look at the horse's new role in man's society: the pleasure horse.

CHAPTER II

TECHNOLOGICAL CHANGES AND THE HORSE DURING THE VICTORIAN AND EDWARDIAN ERAS, 1850-1900

The Crimean War: The First Modern War to Signal the

Decline of the War Horse, 1853-1856

In 1929, an article in the *Cavalry Journal* professed that “the horse was the first animal of war, and it is inconceivable that war will ever be waged without him” and that it remained so for one hundred years after decades of declines.²⁶ The decline of the war horse began during the Crimean War, where trench warfare was first conceptualized. The Crimean War was the first modern war since the Napoleonic Wars where new technologies, tactics, and strategies played a major role in the outcome of the war. The Crimean War lasted from 1853 to 1856 and was fought over the question of sovereignty in Turkey. Both Napoleon III of France and Nicholas I of Russia claimed influence in the Ottoman Empire. The nations of France, Britain, Sardinia, and Turkey united against Russia in 1853, officially declaring war in March 1854. The war was fought on multiple fronts across the Russian frontier as well as into Western Turkey. The Treaty of Paris ended the conflict in February 1856. The war is named after the region of fighting that

²⁶ G.C.H.V. Anglesey, *A History of the British Cavalry, 1816 to 1919*, 5 vols. (London: Pen and Sword, 1982), 389.

garnered the most attention at the time, the Crimean Peninsula. The war was fought on multiple fronts including in the Baltic, in Central Europe, and on the Crimean peninsula in the Black Sea. Of the three fronts, the Crimean peninsula was the most influential of the war. The three major Allied powers of France, Great Britain, and Turkey battled Russia for influence in the collapsing Middle East. To protect its entire frontier, Russia had 270,000 men in the Baltic, 200,000 in Central Europe, and 60,000 in the Crimea at the beginning of the war.²⁷ The first major battle in the Crimea was the Battle of Alma where the Allied forces faced 33,000 infantry and 3,400 cavalry.²⁸ The Crimean War was the first time the railroad was employed by numerous militaries in wartime. The horse still was used by the British, French, and Russian armies to great extent; however, the Crimean War began the war horse's rapid descent from wartime necessity to wartime anomaly.

Throughout the nineteenth century, the Russian Army was the largest in the world with a peace strength of 900,000 and the ability to raise thousands of more through serfdom. Russia's social structure ordered landlords to send between three and six serfs for every thousand to enroll in the national army; this equates to between 60,000 and 80,000 a year.²⁹ The French Army was the second largest military force at 439,000 in 1850; however, during the war, the French strength was raised to 645,000 men.³⁰ Unlike the Russian and French Armies, the British army was stationed throughout its vast colonies. Its strength was estimated at 183,000 before the war, but the army to be sent to the Crimea only numbered 21,500 men. During the course of the war, the British landed

²⁷ Winfried Baumgart, *The Crimean War, 1853-1856* (New York: Oxford University Press, 1999), 64.

²⁸ Robert B. Edgerton, *Death or Glory: the Legacy of the Crimean War* (Boulder: Westview Press, 1999), 21.

²⁹ Baumgart, *Crimean War*, 63.

³⁰ *Ibid.*, 69.

close to 100,000 men in the Crimean region. The biggest scourge of the war was not bullets or shells but illness. More soldiers died due to disease than weaponry.³¹ Through its rotation system, Russia transported fresh troops to the Crimea from other fronts. Russia kept approximately 70,000 men in the area throughout the war, yet more than 300,000 soldiers were stationed there at some point during the conflict.³² The Industrial Revolution made these large numbers possible. Such massive numbers would have been unheard of prior to the Napoleonic Wars.

In his 1853 treatise on cavalry, Captain Louis Nolan of the British Army lamented that “of all arms, cavalry is the most difficult to handle in the field. It cannot engage an enemy except where the ground is favorable. It is always dependent on the condition of its horses. It is easily dispersed, and it easily gets out of hand. However brave and intrinsically good, it is of no use without good officers.”³³ After the war United States General George McClellan wrote that the Russian Cavalry was probably the best in Europe, yet the British heavy cavalry was “somewhat better” than its Russian counterparts, but neither the light cavalry of Britain nor the one of France could match the Russian animals.³⁴ During the war, the European cavalries were armed with carbines, lances, and sabers. The British also carried the newly developed Colt revolvers; however, the revolver was generally ignored by the cavalymen because it took two hands to cock the gun after each shot, making them difficult to handle during a galloping charge. During countless centuries of cavalry traditions, cavalymen carried down the opinion that they were superior to the infantry. Prior to the twentieth century,

³¹ Ibid., 78.

³² Ibid., 70.

³³ Louis Edward Nolan. *Cavalry: Its History and Tactics*, 1st ed. (Chicago: Westholme, 2007), 36.

³⁴ George Brinton McClellan, *European Cavalry, including details of the Organization of the Cavalry Service Among the Principal Nations of Europe*. (Philadelphia: J.B. Lippincott, 1861), 111.

the cavalry was comprised of wealthy aristocrats, especially among the officers; this added to the “air of immense superiority”.³⁵ The lance and saber were of limited use until the cavalry engaged the enemy’s nervous infantry. During the war, as with most conflicts, the cavalry charge depended mainly on courage and discipline rather than technology. During the war, the British and French forces kept their cavalries on the flanks and used them mainly for reconnaissance in a limited number of charges including the Charges of the Heavy and Light Brigades.³⁶ Despite McClellan’s glowing review of the Russian cavalry, it was mostly for show, only the dragoons, or mounted infantry, did well against the Allied forces. Generally, the Russian horses were smaller and lighter than their Allied counterparts. This created many problems for the Russian cavalry because the Russian riders tended to weigh much more than the French and almost as much as the British, who had stronger animals. The Russian cavalry was also forced to carry food and cooking supplies while the French and Britain had supply trains for that. As a result, the Russians cavalry marched incredibly slow, averaging ten kilometers a day with horses frequently being marched dismounted and receiving on day a week for rest.³⁷ As in the Napoleonic Wars, the cavalry remained an integral part of the Crimean War.

The most famous cavalry charge of all time occurred during the Crimean War and came in two parts. The Charges of the Heavy and Light Brigades of the British Cavalry took place on October 25, 1854. The light brigade was comprised of the 13th Light Dragoons, the 17th Lancers, the 11th Hussars, the 4th Light Dragoons, and the 8th Hussars while the Heavy Brigade was comprised of the 4th Dragoon Guards, the Royal Dragoons,

³⁵ Robert B. Edgerton, *Death or Glory: the Legacy of the Crimean War* (Boulder: Westview Press, 1999), 51-2.

³⁶ Clive Ponting, *The Crimean War* (London: Chatto and Windus, 2004), 23-4.

³⁷ Edgerton, *Death or Glory*, 61.

the Greys, and the 6th Dragoons.³⁸ The Heavy Brigade drove back the Russian cavalry after the artillery duel of 17th of October. The Charge of the Heavy Brigade was viewed as success; however, the subsequent charge of the Light Brigade has been viewed as one of the greatest blunders in military history. The Light Brigade was supposed to pursue the fleeing Russians, who were attempting to remove the captured British artillery guns from the Redoubts. The Commander of the Light Brigade, Lord Cardigan, received a vague order from Lord Raglan to charge the Russian troops. The aide who delivered the message, Captain Nolan, pointed at the Russian artillery rather than the captured guns; thus, sending the Light Brigade on its ill-fated charge. The Brigade charged through the valley toward the Russian artillery through cannon balls and bullets reaching the guns and killing several of the gunners before retreating back across the valley covered by the French army and the Heavy Brigade.³⁹ Nolan had carelessly pointed at the retreating Russian cavalry, who had established themselves behind their own artillery lines at the end of the North Valley instead of the Causeway Redoubts.⁴⁰ The Charge lasted a total of eight minutes.⁴¹ Upon their retreat, the Light Brigade collected and remained gathered for several hours while “stragglers and loose horses kept hobbling home, each being received by a hearty cheer at their unexpected appearance.”⁴² Captain Nolan was the first of the men killed during the charge.⁴³ This ill-fated charge left 118 men died and 127 were wounded on the ill-fated job. During the disastrous charge, 470 out of the original

³⁸ Mark Adkins, *The Charge: Why the Light Brigade was Lost* (London: Leo Cooper, 1996), 255.

³⁹ Baumgart, *Crimean War*, 127-31; Ponting, *Crimean War*, 135.

⁴⁰ John Selby, *Balaclava: Gentlemen's Battle* (New York: Atheneum, 1970), 148.

⁴¹ Ponting, *Crimean War*, 135.

⁴² Lord George Paget, *The Light Cavalry Brigade in the Crimea: Extracts from the Letters and Journal of the Late Gen. Lord George Paget, K.C.B., during the Crimean War* (London: John Murray, 1881), 171.

⁴³ Trevor Royle, *Crimea: the Great Crimean War, 1854-1856* (New York: Palgrave Macmillan, 2000), 274.

673 horses were killed, 42 were wounded, and 43 others were later destroyed due to wounds or sickness.

The Crimean War was the first to use the railway system for military purposes. The only railroad in Russia at the time was between Moscow and St. Petersburg. Because of this, the Russian Army needed months to transport troops and supplies to the front by horse. In contrast, the Western Powers built a good system of railways throughout the region and effectively used their navies to reach the Crimea more quickly than the Russians.⁴⁴ The Western Allies used these railroads to bring supplies from the harbor of Balaclava to the front lines.⁴⁵ Horses were transported by sea, which was extremely taxing on both man and beast. “Our first night on board was one not easily to be forgotten. We very soon began to encounter a heavy swell—the result of a recent gale—which increased as the night wore on, from which the men and horses (not having got their ‘sea-legs’) suffered much, and the result of which was the loss of two horses on this first night.”⁴⁶ Once the ship arrived in the Harbor, horses were deposited into the water and forced to swim ashore.⁴⁷ All of the combatants were plagued by supply shortages, mostly due to bad roads and shipping problems caused by overcrowding at Balaklava.⁴⁸ Because of the extreme shortages, both men and horses died of starvation. It is estimated that the British cavalry lost 1,800 of its 2,000 horses during the first two months.⁴⁹ Horses became too weak to haul their loads and sometimes resorted to eating each other’s manes and tails. Cavalry mounts were used to replace the

⁴⁴ Baumgart, *Crimean War*, 64.

⁴⁵ Norman Rich, *Why the Crimean War? A Cautionary Tale* (Providence: Brown University Press, 1985), 131.

⁴⁶ Paget, *Light Cavalry Brigade*, 2.

⁴⁷ Selby, *Balaclava*, 46.

⁴⁸ Baumgart, *Crimean War*, 141.

⁴⁹ Elwyn Hartley Edwards, *Horses: Their Role in the History of Man* (London: Willow Books, 1987), 155.

draft animals; however, they were not up to the challenge and quickly perished as well. During the first winter, the cavalry basically vanished.⁵⁰ As the weather worsened, the plight of the horses also worsened due to the lack of winter shelter and no transport to bring fodder to camp. Lord Cardigan ordered no animal be shot unless it had a broken leg or an incurable disease. As a result, the horses perished slowly of the cold and starvation in the Crimea.⁵¹ Supplies proved difficult to move because the carts also had to be loaded with so much fodder to keep the horses alive on the journey that hardly anything else could be carried. The Russian supply system fared worse because officers were simply given money and instructed to feed the horses themselves, yet most pocketed the money instead.⁵² The French army fared the best of all of the combatants. The French were able to sustain an army four times larger than the British despite its lack of shipping. The conditions remained harsh, but the French soldiers never suffered from the same horrors as the British.⁵³ The French horses suffered the same fate as the British horses, resulting in the cavalry being dismounted and double teams needed to move the lightest cargo loads. Men were often used to bring up the much needed supplies.⁵⁴ In general, the Russian army was better off than the British, but not as well off as the French. The Russians were also plagued by supply shortages despite the fact that the war was fought within its borders, all supplies had to be transported by wagon while the French and British had their railroad.⁵⁵

⁵⁰ Baumgart, *Crimean War*, 139.

⁵¹ Ponting, *Crimean War*, 160.

⁵² *Ibid.*, 175-76.

⁵³ *Ibid.*, 174.

⁵⁴ Alexander William Kinglake, *The Invasion of the Crimea, Its Origin, and an Account of its Progress Down to the Death of Lord Raglan*, 4 vols. (New York: Harper, 1888-1899), 4: 132.

⁵⁵ Baumgart, *Crimean War*, 142

The Crimean War ended the Concert of Europe as well as claimed hundreds of thousands of lives both in battle and by disease.⁵⁶ It was one of the last times that the massed formations of cavalry and infantry were employed using Napoleonic tactics and strategies.⁵⁷ With the end of the Concert of Europe, wars gripped the European nations fighting for territory, influence, and unity in some cases. The war ended the friendly relations between the Austro-Hungarian Empire and Russia, setting the stage for the rivalry that sparked the powder keg in the Balkans. The war bankrupted Russia, forcing numerous reforms throughout the nation including the end of serfdom and the start of Russia's Industrial Revolution; however, these reforms would prove ineffective at saving the Russian way of life. After the Crimean War, armies fought with more advanced weapons, beginning the war horse's decline in warfare.

⁵⁶ Baumgart, *Crimean War*, 216

⁵⁷ Alexis Troubetzkoy, *Brief History of the Crimean War: the Causes and Consequences of a Medieval Conflict Fought in a Modern Age* (New York: Carroll and Graf, 2006), 37.

The American Civil War: a Tale of Feuding Brothers and their Horses, 1861-1865

The Crimean War's technology, tactics, and strategies heavily influenced the American Civil War and the role of the horse in the war. Many historians have credited the American Civil War with the altering the use of cavalry forces to fit the change in modern warfare. The transformation from shock tactics to mounted infantry came quickly during the war as new technologies and tactics made the Napoleonic doctrine of shock action obsolete for both the Union and Confederate cavalries. Besides its other duties, the cavalry was trusted with both offensive and defensive missions. Both of these types of missions were a novel development in response to the growing threat of a costly war. Many historians debate the effectiveness of the offensive and defensive uses of the cavalry with regards to the war effort on either side of the battlefield; however, of the numerous uses of the cavalry forces, the new strategy of raiding proved to be the most effective use of the mounted infantry during the American Civil War.

Prior to the American Civil War, most of the experienced officers in the Union mounted service were from the South and when war erupted in 1861, almost all of them joined the Confederacy's cause for independence, giving the South an early advantage over the Union army.⁵⁸ The Southerners adapted to the life of a cavalryman more readily due to their upbringing in the "gentlemanly tradition of horsemanship" than their Union counterparts because most Northerners were from urban locations such as laborers and shopkeepers.⁵⁹ Most of the individuals in the North who joined the Union cavalry were from industrial and urban areas, most of whom "had grown away from the rigors of

⁵⁸ John K Herr and Edward S. Wallace, *The Story of the U.S. Cavalry: 1775-1942* (Boston: Little Brown Book, 1953), 88.

⁵⁹ Edward G. Longarce, *Mounted Raids of the Civil War* (New York: A.S. Barnes, 1975), 16.

outdoor life.”⁶⁰ However, the individuals from the Northwest, whose states were still attached to the “old frontier spirit,” were more like the Southerners. These individuals had been raised on farms or homesteads and had more experience with horses and mules than the men from the Eastern states.⁶¹

The main supply of mounts for the Confederacy came from many of the Border States including Kentucky, Tennessee, and Virginia as well as Texas.⁶² Despite this supply of mounts, the Confederate government passed an act on March 6, 1861, which stated that “each mounted volunteer was to furnish his own horse and horse equipment, for which he was to receive forty cents a day and pay for the horse if it should be killed in action.” The Provisional Government enacted the act for economic reasons as well as ideological ones, since it was believed that volunteers would take better care of their horses and equipment if it was their private property. However, as the war progressed, the act became a nuance to Lee because men who lost their horse to illness, injury, or in action were sent on furlough to find new horses, yet with the economy crisis in full swing the horsemen had trouble obtaining fresh mounts quickly, keeping them out of action for numerous months.⁶³

The Confederate cavalry in the Tennessee Army continuously outnumbered the Union forces in the West throughout the war. In the fall of 1862, the Confederates outnumbered the Union seven to three and nearly eleven to seven during the height of the Atlanta campaign.⁶⁴ Because of the South’s long history with horses, the Confederacy

⁶⁰ Herr, *U.S. Cavalry*, 117.

⁶¹ *Ibid.*, 118.

⁶² Charles W. Ramsdell, “General Robert E. Lee’s Horse Supply, 1862-1865,” *The American Historical Review* 35 (July 1930), 758.

⁶³ *Ibid.*

⁶⁴ J.P. Dyer, “Some Aspect of Cavalry Operations in the Army of Tennessee,” *The Journal of Southern History*. 8

possessed better mounts and a better knowledge of proper animal maintenance.⁶⁵

Contrary to the act of March 6, 1861, cavalrymen were not inclined to take their personally furnished horses in battle because they knew that the government would not follow through on paying for a new animal; thus, the cavalrymen worried more about their mounts safety than their own; this mentality render many cavalry units ineffective during the course of the Civil War.⁶⁶

As with all mounted cavalry units, maintaining mounts proved to be just as difficult for the Union army as supplying the animals. Unlike the Confederates, the Union cavalrymen knew little to nothing about being a cavalry soldier or horses in general.⁶⁷ Many horses were improperly shod until foraging in enemy regions produced an adequate supply of horseshoes. Many men used knives and hatchets to shod horses, which caused lameness due to hoof problems for the horse.⁶⁸ Another issue that arose due to the lack of experience with horses was ground feeding. The feed and hay should not be placed on the ground because it can lead to sand colic if the horse ingests too much sand or gravel. The Union cavalrymen repeatedly engaged in ground feeding, which caused large numbers of animals to become lame.⁶⁹

Compared to the Confederate cavalries, the Union cavalry units had enormous wastage in mounts. Men would overweigh their horses with extra supplies as well as improperly care for the animals such as giving them too much water after a long march. In general, the Union cavalrymen had less experience in the area of horse care than the

(May 1942), 212.

⁶⁵ Dyer, "Army of Tennessee", 213.

⁶⁶ Ibid., 214.

⁶⁷ Jerry Keenan, *Wilson's Cavalry Corps: Union Campaigns in the Western Theatre, October 1864 through Spring 1865* (Jefferson, NC: McFarland, 1998), 77.

⁶⁸ Ibid., 35.

⁶⁹ Ibid., 143.

Confederate cavalymen. The Union soldiers knew little about feeding, watering, packing, feet care, or wound care. All of these mistakes led to huge losses in animals due to lameness.⁷⁰

General Robert E. Lee pleaded repeatedly with the Provisional Government for aid both in the form of horses and supplies; however, the poor economic situation kept the Confederacy's hands tied. By 1864, the Provisional Government had devised a new way to fill the horse quotas quickly. The government told Lee to remove all horses not absolutely necessary for agriculture from Confederate farmers; however, the government underestimated the importance of these horses, for this act only worsened the economic and agricultural crises in the South.⁷¹ By 1865, no laws that the Confederate government passed could ensure victory over the Union forces. Inflation and supply shortages weakened all of the Southern armies beyond repair. Lee, too weak from the lack of mounts and supplies, became surrounded by Union forces, who eventually forced Lee to surrender in April 1865.⁷²

Like the shortages in weapons, the shortage in mounts stemmed from slow transportation and poor procurement methods by the Confederate government; however, unlike the weapon issues, the supply of horses in the Western theatre was plentiful. The total military population in the West in 1860 was 484,065 while the total horse population was 919,532, with Texas having the highest ratio of men to horses. Because of an ordinance by the Confederate government, all cavalry volunteers were ordered to supply their own mounts and equipment throughout the course of their military service. Each cavalryman was paid forty cents a day and compensated for the death of the animal

⁷⁰ Herr, *U.S. Cavalry*, 118-121.

⁷¹ Ramsdell, "Lee's Horse Supply", 763, 771.

⁷² *Ibid.*, 776-777.

in battle.⁷³ If mounts could not be furnished, cavalry units attempted to purchase animals from the local population and some even captured wild mustangs that roamed the Trans-Mississippi region.⁷⁴ The Confederate cavalries experienced heavy losses of mounts during the 1862-1863 winter campaigns in the West, almost all of these losses were due to lameness and disease rather than Union marksmanship. Horses became lame for many reasons including lack of horseshoes, diseases involving soft hoofs and sore tongues, and exhaustion due to long campaigns without rest. By Confederate law, dismounted cavalrymen had forty days to procure another animal or they would be transferred to the infantry.⁷⁵ These furloughs greatly depleted the Confederate forces throughout the war, creating opportunities for the Union armies to defeat the Confederacy. In 1863, the Confederate government passed a new law giving the cavalry commanders the power to seize all necessary animals and supplies from the local populations; this action created fear among the non-combatants in the Trans-Mississippi, leading them to fear their own cavalry units more than those of the Union.⁷⁶ By December of 1864, the shortages in supplies and mounts caused by the transportation deficiencies of the Confederacy forced the army commanders to reduce the strength of the cavalry units in the West, moving the dismounted cavalrymen to the infantry and the horses to artillery units.⁷⁷ However, this reduction did little to boost the number of victories for the South. By 1865, the cavalries as well as the infantries of the South were in shambles, weakened by long supply shortages and large Union victories. In April of 1865, Lee surrendered to General Ulysses S. Grant at Appomattox Courthouse; this was a demoralizing event for the other

⁷³ Oates, *West of the River*, 74.

⁷⁴ *Ibid.*, 75-76.

⁷⁵ *Ibid.*, 78-79.

⁷⁶ *Ibid.*, 80-82.

⁷⁷ *Ibid.*, 155-56.

Southern armies, leading to their own disbanding in the next month. The Army of the Trans-Mississippi surrendered on May 26, 1865.⁷⁸

Like the Confederate cavalry units, General James H. Wilson's corps suffered from supply and mount shortages during his campaigns in the Western theatre, though never to the extent that the Confederacy did. The biggest problem for Wilson was supplying healthy mounts and remounts to his troops. In the beginning of the campaign, the shortages stemmed from the stringent rules concerning the purchase of horses in the Union while the later shortages were caused by the lack of mounts in the immediate area.⁷⁹ By December 1, 1864, the Union government passed laws allowing cavalry units to impress all needed animals from the local region, including the Vice President's carriage horses. Within seven days of the passing of the Union impressment law, Wilson's troops were able to gather over seven thousand animals.⁸⁰ Another source for mounts during Wilson's campaigns in the West was the Ohio, Illinois, and Indiana regions. Between September and December of 1864, the Union government authorized the impressing of animals in these three states, in hopes that the new supplies would reduce the shortages in Wilson's cavalry corps. By April 1865, Wilson had captured the town of Selma and impressed a large number of horses and mules, which actually created a surplus of 500 animals. Rather than transporting the surplus elsewhere in the region, Wilson ordered that they be destroyed lest the animals fall back into Confederate hands.⁸¹ Wilson had "no qualms about destroying anything of military value, but was ready to

⁷⁸ Ibid., 159-161.

⁷⁹ Keenan, *Wilson's Cavalry Corps*, 26.

⁸⁰ Ibid., 78-79.

⁸¹ Ibid., 176.

countermand a destruct order if sufficient cause for its revocation could be demonstrated.”⁸²

The Civil War was a war of attrition to the special detriment of the Confederacy. The Confederate cavalries suffered from many of the some shortages felt by the infantry including food, clothing, and ammunition.⁸³ While railroads were used to bring supplies to armies in the field, they had to use horsepower to move the much needed supplies and equipment to the front lines and as the years dragged on the use of horsepower to find and move supplies was increased as the Union armies disabled the railroads. Because the railroads were under constant attack from the Union armies, General Lee and his cavalry units were forced to forage for food, supplies, and mounts in the surrounding territory.⁸⁴ The scarcity of supplies dictated Lee’s strategies for combating the Union armies in the Eastern theatre. Lee was forced to remain on the defensive for most of the war compared to the offensive, which Lee’s education demanded he maintain.⁸⁵ The Union was better supplied, equipped, and had a larger region to supply the necessary mounts than the Confederate troops.⁸⁶

Despite promising developments during the war, the cavalry on both sides experienced a retardation in evolution from its Napoleonic roots to the mobile arm of the army. Its development was slowed by leaders on both sides who lacked the vision to use the cavalry to its fullest potential. The Confederate cavalries in the West suffered at the hands of General Braxton Bragg and General John Bell Hood, who did not fully understand the cavalry’s potential and, therefore, limited their use to reconnaissance and

⁸² Ibid., 185-186.

⁸³ Herr, *U.S. Cavalry*, 95.

⁸⁴ Ramsdell, “Lee’s Horse Supply”, 760.

⁸⁵ Ibid.

⁸⁶ Ibid., 762.

raiding parties.⁸⁷ The other glaring evidence of mismanagement was General Bragg and General Hood limited use or misuse of the South's two most successful cavalry leaders, General Joseph Wheeler and General Nathan Bedford Forrest. Many historians believed that the South would have fared much better in the war had these two men been forced to work together. Had Wheeler operated as the eyes of the army, and Forrest in command of operating on Federal communications, the Army of Tennessee would have had an almost unbeatable combination, yet Bragg and Hood gave in to Wheeler's and Forrest's hatred of one another and kept the two men separate to the detriment of the Confederacy.⁸⁸ However, both the Union and the Confederacy was that both belligerents historically had little experience with operating, organizing, and implementing cavalry units and, thus, the cavalry was not used to its full potential on either side.⁸⁹

In the North, General William T. Sherman and General Grant were at odds over the use of Union cavalry in the last years of the Civil War. Sherman believed the cavalry to be an unnecessary arm of the Union army; thus, he did little to encourage its use in maneuvers.⁹⁰ Sherman believed that the only use of cavalry units in modern warfare was as raiding parties. General Grant, on the other hand, saw a potential in the cavalry as "mounted infantry" as shown by the Confederate cavalry under the command of Forrest. Grant ordered the tactics implemented in both the Eastern theatre under Sheridan and in the West under Wilson. Wilson was officially assigned to command all of the cavalry in

⁸⁷ Dyer, "Army of Tennessee", 215-217.

⁸⁸ Ibid., 217-223.

⁸⁹ Ibid., 224-225.

⁹⁰ Keenan, *Wilson's Cavalry Corps*, 3.

the West as part of Sherman's army in 1864 and became one of the most celebrated cavalymen of the Union army after his successes in the Western theatre.⁹¹

The cavalries of both sides used tactics from the Napoleonic Wars in the beginning of the Civil War, mainly the idea of a shock charge to frighten the infantry; however, with the advent of new technologies, this type of charge became suicidal, leading the leadership of both sides to adopt new tactics and strategies including raiding.⁹² The Confederate Army in Virginia under Lee used both horses and mules for mobility, mainly for the cavalry, the artillery, and moving supplies and equipment.⁹³ The cavalry saw huge developments in cavalry tactics, moving it from the realm of mobility to strategic operations such as raiding and reconnaissance.⁹⁴ The cavalry engaged in numerous activities when not in battle: the cavalry was expected to divert attention from the infantry, scout in enemy territory, carry on reconnaissance missions, carry messages to headquarters, escort field commanders, and clear paths for the main army.⁹⁵ Previously, the cavalry had been used by the Union to pursue fleeing enemy infantry after they had been defeated on the battlefield and for raids; however, Wilson saw the potential for the cavalry to be used both as a fighting force and as a means of pursuing the enemy.⁹⁶ During his campaigns in the Western theatre, Wilson used his cavalry corps as a primary striking force similar to the infantry. He ordered the cavalry to "fight alongside [the] infantry" before they continued their usual role in enemy pursuits.⁹⁷

⁹¹ Ibid., 5.

⁹² Herr, *U.S. Cavalry*, 89.

⁹³ Ramsdell, "Lee's Horse Supply", 759.

⁹⁴ Oates, *West of the River*, xv.

⁹⁵ Longarce, *Mounted Raids*, 11.

⁹⁶ Keenan, *Wilson's Cavalry Corps*, 110.

⁹⁷ Ibid., 221.

The Confederate armies used the cavalry for a variety of tasks such as front line fighting, digging trenches, covering flanks, pursuing the enemy after victory, covering the army in retreat, and screening infantry movements. The Confederacy also employed the cavalry to scout in enemy territories and patrol the regions surrounding the main army to watch for ambushes.⁹⁸ The Confederacy used the strategy of raiding as a “substitute for a more costly combat strategy” and that the main purpose of the raids was to limit the enemy’s ability to wage war; this meant attack any or all targets deemed valuable to the Union’s war effort including railroads and supply depots.⁹⁹ The strategy of raiding illustrated a divergence from the Napoleonic-cavalry doctrine of shock action and pursuit. Raiding gave the cavalry an active role in the Civil War, outside of costly battles. The use of raiding by both sides gave the cavalry a much needed purpose in modern warfare, allowing it to continue to develop into one of the most valuable branches of the military in the decades to come.

The only major innovation of the war was the expansion of the railroads around the world. Because of its head start in the Industrial Revolution, Great Britain was the first world power to connect its borders with railways. France’s railroad system began taking off during the reign of Napoleon III.¹⁰⁰ Both the German States and Russia did not really experience the railroad boom until the 1860s. By 1850, Great Britain possessed 7,000 miles of track, the United States had 9,000 miles while Russia only had 410 miles.¹⁰¹ After the disastrous results of the Crimean War, Russia significantly increased

⁹⁸ Christopher S. Dwyer, “Raiding Strategy: As Applied by the Western Confederate Cavalry in the American Civil War.” *The Journal of Military History* 63 (Apr., 1999), 264.

⁹⁹ *Ibid.*, 266.

¹⁰⁰ J.H. Clapham, *The Economic Development of France and Germany, 1815-1914* (Cambridge: Cambridge University Press, 1936), 149.

¹⁰¹ Edgerton, *Death or Glory*, 7.

its railroad construction. By 1900, Russia possessed 53,500 miles of track.¹⁰² While many historians contend that the rise of the railroads in Europe and America started the decline of the horse in society; however, the railways actually increased the demand for horses because more animals were needed to transport goods and supplies to and from the railroad heads.¹⁰³ Due to the advances in modern technologies such as the expansion of railways and the improvements to firearms, the American Civil War became the first total war where horses and the cavalry experienced a decline in effectiveness. The war illustrated the ineffectiveness of Napoleonic tactics; however, all Western cavalries continued to strictly follow these traditional doctrines for decades to come.

¹⁰² Arcadius Kahan, *Russian Economic History: the Nineteenth Century* (Chicago: University of Chicago Press, 1989), 29-30.

¹⁰³ Margaret E. Derry, *Horses in Society: A Story of Animal Breeding and Marketing, 1800-1920* (Buffalo: University of Toronto Press, 2006), 46-7.

The Franco-Prussian War: the Last Great Cavalry War, 1870-1871

The Franco-Prussian War continued to employ the war horse in its traditional role of transportation and cavalry; however, the advancements in warfare technology began to make the horse's role in warfare more precarious. The Franco-Prussian War saw developments in better artillery, better firepower, and better forms of the machine gun. The Franco-Prussian War officially began in July 1870 when Napoleon III of France declared war on the German principality of Prussia after much tension over the candidate for the vacant Spanish throne and the Ems Dispatch. Prussia, backed by many of the other members of the German Confederation, captured Paris within five months of invading France. The Treaty of Frankfurt ended the war in May 1871. France's defeat in the Franco-Prussian War created a deep hatred for the newly united Germany, leading to the tensions before the First World War. The Franco-Prussian War was one of the final wars of the modern age prior to the era of total war that characterized the twentieth century. The Franco-Prussian War was the last war to fully employ horses in the traditional vocations where new technologies did not alter the role of the horse in war drastically.

The Franco-Prussian War was the final war of the modern age prior to the era of total war that characterized the twentieth century. Prior to the war, the Prussian and French armies underwent many major renovations in technology, tactics, and structure. By 1866 both the Prussian and the French Armies converted their infantry from muzzle-loading rifles to the newer breech-loading ones. This new type of rifle allowed for more rapid firing and better accuracy. The main difference between these two nations was that the French continued to believe in the value of Napoleonic style shock tactics by massed

column.¹⁰⁴ However, these tactics did not take into account the unusual strategies of the Prussian Army under Moltke. The Prussian Army used the tactic of scrambling smaller units and the flanking attack. The French preferred narrow, fixed attacks straight on.¹⁰⁵ These smaller units skirmished in the front to cover the advancing army, while the full force crept ahead on the flanks.¹⁰⁶ The war between France and Prussia broke out in the summer of 1870 after conflict over who should ascend the Spanish throne and the Ems Dispatch, in which the French ambassador allegedly insulted the King of Prussia. France declared war on July 19 and promptly lost the conflict in less than a year after the capture of Napoleon III and the fall of Paris in January of 1871. Just prior to the outbreak of the war, Napoleon III divided the French Army into three forces: the Army of the Rhine at Metz, I Corps in Alsace, and IV Corps at Châlons. Napoleon III decided to take command of the Army of the Rhine personally despite having no military competency. Besides this division, the French Army never devised an actual war plan for handling a war with Prussia; this created confusion in the French mobilization.¹⁰⁷ In response to the division of the French forces, Moltke created a similar three-pronged formation of the Prussian Army to attack the French wherever it reared its head. The Prussians won the war not because the French Army's strategies or incompetency of its commanders, but because of the "chaos of the French mobilization." The French Army had to mobilize quicker than the Prussians to assure victory and they simply did not do so.¹⁰⁸ Within

¹⁰⁴ Geoffrey Wawro, *Franco-Prussian War: the German Conquest of France in 1870-1871* (New York: Cambridge University Press, 2005), 50-2.

¹⁰⁵ *Ibid.*, 55.

¹⁰⁶ *Ibid.*, 56.

¹⁰⁷ *Ibid.*, 50.

¹⁰⁸ Michael Howard, *Franco-Prussian War: the German Invasion of France 1870-1871* (New York: Macmillan, 1961), 66-7.

eighteen days, 1,800,000 men prepared for the war in Germany with 462,000 being transported to the French border to begin the campaign.¹⁰⁹

Since the Crimean War, the railroad system had made leaps and bounds, increasing 200 percent from the 1860s to the eve of the First World War. The railroad was the greatest contribution to the pace of the war. During the Franco-Prussian War, a single line could carry eight trains a day and twelve on a double line. By 1914, this number rose to forty and eighty respectively.¹¹⁰ The French mobilization was continuously hindered by railroad jams. Because France did not possess enough “strategic railways” including double-tracked trunk lines from the industrial and population centers of the country; chaos ensured throughout the nation. Prussia, on the other hand, placed its railroads, which were mostly double lines, with the vision of invasion in mind. French mobilization had to rely on single tracked lines that only traveled in one direction. Because of this railroad difference, it took France three weeks to mass an army Corps while Prussia accomplished the same task in three to five days.¹¹¹ The railways were most important during the mobilization period of the war. They proved to be of limited use as the Armies advanced because they were unable to effectively move supplies to the front.¹¹² The Prussian Army preferred to use continuously advancing supply bases to replenish its supplies. These bases were stationed at the rear of the Prussian Army and used the captured roads and railways to keep the Army in working order.¹¹³ Also, the Prussian transported entire regiments to the

¹⁰⁹ Ibid., 60.

¹¹⁰ Martin Van Crevald, *Supplying War: Logistics from Wallenstein to Patton* (Cambridge: Cambridge University Press, 1977), 111-112.

¹¹¹ Wawro, *Franco-Prussian War*, 74.

¹¹² Van Crevald, *Supplying War*, 104.

¹¹³ Thomas J. Adriance, *The Last Gaiter Button: A Study in the Mobilization and Concentration of the French Army in the War of 1870* (New York: Greenwood Press, 1987), 50.

front while the French rushed men from all of the regiments and assembled them at the front.¹¹⁴ The Franco-Prussian War was the first war to amass enormous forces in a short amount of time; this trend continued into the twentieth century and even dramatically increased. Between July 16 and August 6, the French Eastern Railroad transported over 315,000 men and 162,000 horses to the front while the Northern Railroad transported another 200,000 men and 15,000 horses.¹¹⁵

Before the outbreak of the war, France had 50,000 horses and required an annual supply of 7,000 for remounts. The Prussian Army had 75,000 horses and asked for 8,000 new mounts a year. The war quadrupled these figures. During the conflict, France estimated that it lost 150,000 animals while Prussia and the other German States lost more than one million horses, half of which were from disease and poor management.¹¹⁶ During the course of the Franco-Prussian War, Prussia increased its soldier to horse ratio from 1:4 to 1:3. This meant an increase in the quantities of fodder and grain to feed the increased number of horses.¹¹⁷ Both the cavalry and artillery experienced horse shortages on both sides. The French artillery had enough vehicles and guns to mobilize 396 batteries in 1870 but only had 17,000 of the 52,000 horses it required to complete the task. As a result of the widespread shortages, both cavalry and artillery officers were forced to purchase the required animals from the surrounding regions, which rarely went smoothly. Purchasing possessed its own problems including money hoarding and poor selection.¹¹⁸ The shortages would never be fully resolved during the war.

¹¹⁴ Wawro, *Franco-Prussian War*, 65-6.

¹¹⁵ Adriance, *Last Gaiter Button*, 104-5.

¹¹⁶ Borden, Spencer Borden, *What Horse for the Cavalry?* (Fall River, MA: J.H. Franklin, 1912), 1.

¹¹⁷ Van Crevald, *Supplying War*, 111.

¹¹⁸ Adriance, *Last Gaiter Button*, 74.

Like the wars previously fought, the cavalries of both sides found themselves in limbo between the battlefield and the sidelines. Traditionally, the light regiments of the cavalry carried out raids and scouting while the heavy regiments ran down fleeing infantry in the last phase of the battle; however, the improvements in rifles doomed these tactics, though both armies continued to attempt them during the war.¹¹⁹ The French cavalry refused to change with the progress of weapons and rose into battle “gaily uniformed” in massed squadrons. The Prussians, on the other hand, wore plain uniforms. The French Army also expected the cavalymen to supply their own mounts while the Prussian government provided the horses, making the Prussian cavalry less a traditionally aristocratic organization.¹²⁰ The chronic horse shortages retarded the mobilization of both sides because men had to be sent into the countryside to acquire the much needed animals.¹²¹ The Prussian cavalry attempted to reform themselves by instituting new tactics such as encircling the enemy and clinging to him as he advanced. The Prussian Army also was used their cavalry as advance guards, rear guards, and escorts as well as continuing their traditional role in reconnaissance.¹²² Many cavalry reformers called for the conversion of both the light and heavy regiments into mounted infantry units; however, few European armies “heeded to call.”¹²³ Cavalry charges became absurd because of the improved firepower of rifles. Charges had to be started at further and further distance to limit the effectiveness of the rifles; horses were, thus, exhausted by the time they reached the enemy 1,000 to 2,000 yards away.¹²⁴ Because of the long distance

¹¹⁹ Wawro, *Franco-Prussian War*, 60.

¹²⁰ *Ibid.*, 62-3.

¹²¹ Adriance, *Last Gaiter Button*, 74.

¹²² Wawro, *Franco-Prussian War*, 62.

¹²³ *Ibid.*, 60.

¹²⁴ Lieutenant-Colonel Bonie, et al., *Cavalry Studies from Two Great Wars* (Kansas City, MO: Kimberly Pub., 1896), 61.

artillery pieces, both cavalries decided it was best to employ their forces on the flanks rather than in head on charges. Frontal charges were deemed as “wasting our courage in this useless manner.”¹²⁵ One of the last successful cavalry charges of the modern age was known as “Von Bredow’s Death Ride.” Von Bredow’s men approached French batteries outside of Vionville and surprised the unorganized French soldiers. Despite their initial success, the Prussian cavalry overran the French gun line and clashed with two brigades of French cavalry. The survivors retreated through a hail of fire to their own line with only half of their original 800 men.¹²⁶ The developments in technology ended the cavalry charge after the war, but that did not keep commanders from clinging to the tradition well into the twentieth century.

One of the advancements that did signal the decline of the war horse was the improvement in firepower. This improvement can be divided into two categories: firearms and machine guns. Firearms began to improve over their Napoleonic predecessors in the 1850s with the repeater rifle and hand gun.¹²⁷ Previously the Napoleonic muskets were only accurate to 300 feet while the newer breech-loading rifles of the 1860s and 1870s were accurate to 1,000 to 3,000 feet.¹²⁸ The newer breech-loading rifles also allowed soldiers to reload at a faster rate. The higher accuracy rate and the quicker loading time made cavalry units more vulnerable during charges. These better firearms also gave nervous infantrymen an added dose of courage, making the shock tactic of the charge less effective. The other improvement in firearms was the invention of the machine gun. The first machine gun was the Belgian *mitrailleuse*, which

¹²⁵ Ibid., 111-2.

¹²⁶ Howard, *Franco-Prussian War*, 157.

¹²⁷ Kenneth Macksey, *Technology in War: the Impact of Science on Weapon Development and Modern Battle* (New York: Prentice Hall Press, 1986), 31.

¹²⁸ Howard, *Franco-Prussian War*, 157.

was invented in 1851. The most famous machine gun was the Gatling gun, which was invented in 1861 by the American Dr. Richard Gatling. The Gatling gun was a rotating, hand-cranked weapon capable of firing 200 bullets a minute.¹²⁹ In the late 1860s, the Belgians made improvements to the *mitrailleuse*, creating the very successful Montigny *mitrailleuse* version. The French Army preferred to use the Montigny *mitrailleuse* during the Franco-Prussian War.¹³⁰

After the Franco-Prussian War, an “equine crisis” occurred through Europe and the British Isles from the large quantities of horseflesh purchased and destroyed during the conflict. This massive shortage created an opening for North American breeders, who began supplying Britain and the rest of Europe with fresh stock. Between 1895 and 1900, Britain received approximately eighty percent of its horse imports from Canada and the United States. The Franco-Prussian War itself had grave effects on Europe. The outcome of the war sparked a deep hatred between France and Germany, which led to forming of alliances throughout the continent. These alliances as well as many other tensions between the nations of Europe changed the course of world history in the form of the First World War.

¹²⁹ Macksey, *Technology in War*, 31.

¹³⁰ Edward Jablonski, *Knighted Skies: a Pictorial History of World War I in the Air* (New York: Putnam, 1964), 33.

The Anglo-Boer War: Mounted Cavalry
Command the World's Attention, 1899-1902

The open warfare of the Anglo-Boer War in South Africa influenced the view many future British commanders held about the employment of the cavalries in Europe. This conflict also showed the limits of the horse in modern warfare both in acquisition and maintenance of the British horse population in another hemisphere. The Anglo-Boer War is actually the second conflict in the region between the British and the Boers. The first conflict lasted from 1880 to 1881 and is also known as the Transvaal War. The Anglo-Boer War began in October 1899 and lasted until May 1902. In 1899, the British Empire declared war on the two major Boer Republics in South Africa, i.e. the Orange Free State and Transvaal Republic. War declared after the British Government sent an ultimatum to the Boers Republics ordering the Boers to recognize the equality of the new South African population of *uitlanders*, foreigners mostly of British heritage who migrated to the region to work in the gold mines of Transvaal. The Anglo-Boer War lasted until May 1902 and the British victory resulted in the annexation of the two Boer Republics to the British Empire. The Anglo-Boer War was the first conflict to use both modern tactics as well as modern technologies against a less advanced region. The British amassed an enormous horse population in South Africa during the war as well as employed the automobile in the conflict. The war heavily influenced the fighting of the First World War as well as signaled the slow death of the horse cavalry in Europe and America.

In his treatise on the British war horse in the Anglo-Boer War, Rimmington stated that “the commander must suit his campaign to his horses, not his horses to his

campaign;” however, the British military once again refused to do just that.¹³¹ As with all wars, the Anglo-Boer War was “bedeviled” by the hydra of transportation: trains and livestock.¹³² The British Army shipped thousands of horses to South Africa to fight the rebelling Boers and just like during the Crimean War, the horses were unloaded at the docks or made to swim ashore before being collected in a stockyard.¹³³ After the stockyards, the horses were loaded onto the main railway and transported to the front for employment. The number of horses that passed through this remount system was extraordinary. The British Army tended to “swallow horses as a modern army swallows petrol.”¹³⁴ Because of the massive wastage, the British Army created the Army Veterinary Department in 1878 and in 1892 it provided one “Sick Horse Hospital” to accompany every Army Corps in South Africa. These hospitals had a 300 horse capacity and were stationed at the rear. The hospital also acted as the Corps’s remount depot.¹³⁵ The imported horses suffered from local diseases, which prompted the British Army to also use the hardier local animals.¹³⁶ During the course of the war, the British lost most of their horses due to starvation, disease, and overexertion.¹³⁷ Rimmington believed that teaching British soldiers the “art of good horse management” would save the British Army “many millions of pounds and the horrible cruelties to animals who are our best friends and allies in war.”¹³⁸

¹³¹ M.F. Rimmington, *The Horse in Recent War* (Dublin: A. Thorn, 1904), 13.

¹³² Thomas Pakenham, *The Boer War* (New York: Random House, 1979), 401.

¹³³ General William H. Carter, *U.S. Cavalry Horse* (Guilford, CT: Lyon Press, 2003), 398.

¹³⁴ Pakenham, *Boer War*, 401-2.

¹³⁵ G.C.H.V. Anglesey, *A History of the British Cavalry, 1816 to 1919*, 5 vols. (London: Pen and Sword, 1982), 334.

¹³⁶ Anglesey, *British Cavalry*, 4: 291.

¹³⁷ Bill Nasson, *The South African War, 1899-1902* (London: Arnold, 1999), 297.

¹³⁸ Rimmington, *The Horse in Recent War*, 12.

With the British Army racing through its remount resources, it needed to purchase large quantities of horse-flesh and ship them to South Africa. Since “the efficiency of the cavalry depend[ed] upon their horses” it was believed that the purchasers needed to specialize in buying horses.¹³⁹ Rimmington states that the British had been misinformed about the horse supply in South Africa and, therefore, believed it needed to import all of its required horse population. At the start of the war, it was believed that South Africa offered few horses and of the ones available, none would be of use to the British Army. Thus, the Army decided to purchase itself remounts from locals as well of other countries.¹⁴⁰ Remounts were purchased in many different countries including Hungary, Canada, the United States, Argentine, and Australia.¹⁴¹ Rimmington estimated that the Boers actually possessed three mounts for each of its 70,000 men, or approximately 210,000 horses. Rimmington states that “I think I may fairly say that we were unprepared and mistaken in our estimate of there being no horses in South Africa.”¹⁴²

At the beginning of the war, the British determined that the Army would lose at minimum one-third of its horse population during the course of the conflict.¹⁴³ The British Cavalry fought the war with carbines and sabers as well as lancers on occasion; however, as the war dragged on the British Cavalry was forced to temporarily adopt the mounted infantry approach, using rifles rather than the traditional cavalry weapons.¹⁴⁴ The Boers, on the other hand, knew their smaller horses would never defeat the British in

¹³⁹ Anglesey, *British Cavalry*, 4: 279.

¹⁴⁰ Rimmington, *The Horse in Recent War*, 4.

¹⁴¹ Anglesey, *British Cavalry*, Vol. 4, 295.

¹⁴² Rimmington, *The Horse in Recent War*, 5.

¹⁴³ *Ibid.*, 15.

¹⁴⁴ Peter Warwick, ed., *The South African War: the Anglo-Boer War, 1899-1902* (Harlow, Essex: Longman, 1980), 69.

traditional warfare, so they adopted mounted guerrilla warfare.¹⁴⁵ Because the Boers preferred guerilla warfare, the British Cavalry spent much of its time waiting for an opportunity to perform the traditional cavalry charge. Because the cavalry could not point to either success or failure during the war, its commanders believed that the warfare in South Africa to be a fluke and would not be repeated in the future; therefore, they continued to emphasize the *arme blanche* style of fighting over the adopted tactics of mounted infantry.¹⁴⁶ Because of this traditional mentality, the British commanders believed that had the Boers used the traditional form of cavalry tactics, they might have been more successful.¹⁴⁷ An unusual byproduct of the war was that British gray horses were camouflaged with a zebra-like effect so that the Boers would have more difficulty see them at a distance.¹⁴⁸ This illustrates how important the horse still was to the British.

At the beginning of the war, the British Army estimated that it would need five percent of the total horse strength each month in replacements. In November 1899, only 125 cavalry horses and 250 mules were believed to be needed to fill this quota; however, as more and more units were called up, the monthly requisition was duly increased. By January 1902, the British Army required 14,000 horses and 2,000 mules a month.¹⁴⁹ After the close of the war, it was estimated that one-tenth of the total cost of the war was horse-flesh.¹⁵⁰ From 1899 to 1902, the British shipped over 800,000 people and 420,000 animals.¹⁵¹ Of the number of animals, 309,000 were horses.¹⁵² Most of the horse losses

¹⁴⁵ William L. Taylor, "The Debate over Changing Cavalry Tactics and Weapons, 1900-1914," *Military Affairs* 28 (Winter 1964-65), 174.

¹⁴⁶ Anglesey, *British Cavalry*, 4: 402-3.

¹⁴⁷ Anglesey, *British Cavalry*, 4: 403.

¹⁴⁸ Nasson, *South African War*, 150-1.

¹⁴⁹ Anglesey, *British Cavalry*, 4: 298.

¹⁵⁰ Rimmington, *Horse in Recent War*, 1.

¹⁵¹ Anglesey, *British Cavalry*, 4: 298.

¹⁵² Borden, *What Horse for Cavalry*, 3.

for the British Army were caused by poor management. A total of 326,000 of the total 494,000 horses employed by the British Army were lost during the war with only a small portion being the result of enemy fire.¹⁵³ Despite shipping a few lorries to South Africa during the war, the British Army remained dependent on the horse to transport supplies, artillery, and soldiers.¹⁵⁴

None of the European Powers adopted the cavalry lessons of the Anglo-Boer War. They all remained utterly committed to Napoleon's idea of *arme blanche*. Even during the Manchurian War, the Russians firmly believed that the cavalry with the most offensive spirit would decide the outcome of the war.¹⁵⁵ In 1905, Sir John French even wrote that "it would never be forgotten that it is only by the employment of 'shock tactics' and the superior morale of the highly trained horseman wielding sword and lance, that decisive success can be attained."¹⁵⁶ In 1909, Sir Douglas Haig also wrote that while charges may be fewer in future battles, the army must keep the cavalry for when the opportunity arises, they will result in decisive success. Thus, "the mounted attack must always be our ideal, our final objective."¹⁵⁷ During the First World War, both French and Haig held to their beliefs in the cavalry despite the evidence of its limitations during all of the conflicts of the Victorian Era.

The years surrounding the Anglo-Boer War were ones of accelerated technological development. In 1885, Hiram Maxim created a more compact version of the machine gun. The Maxim was smaller and used the power from its recoil to eject and chamber shells. The Maxim was also cooled by water, which was one of the main flaws

¹⁵³ Edwards, *Horses*, 155.

¹⁵⁴ Derry, *Horses in Society*, 116.

¹⁵⁵ Anglesey, *British Cavalry*, 4: 418-9.

¹⁵⁶ *Ibid.*, 388.

¹⁵⁷ *Ibid.*, 420.

of the previous models. Both the Gatling gun and the *mitrailleuse* overheated easily. The Maxim was the first fully automatic machine gun. All the soldier had to do was load the belt, aim, and hold the trigger down. The Maxim could pour out bullets at the rate of 500 rounds a minute.¹⁵⁸ The final improvement in the machine gun was the Lewis gun. In 1913, Colonel Lewis improved on the existing Maxim gun. The Lewis gun was almost exactly like the Maxim except for the fact that the Lewis gun was air cooled. The removal of the bulky water cooling system meant that the new Lewis machine gun was much lighter and easier to handle.¹⁵⁹

The next invention that sparked the decline of the war horse was the automobile. The development of electricity gave way to electric streetcars as well as the first automobile. The first car was battery powered; however, by 1889 the electric car was being quickly replaced by the first gas powered ones. Daimler of Germany patented the first version of the gas powered automobile in 1885.¹⁶⁰ His version only had three wheels, while the first four-wheeled was patented in 1889 by Benz in Germany.¹⁶¹ As well as producing cars, the auto industry also produced lorries, or trucks, in significant numbers. The first armored car appeared in 1899 as well as 1902. These cars were armed with machine guns and a primitive form of body armor. However, the European armies did not seem to be interested in the armored car until the First World War.¹⁶² As manufacturing technology improved, society's interest in the automobile increased both on the home front and for the military. The British Army created the Motor Volunteer

¹⁵⁸ Macksey, *Technology in War*, 40-1.

¹⁵⁹ Aaron Norman, *The Great Air War* (New York: Macmillan, 1968), 24.

¹⁶⁰ Charles Singer, ed., et al., *A History of Technology: the Late Nineteenth Century, Volume 5: c 1850 to c 1900* (New York: Oxford University Press, 1958), 164.

¹⁶¹ *Ibid.*, 427.

¹⁶² Macksey, *Technology in War*, 48.

Corps in 1903, which attempted to utilize the automobile for military purposes.¹⁶³ Prior to Henry Ford's invention of the moving assembly line in 1908, automobiles were expensive and scarce. Many people viewed the car as a fad for the rich rather than the replacement of the horse.¹⁶⁴ However, the moving assembly line decreased the cost of production and increased the availability of the car to the public. In 1910, the British possessed 144,000 vehicles and 390,000 by 1914.¹⁶⁵ The United States possessed 175,000 in 1910.¹⁶⁶ In comparison, Britain had 1,545,000 horses in 1910.¹⁶⁷ With the introduction of motorized taxis to the London streets, the London Omnibus Company replaced its horses at a rate of 150 a day.¹⁶⁸ During the early twentieth century, a common sentiment about horses among motorized advocates was that "automobiles can be made in a week. A battleship takes two or three years. A horse cannot be bred and reared and trained so as to be serviceable for hard work, in less than six years, one while the mare carries him, three while he grows to an age where his training can begin, two for him to mature and complete his education."¹⁶⁹

Another motorized invention that would in time replace the horse in agriculture and in the military was the Caterpillar track-type tractor. The Holt Brothers of California invented the track-type tractor in 1904 and it would later be the inspiration for the British tank "Mother" during the First World War.¹⁷⁰ The final motorized machine that would eventually replace the horse in warfare was airpower. The two significant developments

¹⁶³ Anglesey, *British Cavalry*, 4: 443.

¹⁶⁴ Derry, *Horses in Society*, 41.

¹⁶⁵ Mitchell, B.R. Mitchell, *British Historical Statistics* (New York: Cambridge University Press, 1988), 557.

¹⁶⁶ Borden, *What Horse for Cavalry*, iv.

¹⁶⁷ Mitchell, *British Historical Statistics*, 202.

¹⁶⁸ Derry, *Horse in Society*, 119.

¹⁶⁹ Borden, *What Horse for Cavalry*, v.

¹⁷⁰ Reynold Wik, "The American Farm Tractor as Father of the Military Tank," *Agricultural History* 54 (January 1980), 126.

in airpower was the motorized airplane in 1903 by the Wright Brothers and the airship in 1904 by Count Ferdinand von Zeppelin.¹⁷¹ These aerial developments would take over the role of reconnaissance from the cavalry during the Great War.

¹⁷¹ Trevor I. Williams, *A History of Technology: the Twentieth Century, Volume 7: c. 1900 to c. 1950* (New York: Oxford University Press, 1978), 797-8.

CHAPTER III

THE CLASH OF THE TITANS: THE EUROPEAN WAR HORSE VERSUS TECHNOLOGY THE FIRST WORLD WAR IN EUROPE, 1914-1919

The Clash of Muscular Power and Mechanized Power on the Western Front

“I tell you it is the vilest baseness to use horses in the war.”¹⁷² This quotation from Remarque’s masterpiece, *All Quiet on the Western Front*, expresses the feelings many soldiers had about the use of horses during the First World War. Despite this opinion, horses were an integral part of the war effort for all of the belligerent nations. While the war on the Eastern Front was characterized by mobility and the cavalry maneuvers, the Western Front in France and Belgium was defined by stagnation and advancing technologies. The war horse was mainly localized to mundane tasks rather than the “noble” cavalry charges of bygone days. Trench warfare and the technology it birthed made the traditional cavalry role obsolete; however, the horse’s primary role as a beast of burden remained relatively unchanged until the mechanization of labor entered full swing in the postwar period. The horse’s main role was in transportation especially supplies, munitions, messages, weapons, and the dead. These tasks, though mundane in nature, formed the building blocks of an army’s success on the Western Front, especially

¹⁷² Erich Maria Remarque, *All Quiet on the Western Front* (Boston: Little, Brown Book, 1929), 64.

for the Allied forces. Because the horse remained a vital asset to the Allied war effort on the Western Front, maintaining a healthy population was of the utmost importance; included feeding, housing, health services, and the acquiring of replacements.

Acquiring a European Horse Population

The first goal for the British army after declaring war was to acquire an adequate supply of horse flesh. Within the first twelve days of the war, the British military impressed over 165,000 animals.¹⁷³ Horses were purchased first from farms and then from urban centers as the supply of farm horses thinned out.¹⁷⁴ When Britain had exhausted their resources the government turned to Canada, Australia, and later America for imports.¹⁷⁵ By the end of the war in November 1918, it was estimated that America provided Britain with close to half a million horses and over a quarter of a million mules.¹⁷⁶ During the war, the ratio between horses and mules with the British Army on the Western front was three to one respectively.¹⁷⁷ America was asked to provide three different categories of horses: one, cavalry mounts, two, light artillery horses, and three, heavy artillery horses. The categories were based both on the height and weight of the animal with cavalry mounts being the shortest and lightest and the heavy artillery animals the tallest and heaviest. America was able to easily supply the artillery horses from its large stock of farm horses; however, the United States had difficulty acquiring cavalry mounts because “the cavalry horse as we know him in England does not exist in North America in any numbers which are appreciable for modern war requirements.”¹⁷⁸

¹⁷³ John Singleton, “Britain’s Military Use of Horses 1914-1918,” *Past and Present* 139 (May 1993), 184.

¹⁷⁴ Peter Dewey, *British Agriculture in the First World War* (London: Routledge, 1989), 192-193.

¹⁷⁵ Singleton, “Military Uses,” 186.

¹⁷⁶ *Ibid.*, 186.

¹⁷⁷ Sidney Galtrey, *The Horse and the War* (London: “Country Life,” 1918), 86.

¹⁷⁸ *Ibid.*, 34-35.

Imported horses were first sent to Britain for classification and evaluation and then shipped to one of the five remount depots in France. From there the animals were disseminated throughout the allied armies on the Western Front.¹⁷⁹ By September 1917, the United States had over 35,000 trained animals ready for deployment in Europe.¹⁸⁰ Horses were viewed as so important to the war effort that Britain, France, and the United States passed luxury taxes on items that were viewed as frivolous in wartime; this including taxes on horse races, non-agricultural horse breeds, carriages, and riding accessories.¹⁸¹ Nations placed such a high priority on the safety of its horse population that many horses were issued gas masks after gas warfare began in 1915. The photograph in Figure 1 shows a cavalryman and his horse preparing for a gas attack on the Western Front.¹⁸²



Figure 1

¹⁷⁹ Ibid., 61.

¹⁸⁰ Phil Livingston and Ed Roberts, *War Horse: Mounting the Cavalry with America's Finest Horses* (Albany, TX: Bright Sky Press, 2003), 32.

¹⁸¹ Ernest L. Bogart, *Direct and Indirect Costs of the Great World War* (New York: Oxford University Press, 1920), 21-230.

¹⁸² Tom Pendergaust, et al., *World War I Almanac* (Detroit: UXL, 2002), 142.

Role of Horses

While mechanized machines were available on the Western Front, their numbers were very limited, making the horse the primary “machine” of labor for the army. The horse was essential to everything from transportation, artillery, front maintenance, and the mounted forces. With a few exceptions, the taxis of the Marne and tanks after the Somme, mechanized machines were relegated to labor far from the front.

The first role of the horse was in the transportation of supplies to the front. Horses transported supplies from the assembly points to the front lines, where few machines could travel due to poor road conditions. Motor trucks transported the supplies from the railroads to the assembly, since the railroads rarely traveled close enough to the front. The assembly points usually lay approximately five miles from the front, at which time horse-drawn wagons and pack animals carried the supplies the rest of the way. The heavily cratered terrain close in the front had a tendency to become miles of mud after rain, making them impassable for everything but horses.¹⁸³ In some incidences, the terrain was almost too poor for horses and their wagons becoming engulfed in the mud like in Flanders and at the Somme. At this point the supplies were unloaded and put on pack animals to continue the journey to the front.¹⁸⁴ Figure 2 illustrates the use of horses for transporting supplies to the front.¹⁸⁵

¹⁸³ Singleton, “Military Use,” 190.

¹⁸⁴ Galtrey, *The Horse*, 78.

¹⁸⁵ Archibald Home, *The Diary of a World War I Cavalry Officer* (Tunbridge Wells, Kent: Costello, 1985), n.p.

Figure 2



The second role of the horse was that of artillery transport. The artillery of World War I grew to sizes of enormous proportion. With trucks and tractors in short supply on the front, horses once again continued their traditional role as artillery transportation. An average six to eight animals, whether draft horses or mules, were used to move a single artillery piece.¹⁸⁶ Toward the end of the war, military leaders began experimenting with self-propelled artillery guns, as well as other mechanical forms of transportation. This slowly began to replace the horse in artillery mobility. However, the artillery did not become fully mechanized in the British or American armies until the end of the inter war period.¹⁸⁷ Figure 3 shows the harsh conditions that horses faced on the Western Front. This image is of horses transporting artillery shells through the mud at the Battle of the Somme in 1916.¹⁸⁸

¹⁸⁶ Galtrey, *The Horse*, 14-15.

¹⁸⁷ H.G. Bishop, *Field Artillery: the King of Battles* (Boston: Houghton Mifflin, 1935), 14.

¹⁸⁸ Richard Holmes, *The First World War in Photographs* (London: Imperial War Museum, 2001), 178.



Figure 3

The third use of horses during World War I was in front maintenance. This classification included everything from maintaining communication lines to repairing trenches to maintaining roadways. The region known as the Western Front was originally farmland. The Allied forces had to construct miles of new roadways to reach the front. Horses transported the stone materials from the quarry trucks to the construction area. By the armistice more than 3,500,000 tons of road material had been transported by both motor vehicles and horses to maintain the roads on the Western Front.¹⁸⁹ Horses were needed to help repair poorly constructed trenches as well. They transported the timber needed for the duckboards at the bottom of soggy trenches as well as to carry sandbags to reinforce the crumbling walls.¹⁹⁰ Horses also transported wood needed to build shelter for the troops.¹⁹¹ In the area of communication, horses laid the telephone and telegraph wires from the front to the Allied Headquarters.¹⁹² Horses

¹⁸⁹ Jon E. Lewis, *The Mammoth Book of Eye-witness History of World War I* (New York: Carroll and Graf, 2004), 468-69.

¹⁹⁰ Neil Heyman, *Daily Life during World War I* (Westport, CT: Greenwood Press, 2002), 48-9.

¹⁹¹ John R. Jeanneney, "The Impact of World War I on French Timber Resources," *Journal of Forest History* 2 (Oct., 1978), 226.

¹⁹² Bishop, *King of Battles*, 59-60.

carried messengers when motor vehicles were unable to transverse the poor terrain.¹⁹³

The average weekly issue of communication cables was 3,300 miles with as much as 6,500 miles being built in any given week during the war.¹⁹⁴

The final use of the horse was for the cavalry. Trench warfare, which characterized the Western Front in World War I, did not allow for the traditional use of cavalry as shock troops. This is in strict contrast to the fighting on the Eastern, Middle Eastern, and Egyptian fronts, where mounted forces played a key role to the region such as T.E. Lawrence in Palestine. Most cavalry units were kept in reserve as military leaders hoped to use them should a break thorough in the lines occur; however, when few gaps appeared, the cavalry was reduced to mounted forces, whose steed was only used to move the soldier from location to location quickly.¹⁹⁵ The use of cavalry units was also reduced by the employment of the machine gun and barbed wire by the Germans from the outset of the trench war. During the first days of the war in 1914, the British cavalry learned the lesson of machine guns quickly when the horses of the 9th Lancers froze in the face of the lines and lines of barbed wire in No Man's Land and were mowed down by machine gun fire.¹⁹⁶ Cavalry units were also used for reconnaissance missions when airplanes could not due to weather issues.¹⁹⁷ Figure 4 illustrates the last category of horses during the First World War: the cavalry mount.¹⁹⁸

¹⁹³ Ibid., 67-68.

¹⁹⁴ Ibid., 467.

¹⁹⁵ Richard Holmes, *The Western Front* (New York: TV Books, 2000), 59.

¹⁹⁶ Louis DiMarco, *War Horse, A History of the Military Horse and Rider* (Chicago: Westholme, 2008), 318.

¹⁹⁷ Sheffield, *War on the Western Front*, 174.

¹⁹⁸ John Keegan, *An Illustrated History of the First World War* (New York: Alfred A. Knopf, 2001), 376.



Figure 4

Fodder and Veterinary Corps

Horses were purchased first from farms and then from urban centers as the supply of farm horses thinned out.¹⁹⁹ When Britain had exhausted their resources the government turned to Canada, Australia, and later America for imports.²⁰⁰ By the end of the war in November 1918, it was estimated that America provided Britain with close to half a million horses and over a quarter of a million mules.²⁰¹

The logistics of maintaining a large horse population in France proved to be an enormous task for the Allies. Not only did the Allies have to ship the animals from Britain to France, and beyond to the Middle East, but they had to maintain the health of the animals through proper food and veterinary services. As previously mentioned, horses were transported to France from Britain where they were then sent to remount depots. These remount depots were situated within easy access to both the railroads and

¹⁹⁹ Peter Dewey, *British Agriculture in the First World War* (London: Routledge, 1989), 192-3.

²⁰⁰ Singleton, "Military Uses," 186.

²⁰¹ *Ibid.*

the roadways to the front.²⁰² The British had to import almost all of their fodder, both oats and hay, from the British Isles and North America. Table 1 shows the British agricultural output during the Great War, including the output of fodder for the military’s animals.

Table 1: British farm output structure, 1914-18						
Percent of total output						
	1.909-13	1914	1915	1916	1917	1918
Cereals and potatoes	16.6	16.6	17.3	14.9	18.8	26.1
Dairy produce	16.8	17.7	17.1	16.6	15.2	13.9
Livestock	40.5	38.4	38.2	38.8	36	29.8
Other	26.1	27.3	27.4	29.7	30	30.2

The “other” category is comprised of mostly hay or straw as well as hops, poultry, and fruit. Over the course of the war the percentage of total output for the “other” category increased much like the cereals and potato category. This was due to the increased requirements for food and fodder to feed the increased amount of soldiers and horses on the numerous battlefronts. It has been estimated that the British Army that its horses in France consumed approximately 70,000 tons of hay a month during 1917.²⁰³ Due to the high demand for oats and hay at the front, the British home front experienced rationing of these particular staples. The British government even placed restrictions on horse-racing, claiming that the race-horses were unnecessarily reducing the fodder supply in the Isles;

²⁰² Galtrey, *The Horse*, 61.

²⁰³ Dewey, *British Agriculture*, 212-213.

however, many historians now believe that there was underlying motive behind the restrictions. John Singleton contends that the restrictions were the government’s way of assaying “public hostility toward frivolities when men were suffering and dying at the front.”²⁰⁴

Because horses were vital to the war effort, their health was extremely crucial to military activities. Poor health and abusive conditions created massive wastage in France. Britain, and later the United States, created the Veterinary Corps to reduce the wastage of animals at the front. At the beginning of the war, the Royal Army Veterinary Corps was comprised of 519 individuals. By the armistice, the corps had been expanded dramatically to 27, 502 individuals.²⁰⁵ This increase in personnel clearly illustrates the British Army’s desire to effectively maintain the health of animals at the front as well as a general goal of reducing the amount of wastage due to curable diseases and wounds. The British Army estimates for the percentage of horse and mule wastage during the Great War is located in Table 2, which is below.

Table 2: Percentage of Animal Wastage, i.e. Deaths, in the British Army

	1914	1915	1916	1917	1918	Average
United Kingdom	4.61*	9.98	11.75	15.81	16.3	11.69
France	12.58*	14.32	14.09	28.5	24.24	18.75
Egypt	NA	11.77	14.2	13.24	11.13	12.6
Mesopotamia	NA	NA	1.83^	8.23	6.02	5.36

* only four months of fighting

^ only three months of fighting

²⁰⁴ Singleton, “Military Use,” 197.

²⁰⁵ *Statistics of the Military Effort of the British Empire during the Great War, 1914-1920* (London: War Office, 1922), 189.

The British Army estimated that the replacement of horses employed by civilian firms to be twenty percent per year while the Army lost ten percent per year, meaning the Army lost fewer animals on average than did the home front. During the last two years of the war, the Veterinary Corps experienced a major influx of animal casualties due to supply issues, increased fighting on muddy terrain, and an increase in contagious diseases like glanders. Because of the extreme conditions that the horses at the front faced, they were prone to respiratory, skin diseases, and exhaustion.²⁰⁶

Mobile veterinary units were usually attached to combat divisions. Their job was to either destroy wounded animals on site or evacuate the casualty to clearing stations for further evaluation and emergency treatment. Stable cases were then evacuated from the clearing stations to the main hospitals in horse-drawn ambulances or by motor vehicles. In Figure 5, the photograph below, wounded horses are being transported from the front to a veterinary hospital by cart.²⁰⁷



Figure 5

²⁰⁶ *Military Effort*, 879.

²⁰⁷ Lyn Macdonald, *1914-1918: Voices and Images of the Great War* (London: Michael Joseph, 1988), 79.

Gunshot wounds and gas accounted for only a small percentage of the horse fatalities. In contrast, horses usually died from exhaustion and disease. Due to the Veterinary Corps's valiant efforts, the average wastage percentage for the whole of the British Army was under fifteen percent compared to the seventeen percent for the French Army and eighty percent during the Crimean War.²⁰⁸ Another way for the British and American Armies attempted to reduce the annual waste on the Western Front was to keep the front line soldiers from abandoning wounded or sick animals on the side of the road. In a memorandum in 1918 to the Veterinary Corps, General John Pershing ordered every member of the mobile veterinary sections to evacuate as many of the savable animals as possible to designated collecting sections behind the lines before the unit was set to move out. General Pershing also ordered that all of the dead animals be buried immediately should the local population not want the carcass.²⁰⁹

After War Service

When the war ended on the eleventh of November in 1918, the Veterinary Corps job was far from over. Along with recuperating the animals, the Corps was responsible for separating the animals suitable for civilian life back in Britain and United States from those selected to be sold off the rest to the local population; this second option was known as "casting". Between November 1918 and March 1920, the British Army transported and sold approximately 140,000 horses in Great Britain, with ninety-five percent of those sold for labor. During that same time, the Army sold close to 238,000 animals in France and Flanders with eighty-two percent for labor and approximately 185,000 animals in all of the other theaters of the war, including Egypt and the Middle

²⁰⁸ Singleton, "Military Use," 198-99.

²⁰⁹ Louis Merillat and Delwin Campbell, *Veterinary Military History of the United States*, 2 vols. (Chicago: Veterinary Magazine Corp., 1935), 886.

East with about ninety-two percent of those animals sold for labor. Of the three major zones of auctioning, France purchased the largest amount of cast animals for meat at eighteen percent of their total purchased population. In total the British Army sold approximately 420,000 animals abroad or seventy-five percent of the war stock.²¹⁰ The United States sold over 177,000 horses and mules in Europe immediately following the armistice.²¹¹ Despite the huge uproar on the British home front and threats from the R.S.P.C.A. to withdraw its support for the war effort, the British Army continued to resell their horse population to French farmers and butchers as well as to Egyptians. The British public was outraged at these practices because it was believed that neither country could properly care for them.²¹² As it turned out, the British public's concern for the horses in Egypt was actually warranted. In 1930, during a trip to Egypt with her husband, Mrs. Dorothy Brooke discovered the terrible living conditions of the former British war horses.²¹³ The vast majority were ill or weak from disease, poor feeding, overloaded during their work, or completely lame. In an endeavor to relieve their suffering, Dorothy Brooke created the "Old War Horse Fund." The purpose of the organization was to purchase the remaining stock of war horses in Egypt and fill their few remaining years with peace and relaxation.²¹⁴ She also established the "Old War Horse Memorial Hospital" in 1934 for horses as well as all other animals in need of

²¹⁰ *Military Effort*, 397.

²¹¹ Livingston, *War Horses*, 32.

²¹² Singleton, "Military Uses," 201.

²¹³ Dorothy Brooke, *For Love of Horses: Diaries of Mrs. Geoffrey Brooke* (ed. Glenda Spooner. London: Isis Large Print Books, 1960), 1.

²¹⁴ *Ibid.*, 13.

veterinary services.²¹⁵ In all, Dorothy Brooke's foundations rescued more than 5,000 war horses.²¹⁶

Conclusion

In the years that followed World War I, mechanical machines came to dominate both the battle front and the home front. Improvements in the technology of automobiles, tanks, and tractors pushed horse power to the background. The new, more reliable machine came to replace horses and especially the cavalry of all of their military roles. The cavalry was no longer needed for reconnaissance of communications and with the more powerful automobiles the horse was no longer required for load bearing transportation. By the end of World War II, the only remaining military role for the horse was in parades.²¹⁷ While World War I has been commonly characterized as the first modern war because of the use of numerous modern weapons like airplanes, machine guns, and tanks, WWI was actually a war dominated by horse power. Trench warfare and the destruction of land it created meant that the war horse would remain an integral part of the Allied war effort. Because of its vitalness at the front, the Allied forces devoted a great deal of resources to the maintaining of their horse population on the Western Front.

Maintaining the Status Quo on the Eastern Front

The experiences of the Eastern Front were far from those of the Western Front. The Western Front was a war of attrition and stagnation while the Eastern Front was one

²¹⁵ Ibid., 108.

²¹⁶ Ibid., 126.

²¹⁷ Arthur Vernon, *History and Romance of the Horse* (Boston: Waverly House, 1939), 368.

of mobility and open warfare.²¹⁸ The Eastern Front appeared to be primitive in comparison to the technology orientated battles of the West. The Russian and German armies fought much like they did in the nineteenth century, with infantries and cavalries. The war on the Eastern Front lasted longer than it should have had the German High Command not sent only one of its eight armies to fight against the Russian steamroller.²¹⁹ Compared to the Western Front, the war in the East was costlier in terms of human life during the first two years of the war; however, by 1916 with the battles of Verdun and the Somme begun, the West exceeded the loses on the Eastern Front. By the time Russia exited the war in 1918, the Eastern Front had “two-fifths less dead, one-half the number of missing, and one-third fewer wounded than the West.”²²⁰ Another characteristic of the Eastern Front was the severe supply shortages in the Russian Army. The Russian Army chronically was short on food, weapons, clothing, and fodder. These shortages slowed the full Russian mobilization, forcing the Russian Army to send its soldiers into battle without the proper equipment or with obsolete equipment.²²¹

Unlike the landscape of the Western Front, the lands of Poland, East Prussia, and Russia were flat plains without proper drainage systems or a marshy bog like the Mazurian Lakes district. The rivers of the East did not cut deep trenches; thus, during the wet seasons, the rivers tended to overflow, adding to the wet environment of the East. The wettest of the Eastern Front kept the German and Russian armies from engaging in the destructive trench warfare of the West.²²² The land of Poland did not provide a large

²¹⁸ Vejas Gabriel Liulevicius, *War Land on the Eastern Front: Culture, National Identity, and German Occupation in World War I* (Cambridge: Cambridge University Press, 2000), 21.

²¹⁹ Michael S. Neiberg, *Fighting the Great War: a Global History* (Cambridge: Harvard University Press, 2005), 42.

²²⁰ Liulevicius, *War Land*, 22.

²²¹ Neiberg, *Fighting Great War*, 38-9.

²²² Douglas Johnson, *Topography and Strategy in the War* (New York: H. Holt, 1917), 55-8.

amount of road material; thus the roads of the region were poor and almost impassable during the wet seasons. The land also made it difficult to construct proper railways.²²³ Because of the preference for river travel and sled transportation in the winter months, road maintenance system was almost nonexistent outside of postal routes.²²⁴ The roads were “rutted and dry” in the summer and swallowed men, horses, and vehicles when wet.²²⁵ Just like on the Western Front, horses died like flies in the quagmire of the mud from drowning or exhaustion.²²⁶

As previously stated, the Eastern Front was comparatively technologically backwards. At the start of the war, the Russian Army owned only 679 motorized vehicles including 418 tracked vehicles and two ambulances. To this the army added 418 privately requisitioned motor cars.²²⁷ By the end of 1916, the Russian Army had 12,100 automobiles, 3,050 motorcycles, and 12,300 bicycles. To show how much smaller the Russian Army’s supply of motorized vehicles, in 1918 the French Army, a force more than half the size of the Russian Army, had 90,000 cars alone.²²⁸ The Russian air supplies were even smaller than the number of motorized vehicles. Russia had the smallest air force of the major powers. At the beginning of the war, the Russian Army only had 263 airplanes, 229 pilots and observers, and 12 balloon companies. By September 1916, the Russians possessed 716 planes and 859 pilots and observers.²²⁹ This is compared to the thousands of pilots and planes owned by the British, French, and German forces.

²²³ Ibid., 82.

²²⁴ Kahan, *Russian Economic History*, 28.

²²⁵ Liulevicius, *War Land*, 28.

²²⁶ Ibid., 97.

²²⁷ Lieutenant-General Nicholas Golovine, *The Russian Army in the World War* (New Haven, CT: Yale University Press, 1931), 149.

²²⁸ Ibid., 149.

²²⁹ Ibid., 150.

In 1910, when the latest horse census was taken in the Western world, Russia far exceeded the rest of Europe in the number of animals it possessed compared to its population: for every 100 inhabitants Britain had 3.6 horses, France had 8.1, Germany had 6.9, and Russia had 21.3 horses. The only western country to beat Russia was the United States with 25.0 horses per 100 people.²³⁰ Before the war broke out in 1914, the Russian Empire possessed 35 million horses.²³¹ The horses of Russia can be divided into three categories: the peasants' horses, the horses of the nomadic tribes, and the premier breeds owned by the wealthy landowners. 86 percent of the 35 million horses were of the peasant stock with the remaining 14 percent divided between the nomadic tribes and the aristocracy.²³² During the course of the war, Russia requisitioned approximately 2,600,000 horses for military use; that was about ten percent of the mature horse population available in the Russian Empire.²³³ In comparison, the German Army employed 715,000 horses on both the Western and Eastern Fronts.²³⁴ The military requisitions were very hard on the Russian peasant population. Peasants were ordered to present all of their animals for mandatory horse reviews, at which time the Russian Army may or may not pay for the animals being requisitioned. Because the peasants relied on their horses for survival, many peasants hid their animals in cellars or in nearby forests to avoid the reviews. At the horse reviews, peasants were forced to accept whatever price the army offered them as well as sign papers stating that the sale was entirely voluntary.²³⁵

²³⁰ Alexis N. Antsiferov, et al., *Russian Agriculture during the War* (New Haven: Yale University Press, 1930), 123.

²³¹ *Ibid.*, 83.

²³² *Ibid.*, 86-7.

²³³ *Ibid.*, 117-8.

²³⁴ John Keegan, *An Illustrated History of the First World War* (New York: Alfred A. Knopf, 2001), 68.

²³⁵ Liulevicius, *War Land*, 67-8.

Russia hoped to win the war quickly by focusing all of its industrial energy on heavy industry; this, created chronic shortages in both consumer goods and basic military supplies.²³⁶ Unlike the Western powers, Russia did not impose any taxes on horses, horse-drawn vehicles, or horse accessories like many of the Western nations did.²³⁷ This is most likely because the horse drawn military and society of Russia could not afford to pay taxes on objects that were crucial to the everyday function of society. Also, Russia's horse population came mainly from the poorer sections of society; individuals whose very survival depended on their horse. To acquire the necessary animals, supplies, and vehicles for the army, the Russian government compensated most peasants for their property. Peasants were paid between 200 and 500 rubles for the property, depending on its type and condition.²³⁸ With so many horses being purchased or confiscated by the Russian Army, the agriculture sector of the nation suffered in various ways including a decrease in production as well as a shift in livestock demographics. The largest group of horses in Russia became those under four years of age, those too young to work.²³⁹ To compound matters in the agriculture sector, 1917 experienced one of the worst harvests in decades.²⁴⁰ The poor harvest caused a shortage of food stuff in the major cities, forcing citizens to protest in the streets. The poor harvest is one of the leading causes of the Russian Revolutions of 1917.

The main uses for horse on the Eastern Front were much like those in the West: transportation, communication, and the cavalry. In 1914, Russia had the largest cavalry of all of the belligerent nations. It was divided into four major groups: the Guards, the

²³⁶ Peter Gatrell, *The Tsarist Economy, 1850-1917* (New York: St. Martin's Press, 1986), 185.

²³⁷ Bogart, *Direct and Indirect Costs*, 119-41.

²³⁸ Liulevicius, *War Land*, 68.

²³⁹ Antsiferov, *Russian Agriculture*, 126.

²⁴⁰ Golovine, *Russian Army*, 173-4.

Line, the Cossacks, and the Alien troops.²⁴¹ On the eve of the war, the Russian cavalry numbered 117 regiments of 1,200 men each: twelve Guards, twenty-one Dragoons, seventeen Lancers, eighteen Hussars, forty-one Cossack regiments, three regiments from the Caucasus and Turkestan regions, and five regiments of border guards.²⁴² Compared to the other warring cavalries, the Russian cavalry was quite well mounted. The troops rode on animals that were more than three-fourths Thoroughbreds, the most coveted horse of warfare, for its Arabian qualities and hardiness. The Russian cavalry took much time and consideration to choose the best animals for its cavalry and remount services.²⁴³ On the Eastern Front, the Russian commanders were surprised at the ineffectiveness of their cavalry units against the German infantry. The cavalry units wandered at the front barely in contact with one another or the main army. The information they gathered was usually old or incorrect. The downfall of the cavalry was that the German infantry carried some of the most accurate guns of the warring nations. Their weapons could fire fifteen rounds a minute and were accurate at two miles.²⁴⁴ The Russians attempted to institute much needed reforms in the spring of 1916. At first, each cavalry division had attached to them an infantry battalion of three dismounted squadrons, but later in the year, the Army reduced the mounted strength of the regular cavalry and the Cossack cavalry from six to four squadrons each.²⁴⁵ The dismounted men were assigned to the infantry. The remaining mounted cavalrymen were kept waiting behind the front lines for a breakthrough, much like the cavalries of the West.²⁴⁶

²⁴¹ Martin Windrow, ed., *Men at Arms: The Russian Army, 1914-1918* (Oxford: Osprey, 2001), 13.

²⁴² Alexis Wrangel, *The End of Chivalry: the Last Great Cavalry Battles, 1914-18* (New York: Hippocrene Books, 1982), 2.

²⁴³ *Ibid.*, 11.

²⁴⁴ Norman Stone, *The Eastern Front, 1914-1917* (New York: Charles Scribner's Sons, 1975), 50.

²⁴⁵ Windrow, *Russian Army*, 15.

²⁴⁶ *Ibid.*, 37.

Though fought on the same continent, the Western and Eastern fronts had little similarities. Technology played a major role on the Western front while the Eastern front lagged behind in the nineteenth century. The one common thread in the war was the continued heavy reliance on horses by all of the belligerent nations. Armies employed horses at all levels of warfare during the First World War from transportation to front maintenance to the cavalry. This reliance showed that the Western Powers were not ready to give up their ancient supply work force.

The Failure of Technology to Supplant the Horse on the Western Front

The horse's mobility, versatility, and large quantities were still highly prized by the military leaders of Europe compared to the modern mechanized machines, which remained scarce. The cheapness of the horse both in acquisition and maintenance allowed it to remain unsurplanted until the outbreak of the Second World War. The horse remained vital at the front due to the use of trench warfare, the utter destruction of the landscape, the scarcity and newness of mechanized machines, and an affinity for the creature by the top military leaders such as Sir John French and Sir Douglas Haig. The horse continued to be used in its traditional role as a beast of burden as well as a cavalry mount, albeit it in a greatly diminished capacity compared to the other theaters of the war. The application of trench warfare, destruction of the landscape on the Western Front, and the scarcity of mechanized machines kept technology from supplanting the horse during the First World War; thus, making the continued use of horses vital to the Allied war effort.

Technology

The most important technological advances during the war were the use of the automobile, the airplane, and the tank. The first massive deployment of the automobile was in September 1914 when General Joseph Gallieni ordered 1,200 taxi drivers to rush 6,000 soldiers to the Battle of the Marne. The following photograph, Figure 6, shows the “Miracle of the Marne.”²⁴⁷



Figure 6

The automobile and the lorry attempted to replace the horse’s transportation responsibilities. Cars and lorries were used to move supplies and men to and from the front as long as the roads permitted them to do so. If the roads were wet or not located close enough to the front, horses were still used to move the supplies the rest of the way. At the beginning of the war, the British Army had only eighty motor vehicles. This force had expanded to more than 121,000 vehicles by the end of the war.²⁴⁸ As previously stated, the Wright Brothers flew the first motorized airplane in 1903.²⁴⁹ There was a relatively quick progression from the Wright Brothers’ Flyer I to the Fokker Bi and

²⁴⁷ Jablonski, *Knighted Skies*, 28.

²⁴⁸ Jay M. Winter, *The Experience of World War I* (Oxford University Press, 2005), 95.

²⁴⁹ Charles H. Gibbs-Smith, *The Invention of the Aeroplane, 1799-1909* (London: Faber and Faber, 1966), 34.

Triplanes for the war. While the first airplanes could barely stay aloft before 1910, the combat planes could drop bombs, fly reconnaissance missions, and engage in dog fights over the heads hiding in the dirty trenches. Aces were viewed as ancient knights, fighting with honor and a code unto themselves. These pilots began to replace the cavalry as the keepers of tradition, adventure, and honor.²⁵⁰ Airplanes replaced the horse's duty in reconnaissance missions. The Juggernaut Car of Battle, as one filmmaker called the tank, was first tested in February 1916 by the British.²⁵¹ The tank, which was in the shape of a rhombus, could cross flat ground at a rate of 100 to 120 yards per minute and could cross the 11 foot wide trenches at a rate of 30 to 40 yards per minute, crushing the wire entrenchments as it went. It could also climb over an obstacle that was five feet high.²⁵² Figure 7 illustrates the power of the tank over bared wire.²⁵³



Figure 7

²⁵⁰ Ibid., 35.

²⁵¹ Lieutenant Geoffrey H. Malins, *How I Filmed the War: a Record of the Extraordinary Experiences of the Man Who Filmed the Great Somme Battles Etc.* (London: Imperial War Museum, 1920), 230.

²⁵² Brevet-Colonel J.F.C. Fuller, *Tanks in the Great War, 1914-1918* (London: John Murray, 1920), 49.

²⁵³ John Hamilton, *Weapons of World War I* (Edina, MN: ABDO and Daughters, 2004), 14.

The tank was first deployment during the Battle of the Somme.²⁵⁴ The Germans were horrified by this invention and many fled their trenches at their first glimpse of them.²⁵⁵ A filmmaker who was filming the Battle of the Somme commented that “Fritz must have thought the devil himself had broken loose from hell and was advancing to devour him. The Huns scurried to their funk-holes and craters, their hiding-places, and their trenches like so many rabbits.”²⁵⁶ The Germans viewed the tank as a terror weapon rather than tactical one and, thus, produced very few during the war.²⁵⁷ The Germans were more content to salvage captured British tanks than build their own.²⁵⁸ The British and the French would produce more than 6,000 tanks during the course of the war while Germany only built twenty. The United States only produced 84 during the war, but preferred to use French machines when necessary.²⁵⁹ The tank acted as the new cavalry during the war. It attempted to breach the trenches in much the same way that Sir Haig had hoped the cavalry would do.

Friends in High Places

During the Great War, the horse had the adoration and loyalty of many of the military leaders, the most famous of which were Sir John French and Sir Douglas Haig. Sir John French was the Commander-in-Chief of the British Expeditionary Forces till 1915. Prior to his promotion, Sir French was originally trained as a cavalryman and fought as such during the Boer War. Though his promotion to the position of Field-

²⁵⁴ Patrick Wright, *Tank: the Progress of a Monstrous War Machine* (New York: Viking, 2002), 38.

²⁵⁵ John Glanfield, *The Devil's Chariots: the Birth and Secret Battles of the First Tanks* (Gloucestershire: Sutton Pub., 2001), 157.

²⁵⁶ Malins, *How I Filmed the War*, 232.

²⁵⁷ Kenneth Macksey, *Tank Warfare: a History of Tanks in Battle* (New York: Stein and Day, 1971), 38.

²⁵⁸ Guy Hartcup, *The War of Invention: Scientific Developments, 1914-1918* (New York: Brassey's Defence, 1988), 91.

²⁵⁹ Ross F. Collins, *World War I: Primary Documents on Events from 1914 to 1919* (Westport, CT: Greenwood Press, 2008), 356.

Marshal meant he could no longer be a cavalryman on the battlefield, Sir French continued to value the use of the British cavalry in modern warfare. According to his son, Sir John French devoted much of his life to the “study of cavalry and its employment in war” and was a “staunch upholder of the "cavalry spirit," [believing] the fostering of this spirit to be an essential part of a cavalryman's training.”²⁶⁰ Like French, Douglas Haig trained as a cavalryman prior to his promotion to General. After French returned to Britain to command the British Home Forces, Haig was promoted to the Commander-in-Chief of the British forces on the Western Front. Haig was convinced that the cavalry would be needed to conquer the trenches once a breach was made, thus, he positioned thousands of cavalymen just behind the front lines to wait for just such a breakthrough.²⁶¹ In his war diaries, Haig exalted the deployment of the cavalry and remarked numerous times that all his cavalry needed was a breakthrough to claim victory over the Germans.²⁶² And while Haig preferred to use horses in warfare, he was open to the use of mechanized machines in battles, when they were available. Toward the end of the war, Haig argued that horses were more versatile than motor vehicles because they can “operate in the dark and in bad weather.”²⁶³ Haig was for mobility not cavalry. He was open to the use of other mobile arms such as tanks and bicycles; however, the limited supply of motorized vehicles forced Haig to continue to use the horse on the battlefield. General Galtrey was also very partial to the use of horses in war, the cavalry especially. He commented that “In my opinion the day must come in

²⁶⁰ Gerald French, *The Life of Field-Marshal Sir John French, First Earl of Ypres* (London: Cassell, 1931), 66.

²⁶¹ Martin Gilbert, *The Somme: Heroism and Horror in the First World War* (New York: Henry Holt, 2006), 27.

²⁶² Douglas Haig, *Douglas Haig: War Diaries and Letters, 1914-1918* (ed. Gary Sheffield and John Bourne. London: Weidenfield and Nicolson, 2005), 84-470.

²⁶³ Singleton, “Military Use,” 202.

the closing stages of the war when cavalry will play its own great part. It will operate at the end as it did at the beginning but with this difference, that cavalry when used in an advance in conjunction with modern methods and engines of war must be more vitally important and essential than when used in defence.”²⁶⁴ All of these military leaders, as well as many others, felt that the horse was just more reliable than a motorized vehicle on the Western Front. General H.G. Bishop summed up the belief of many military leaders during the First World War best when he wrote:

Until the gasoline replacement comes up, the motor is riveted in place; but with the horse, a little rest, a little water, a little stubble from the roadside or bark from the trees, a little chafing of palsied muscles, oftentimes just a little petting — and the forward march can be resumed. Another predominating reason is the fact that no motor vehicle has yet been produced which can replace the horse on individual work, such as scouting, wire-laying, line-riding, and messenger service, over rough, heavily wooded, or marshy ground.²⁶⁵

General Ludendorff wrote at length about his concerns for his army’s horse population. He worried that his horses were not receiving the proper food and shelter at the front and that the fodder and oat were scarce most of the time.²⁶⁶ On numerous occasions, Ludendorff wrote in his memoir that we wrote the Army Headquarters Staffs complaining about the poor treatment of the horses, suggesting that “they should devote more care and attention to their horses.”²⁶⁷

There were a few dissenting voices in the British Army, though. The most famous being the voice and ideas of J.F.C. Fuller, an officer and a strategist during the Great War. He was first assigned to the Machine-Gun Corps and then the Tank Corps.

²⁶⁴ Galtrey, *The Horse and the War*, 15.

²⁶⁵ Bishop, *King of Battles*, 67-8.

²⁶⁶ General Ludendorff, *My War Memories, 1914-1918*, 2 vols. (London: Hutchinson, 1919), 1: 184.

²⁶⁷ *Ibid.*, 185.

Fuller later became known as an early theorist of modern mechanized warfare, particularly noted for his philosophy on the use of tanks. Fuller believed that tanks should be used as shock troops, like the heavy cavalry under Napoleon I.²⁶⁸ He also contends that “as the mobility of the tank increases so must it be realized that the opportunities of using tanks as mechanized cavalry can become greater and greater.”²⁶⁹ Finally, Fuller predicted that airplanes and tanks would develop a similar relationship that the cavalry and the infantry had throughout the centuries.²⁷⁰ Fuller’s ideas greatly influenced the mechanization of the European and American Armies during the Interwar period. His tank tactics became the foundation for the use of tanks on the Western Front during the Second World War. Another proponent of mechanization in the war was the British Prime Minister Lord Asquith. Asquith argued with Haig constantly over the large horse population being maintained in Europe by the British Army. He wrote that “they were only there for prospective use when we had broken through. We are maintaining in France an enormous number of horses which [are] temporarily useless.”²⁷¹

Trench Warfare and Technology

After advancing through Belgium using the Schlieffen Plan, the German Army was halted 30 miles outside of Paris at the First Battle of the Marne in early September 1914. The Allies and Germany thus began the “Race to the Sea,” a frantic competition to out maneuver one’s enemy before they reached the English Channel. This line of trenches stretched 475 miles from the North Sea to the frontier of Switzerland.²⁷² With

²⁶⁸ Brian Holden Reid, *J.F.C. Fuller: Military Thinker* (New York: St. Martin’s Press, 1987), 42.

²⁶⁹ *Ibid.*, 55

²⁷⁰ *Ibid.*, 56

²⁷¹ Robin Prior and Trevor Wilson, *The Somme* (New Haven, CT: Yale University Press, 2005), 13.

²⁷² John Ellis, *Eye-deep in Hell: Trench Warfare in World War I* (New York: Pantheon Books, 1976), 10.

both sides unable to find a gap in their enemies' defenses, the massive armies dug in and spent the next four years fighting over the same region of battleground with neither gaining more than a few miles in either direction. The type of fighting that characterized the Western Front has come to be known as "trench warfare." This type of warfare involves lines of hand-dug trenches from which the soldiers shot or charged across No Man's Land to capture the enemies' line of trenches. With the armies fully entrenched on the Western Front, the belligerent nations employed various new and novel technologies in an attempt to gain ground and the advantage. These innovations included but were not limited to: machine guns, gas, flamethrowers, airplanes and zeppelins, automobiles, tanks, massive artillery (in both size and amount), and grenades. Horses were mainly ineffective on the Western Front because of machine gun fire and the barbed wire that lined No Man's Land. Barbed wire was normally laid at two levels: one too high for the horses to jump over and one strung low to trip them.²⁷³

Unlike the open warfare of the East Front, trench warfare was a vile, dirty, and intensely stressful experience. The trenches rarely had proper drainage to combat rain or snow and what shelter that did exist could collapse at a moment's notice due to the shelling. While the trenches might have some form of drainage system, No Man's Land did not. This strip of battlefield usually had been blasted clean of all vegetation by the artillery barrages, leaving a crater-pocked landscape deadly both from the enemy's guns and the muddy swamp that arose after precipitation. The constant exposure to mud, the dead, lice, disease, shelling, and constant fear created apathy, cynicism, and even

²⁷³ George F. Hofman, *Through Mobility We Conquer: the Mechanization of U.S. Cavalry* (Lexington: University Press of Kentucky, 2006), 62.

shellshock in some cases. Through all of the chaos on the Western Front, horses were employed to keep the armies running when the new motorized vehicles could not.

Destruction of Land by the War Effort

On the Western Front, the British Army controlled the Northern portion of the trench lines including Northern France and Flanders. With respect to terrain, this region is particularly prone to large amounts of rainfall and is generally located at sea level, or even below it in some regions. The only season that did not experience rain and mud in this area was the summer.²⁷⁴ The rivers in this area had to be diked to prevent flooding in the wet seasons. There also existed a system of close-set canals to help drain the permanent groundwater of the marshy regions.²⁷⁵ The frequent rains turned the trenches into “muddy bogs” and the soldiers had to place duckboards on the bottom of the trenches to escape the water; this was rarely a permanent solution since the water level rose and fell depending on the weather. The soldiers constantly ran the risk of slipping off the duckboards and developing trench foot.²⁷⁶ To add to the poor terrain, the artillery barrages scarred the land beyond recognition. The land was pockmarked and the drainage system of the region destroyed. This reduced the once fertile farmland to a massive swamp.²⁷⁷ This quagmire wrecked havoc on the soldiers, vehicles, and horses stationed at the front. General Sidney Galtrey observed that it was “a land of horrors underfoot, the whole drab face of the earth nothing now but a racked and scourged wilderness of shuddering pits and water-laden shell holes.”²⁷⁸ Men, vehicles, and horses regularly were pushed to the breaking point at the front and when the weather and the terrain were less

²⁷⁴ Ibid., 44.

²⁷⁵ Johnson, *Topography and Strategy*, 17-8.

²⁷⁶ Heyman, *Daily Life*, 48-49.

²⁷⁷ Ibid., 68-70

²⁷⁸ Galtrey, *The Horse*, 84-86.

than hospitable, they sank into the muddy ground, dying where they stood from exhaustion and drowning.

Mechanical Problems at the Front

The First World War was the first war in which motor vehicles played a major role in warfare. Two main reasons caused the rise of mechanization on the Western front: the first reason was the desire to implement the new civilian technologies of automobiles and trucks to the mundane daily work such as supply transportation and the second reason was the belief that the dying of animals was adversely affecting the soldiers' morale. Many servicemen developed close bonds with their animals and could become quite despondent at their deaths.²⁷⁹ This affection is best illustrated in Figure 9, the famous painting "Goodbye, Old Man" by Fortunino Matania, in which a serviceman cradles his dying horse as his comrades order him to move out. The painting was originally commissioned by the Blue Cross to raise money to relieve the suffering of animals on the Western Front.²⁸⁰



²⁷⁹ Spencer Tucker, et al., *The European War, 1914-1918: an Encyclopedia* (London: Routledge, 1999), 52.

²⁸⁰ Julie Whitaker, *The Horse: a Miscellany of Equine Knowledge* (New York: Thomas Dunne Books, 2007), 57.

Figure 8

Motorcycles, automobiles, buses, airplanes, tanks, and tractors relieved the horse of many of its traditional employments including reconnaissance, communication, and transportation.²⁸¹ British leaders also wanted to endow their artillery with the increased mobility that motorized vehicles offered. As the war progressed, the artillery units began to experiment with different modes of motor-propulsion, in hopes of supplanting the horse as the primary mover of the field guns.²⁸² These experiments included three types of motorization. The first type of motorization was a gun mounted to a self-propelled chassis. The second type was truck-drawn artillery pieces. The last type was the use of a tractor to pull the pieces into position.²⁸³ Figure 10 illustrates one of the many uses of motor vehicles in France. This is a photograph of an ambulance bus.²⁸⁴

²⁸¹ Arthur Vernon, *History and Romance of the Horse* (Boston: Waverly House, 1939), 368.

²⁸² Boyd Dastrup, *The Field Artillery History and Sourcebook* (Westport, CN: Greenwood Press, 1994), 49.

²⁸³ Bishop, *Kings of Battles*, 68-69.

²⁸⁴ Sheffield, *War on the Western Front*, 89.



Figure 9

While mechanization was making an appearance on the battlefields of France, the British Home Islands were also experiencing a rise in mechanization due to the scarcity of horses in the towns and on the farms. With the British government impressing over 467,000 animals from Britain alone, farmers and urban centers experienced a heightened need for other sources of transportation and labor. In the cities, the horse shortage was relieved by the use of automobiles, omnibuses, vans, and lorries. On farms, the wealthier farmers purchased tractors while the poorer farmers used their breeding mares for field work.²⁸⁵ Prior to the war, the caterpillar tractor was in its infancy. It has been estimated that only about 1,000 tractors were in use in the British Isles before 1914. At the end of 1917, the Food Production Department calculated there to be around 3,500 privately owned tractors in Great Britain. The first government tractor census was in 1925; the census found that 16,681 tractors were employed in the region. From 1917 to 1925, the use of the tractor increased five fold.²⁸⁶ The scarcity of horses on the home front was so

²⁸⁵ Dewey, *British Agriculture*, 61.

²⁸⁶ *Ibid.*, 60-61.

acute that even the *London Times* wrote an article on the ways for farmers to deal with the limited horse reserves. In the 26 April 1915 article, entitled “The Horse Supply- Years of Scarcity in Prospect- Opportunity for Farmers,” the *London Times* encouraged farmers to use their breeding mares for both breeding and ploughing. The *London Times* also suggested that farmers should increase their breeding practices to reap the rewards for “replenishing the hunting stables.”²⁸⁷

Despite the fact that motorized vehicles played a major role on the Western Front, they proved too fragile and too limited in numbers to effectively supplant the horse in the Great War. General Galtrey answered home front civilians with this statement:

I have heard folk at home express astonishment that horses and mules are still a vital force in the prosecution of modern warfare. The motor lorry, the steam wagon and the caterpillar tractors, they say, must have supplanted the horse. We have to remember that this is a unique war of enormous, unparalleled magnitude, and that horses are being employed on a scale which could never have been dreamed of. They 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.²⁸⁸

As of the armistice, the British Army estimated that it had employed 121,702 motor vehicles during the course of the war including lorries, cars/vans, ambulances, and motorcycles.²⁸⁹ By the end of the war, the British Army had requisitioned just under 900,000 horses and mules for the war effort.²⁹⁰ Horses outnumbered motorized vehicles in a ratio of approximately seven to one. Of the 121,702 vehicles employed by the British Army, Britain manufactured 2,818 tanks between 1916 and 1918.²⁹¹ As the statistics show, motorized vehicles were available for the use on the battlefield; however,

²⁸⁷ *London Times* 26 April 1915.

²⁸⁸ Galtrey, *The Horse*, 84-86.

²⁸⁹ *Military Effort*, 877.

²⁹⁰ *Ibid.*

²⁹¹ *Ibid.*, 479

their technology was relatively new, their production on the home front was limited, and very few soldiers knew how to repair them in the field.²⁹² Also, motorized vehicles rarely could defeat the massive amounts of water and mud on the Western Front. Figure 11 illustrates how many vehicles, including tanks, became stuck in the mud of Flanders and the Somme.²⁹³

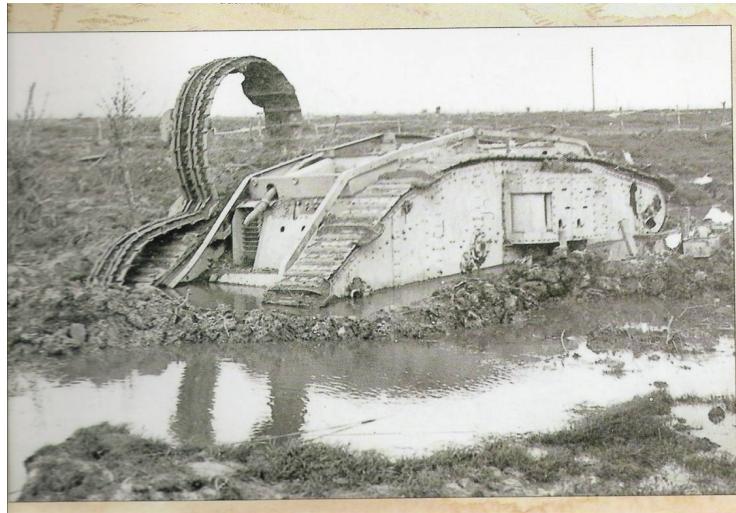


Figure 10

Production was limited by many factors. To meet the demands of the British Army, new factories were built while older ones were expanded. Britain also had to import most of the raw materials needed to manufacture the vehicles. The importation of the raw materials created massive delays in production due to the increased shipping

²⁹² Jeff Kinard, *Artillery: an Illustrated History of its Impact* (Santa Barbara: ABC-CLIO, 2007), 244.

²⁹³ J.M. Winter, *World War I: the Experience* (London: Angus, 2006), 101.

time across the Atlantic Ocean. The average shipping time prior to the war was twenty days; however, the submarine warfare and lack of convey ships created delays of more than two months. Another factor that added to production delays was the shortage of factory workers in Great Britain. The war had removed a large portion of the male population including factory and shipyard workers. Though women were employed to cover the vacant positions, it proved to not be enough in terms of decreasing production times. The government suggested transferring workers from one factory to another, thus, allowed them to work more than eight hours a day. However, this idea fell flat due to trade union protests and workers refusing to be transferred. Trade unions were the biggest problem for the British war effort because the members refused to suspend their hard-won union privileges; this made it almost impossible for the government to place semiskilled workers into the factories.²⁹⁴ Because of the scarcity of motorized vehicles and the difficult terrain, generals at the front were forced to continue using horses for transportation etc. with little progress in breaking the stalemate.

Conclusion

Horses remained a vital part of the British war effort due to their mobility, versatility, Army traditions, and the scarcity of motorized vehicles. While the available vehicles did relieve the horse of a few of its uses like reconnaissance and transportation; however, the horse remained essential at the front, where few vehicles could easily travel. The swampy terrain of Northwestern Europe forced vehicles into positions relatively far from the battle lines, while the horses were able to navigate the poor conditions near the trenches. While World War I has been commonly characterized as the first modern war because of the use of numerous modern weapons including airplanes, machine guns, and

²⁹⁴ George H. Cassar, *The Tragedy of Sir John French* (Newark: University of Delaware, 1985), 229.

tanks, WWI was actually a war dominated by horse power. Trench warfare and the destruction of land it created meant that the war horse would remain an integral part of the Allied war effort. And while many soldiers found the use of horses to be vile and inhumane, its reliability in the face of harsh weather conditions and inhospitable terrain made the horse the greatest mobile asset of the Allied forces. The horse would remain in use in the military until after the Second World War when factories were able to finally produce machines quickly on an enormous scale. Though the Second World War was almost completely mechanized on the Western Front, the German and Soviet fighting on the Eastern Front utilized horses more than machines due to the extreme weather, which caused the machines to freeze and breakdown. The history of mechanized warfare is short in comparison to the history of horses in war; however, in a few decades mechanized machines completely supplanted the horse, fulfilling the hopes of World War One officers like J.F.C. Fuller.

CHAPTER IV

THE FALL OF THE EUROPEAN WAR HORSE DURING THE SECOND WORLD WAR, 1939-1945

The Second World War ended the reign of the horse in warfare in a matter of six years. The war began on 1 September 1939 when Hitler's Army invaded Poland, after years of appeasement and indecision by the Britain and France. In the summer of 1940, Germany violated its nonaggression pact with the Soviet Union and invaded the western Soviet territories. The United States joined the Second World War after the attack on Pearl Harbor in December 1941. The war in Europe ended in May 1945 while the war with Japan ended the following August after the atomic bombs were dropped. The Second World War heralded the final death throw of the war horse on the Western Front. The art of total war on the Western Front made it impossible for the war horse to maintain its foothold on the war front. The Eastern Front, both in Poland and Russia, exhibited a very different experience, one of snow, tanks, and millions of horses lined up before the guns.

The Horseless Age: the Mechanization of the West during the Interwar Period

In his pursuit of mechanization, Fuller stated that “the overall result for the nation

adopting mechanization and tankization would be a great savings in war expenditures, economy in transport and speed in striking power and hence tactical superiority on the battlefield.”²⁹⁵ During the Interwar period, the major Western Powers attempted to mechanize following Fuller’s principles. In the United States, the Tank Corps disappeared under the National Defense Act of 1920. The two battalion commanders, George S. Patton, Jr., and Dwight D. Eisenhower, returned to the cavalry and infantry respectively. The Tank Corps was attached to the infantry rather than remaining a standalone organization. European forces, on the other hand, explored new ways of using tanks to combine firepower and mobility.²⁹⁶ The infantry continued to see the tank as a supporting weapon. Some senior cavalry officers welcomed mechanization because of the lessons of the Western Front. The cavalry reformers created an experimental mechanized brigade in 1933 built around light tanks.²⁹⁷ However, there were still strong defenders of the horse cavalry including Brigadier General Hamilton S. Hawkins. He wrote in 1931 “that mechanized force could never replace horse cavalry in any terrain,” but he agreed that a combination of the two would be beneficial.²⁹⁸ In 1933, the Horse-Mechanized Corps Reconnaissance Regiments was created and combined the advantages of both means of transportation. Men and horses could be loaded on a truck and its trailer and transported quickly over roads and then unloaded to scout cross-county.²⁹⁹ Patton as well as other American generals still wished for the use of horses, but during the Interwar period, it was quickly phased out and replaced with “tanks for assault and motorcycles

²⁹⁵ Fred Vigman, “Eclipse of the Tank,” *Military Affairs* 8 (Summer 1944), 102.

²⁹⁶ Allan R. Millett and Peter Maslowski, *For the Common Defense: A Military History of the United States of America*, 2nd ed. (New York: Free Press, 1994), 400.

²⁹⁷ *Ibid.*, 401.

²⁹⁸ Hofman, *Thru Mobility We Conquer*, 152-3.

²⁹⁹ Herr, *Story of U.S. Cavalry*, 248.

for scouting.” Horse proponents still championed the horse for rough terrain, but their opinions went unheard.³⁰⁰ General Patton stated that “against motorized and mechanized armies, vehicular reconnaissance is adequate. If we were to fight opponents who depended on animal transportation or their feet, horse reconnaissance would be necessary.”³⁰¹ During the Interwar period, Patton argued that no one could make judgments on the use of the future of the United States cavalry because it was not deployed during the recent war in Europe.³⁰² The cavalry supporters did, however, make numerous attempts to distance the US cavalry from the failures of the European cavalries during the war, stating that the American cavalryman was more akin to the dragoon than the traditional shock action cuirassier force.³⁰³

New technological developments during the Interwar period began changing Patton’s mind on the use of tanks in the cavalry. In 1928, the new, faster Christie tank prototypes appeared in the US military. Their speed and agility rivaled the traditional advantages of the war horse. Patton could no longer totally believe in his earlier statement that “at present there is no tank... which can keep up with Cavalry.”³⁰⁴ Another event that changed many minds of horse proponents was the Spanish Civil War of 1936-1939. Tanks and airplanes played a major role in the war, but very few horses were used during the entire conflict.³⁰⁵ By the start of the Second World War, Patton as well as many other supporters of the horse had begun to embrace the tank. Once he took over his own tank army, Patton began to exalt the advantages of the tank in warfare;

³⁰⁰ Livingston, *War Horse*, 147.

³⁰¹ Herr, *Story of U.S. Cavalry*, 258.

³⁰² John Whiteclay Chambers II and G. Kurt Piehler, *Major Problems in American Military History* (New York: Houghton Mifflin, 1999), 306.

³⁰³ Ibid.

³⁰⁴ Ibid.

³⁰⁵ Ibid., 308.

however, he was unable to completely remove his previous affinity for the war horse. He had the habit of referring to his tanks in anthropomorphic terms and he routinely attempted to instill a romantic aura onto the tank that had been previously enjoyed by the war horse.³⁰⁶ The final appearance of a mounted cavalry force was in 1940 and 1941 at the Louisiana maneuvers.³⁰⁷ Despite the lack of horses in the Western Armies, Germany continued to plan for the use of horses on all fronts. The German Army believed that the invasion of England, aka Operation Sea Lion, which was set for August 1940, would require a horse strength of 60,000.³⁰⁸

In Britain, the 5th Cavalry Brigade, or the Household Brigade as it was called, was the only one spared mechanization before the Second World War.³⁰⁹ At the outbreak of the Second World War, the British Army was the only completely mechanized force in the world.³¹⁰ The French Army still had three cavalry divisions and five light cavalry divisions prior to the Fall of France.³¹¹ The American Army was the first in the world to become fully motorized because the British chose to keep its Household Brigade mounted.³¹² America did purchase approximately 40,000 horses before the war but only shipped forty-nine horses overseas while the rest were sold off rather quickly.³¹³ During the war, the purpose of the Remount Service in the United States was liquidation rather than procurement.³¹⁴ The United States War Department sold all of its horse and cavalry

³⁰⁶ Ibid., 304.

³⁰⁷ Herr, *Story of U.S. Cavalry*, 250.

³⁰⁸ Paul Louis Johnson, *Horses of the German Army in World War II* (Atglen, PA: Schiffer Military History, 2006), 6.

³⁰⁹ Janusz Piekalkiewicz, *The Cavalry of World War II* (New York: Stein and Day, 1980), 244.

³¹⁰ James Sidney Lucas, *War on the Eastern Front, 1941-45: the German Soldier in Russia* (New York: Stein and Day, 1980), 113.

³¹¹ Piekalkiewicz, *The Cavalry of WWII*, 237.

³¹² Ibid., 253.

³¹³ Livingston, *War Horse*, 147.

³¹⁴ Ibid., 153.

equipment.³¹⁵ The Second World War reversed the general opinion of the cavalry. The cavalry was accused of living in the days of King Arthur and became the butt of many jokes with the US forces. Once a position of honor and respect, by the Second World War, the cavalry was jeered at by the once lowly infantry soldiers for their old-fashioned ways.³¹⁶ US Intelligence repeatedly showed that Germany and the Soviet Union were still relying on the horse. One US document stated that “horses are playing a most important part and will continue to. The largest and to date most successful armies in Europe and Asia have been and are using horses on a large scale.” The US Military even had figures on the German horse population stating that “in Poland, Germany used more than 200,000 horses, and when she overcame France she had almost 800,000 horses in her armed forces. It is reported that practically all German artillery is horse drawn.” Also, it is known that Germany advertised for and probably purchased all available horses in France, for use in Russia.³¹⁷ Based on the evidence of the German and Soviet armies, Kooster advised that the US should keep a small number of horses on hand just in case they were needed as they seemed to be on the eastern Front.³¹⁸ However, despite Kooster’s advise, the US Army refused to return to horse-drawn days, except in Italy when local mules were needed to carry supplies up mountainous terrain.³¹⁹

The US Army encountered few horses on the march to the Reich. The most unusual experience came during the last few days of the war in Europe. Upon entering Austria, Patton’s 3rd Army was welcomed by a magnificent surprise: a cache of top-

³¹⁵ Herr, *Story of U.S. Cavalry*, 257-8.

³¹⁶ *Ibid.*, 254.

³¹⁷ Lieutenant-Colonel Fred W. Kooster, *The War Horse* (Washington D.C.: War Department of United States Government, 1943), 1-2.

³¹⁸ *Ibid.*, 2-3,

³¹⁹ Livingston, *War Horse*, 160.

quality and highly prized horses owned by the German Government including the Lipizzaners. In a famous photograph, General Patton rides a Lipizzaner named Favory Africa, which Adolph Hitler had personally picked out to be a present for the Emperor Hirohito of Japan. Patton's drive into Austria most likely saved the Lipizzaners from capture by the Soviets.³²⁰ In October 1945, the United States shipped 152 top-quality horses selected from the hundreds available at the German depots and breeding farms. This group included sixty-five Thoroughbreds, twenty-two pure Arabians, fifteen Anglo Arabians, nine Lipizzaners, forty Half-Breeds and one Russian stallion. These animals were nicknamed the "Prizes of War" and they toured the country as spoils of war.³²¹ In September 1946, an additional 300 horses are brought from Europe as "Prizes of War" and included European Thoroughbreds, Half-Breeds, Anglo-Arabs, Arabians, and Lipizzaners."³²²

The "De-Modernization" of the Eastern Front by the German and Soviet Forces

Like during the First World War, the wars on the Eastern and Western fronts had little common. The major difference was the extent of the mechanization. The war in the East had far less mechanization than in the West. This affected the way that the war between Germany and the Soviet Union was fought for five years. "The Soviet Army on the eve of war included four cavalry corps and thirteen cavalry divisions totaling 80,000 men."³²³ Germany planned a three-prong attack on the Soviet Union: in the North, in the

³²⁰ Herr, *Story of U.S. Cavalry*, 256.

³²¹ Livingston, *War Horse*, 190-1.

³²² *Ibid.*, 271.

³²³ David Glantz, *Colossus Reborn: the Red Army at War: 1941-43* (Kansas: University of Kansas Press, 2005), 238.

Center, and in the South.³²⁴ One-third of the German infantry divisions remained in Western and Southern Europe in 1941, providing two-thirds of its total fighting force for the war on the Eastern Front.³²⁵ The average Soviet division employed between 35,000 and 40,000 horses during a campaign.³²⁶ In 1938, the Red Army had only one Army composed of seven Cavalry Corps and Four Tank Corps. By 1941 the Soviet Union had twenty Armies with only four Cavalry Corps but no Tank Corps. While the number of Tank Corps declined, the number of Tank Divisions increased from zero to 61. The Red Army went from zero mechanized divisions in 1938 to 31 in 1941, showing an attempt at increased mechanization.³²⁷

As with the First World War, Russian terrain dictated the pace of war on the Eastern Front. It is a vast region where every type of terrain can be found. It contains icy, snowy regions; hot, dry, sandy deserts; fertile steppes as well as swamps, extensive forests, seemingly unending expanses of flat plain and high mountain ranges.³²⁸ Forests, moors, and marshes covered four-fifths of the entire surface area.³²⁹ In the summer, the land was open and friendly, but in spring and fall it sank into the mud, and in winter it turned to ice and snow.³³⁰ The Soviet Union is a land of extremes, which wreaked havoc on military horse populations, who were not well suited to the extreme weather.³³¹

³²⁴ John Keegan, *The Second World War* (New York: Penguin Books, 1989), 181-2.

³²⁵ Charles D. Winchester, *Hitler's War on Russia* (New York: Osprey, 2007), 23.

³²⁶ R.L. DiNardo, *Mechanized Juggernaut or Military Anachronism? Horses and the German Army of World War II* (Westport, CT: Greenwood Press, 1991), 45.

³²⁷ David Glantz, *Stumbling Colossus: the Red Army on the eve of World War II*. (Lawrence: University of Kansas Press, 1998), 107.

³²⁸ Lucas, *War on Eastern Front*, 71.

³²⁹ Werner Haupt, *Army Group North: the Wehrmacht in Russia, 1941-1945* (Atglen, PA: Schiffer Military History, 1997), 13.

³³⁰ Ibid.

³³¹ DiNardo, *Mechanized Juggernaut*, 43.

In 1933, the German Army had only ten obsolete divisions. By 1939, it had fifty-five divisions, only fourteen of which were fully mechanized.³³² After mobilization, the Germany Army possessed 106 divisions; however, it had not fully mechanized any more than the previous fourteen.³³³ Each infantry division was comprised of 17,000 men, 4,700 horses, 1,000 motor vehicles, and 500 motorcycles. Before the invasion of Poland, the German Army possessed 2,740,000 men, 514,000 horses, 183,000 motor vehicles, and 94,000 motorcycles.³³⁴ Operation Barbarossa involved the amassing of 3,000,000 soldiers, 3,000 tanks, 2,000 airplanes, and 450,000 horses.³³⁵ On the Eastern Front, the Germans were not able to use the railways, because it took months to convert the Russian wide-gauge track to European gauge, and the Soviets evacuated or destroyed most of their rolling stock.³³⁶ The German automobile industry was one reason behind the failure of the Nazi regime to create a modern, motorized German Army. Germany's automobile industry was not up to the task of producing the requisite number of vehicles needed to give Germany a completely motorized army. As late as 1944, the army was still using requisitioned civilian vehicles, most of which were unsuitable for military use. Germany repeatedly resorted to using captured equipment. Also, the German military refused to order large numbers of motor vehicles because they believed that the technology was developing too fast and the purchases would be a waste of precious resources within a few months.³³⁷ Another reason was the German population's general lack of interest or funds (due to the Versailles Treaty) in automobiles before the war. In 1933, it was

³³² Johnson, *Horses of German Army*, 9.

³³³ Ibid.

³³⁴ Ibid.

³³⁵ Ibid., 6.

³³⁶ Winchester, *Hitler's War*, 20-1.

³³⁷ Johnson, *Horses of German Army*, 9.

estimated that there was one car for every eighty-nine citizens, compared to the one to five in the United States. By 1937, Germany had closed the gap to one per every forty-seven people.³³⁸

Because Germany was a land of limited resources, including fuel and building supplies, the German military was not completely mechanized by the start of the war. Iron and steel were in short supplies and the three branches of the German military as well as the industry sector fought over the available supplies. The government was forced to divide the limited iron and steel resources among the four, creating a power struggle.³³⁹ The Army was forced to use most of its allotment to build barracks, armaments, and fortifications; the rest were divided among weapons, ammunitions, equipment, and motor vehicles.³⁴⁰ Germany was dependent on foreign fuel, making complete mechanization implausible.³⁴¹ Germany decided to depend on the horse once more because it was not dependent on oil or fuel.³⁴² By the end of 1941, only 75,000 of the original 500,000 motor vehicles were still in working condition for the German Army on the Eastern Front and although the Germans did capture some 80,000 Soviet vehicles, only forty percent of these were in good condition.³⁴³ In 1943-1944, the United States produced 47,000 tanks while Germany produced 29,600 tanks and assault guns. Britain, in 1944, produced only 5000 tanks. In 1944, Soviet tank production totaled 29,000.³⁴⁴ The Red Army transferred its tanks to both the cavalry and the infantry before 1941. The average Cavalry Corps possessed 16,000 horses, 128 light tanks, 1,300 vehicles, and

³³⁸ DiNardo, *Mechanized Juggernaut*, 9.

³³⁹ Johnson, *Horses of German Army*, 9.

³⁴⁰ Ibid.

³⁴¹ Ibid.

³⁴² Ibid.

³⁴³ DiNardo, *Mechanized Juggernaut*, 50.

³⁴⁴ Keegan, *Second World War*, 399.

19,500 personnel.³⁴⁵ The Red Army's Cavalry Corps steadily increased its number of horses from 16,000 in 1941 to 18,000 in 1943.³⁴⁶ Soviet tank production was so high because of its massive losses against the Germans. In 1941, the USSR lost 22,600 tanks; in 1943, it lost 22,400; and in 1944, it lost 16,900. Of these, about 66 percent were destroyed in action while the rest were lost to mechanical breakdown.³⁴⁷ German armored fighting vehicles, constructed for the terrain conditions met with in Western Europe and therefore less sturdily built and broke down more frequently than the less sophisticated but more robust Russian machines.³⁴⁸

During the Polish campaign alone Germany lost some 5,000 automobiles and 300 tanks. The German automobile industry had trouble building replacements; thus, General Franz Halder decided to begin filling the gaps with horses. However, he knew that this plan had its limits. He observed that each infantry division needed 4,500 horses and some 2,000 horse-drawn vehicles, leaving the army short by 1941.³⁴⁹ The use of horses increased in direct proportion to the losses of motor transport, draft horses were particularly high in demand for moving artillery and heavy supplies.³⁵⁰ Horses provided between seventy and eighty percent of the heavy lifting and transport capacity and remained essentially for infantry divisions due to their need for mounted reconnaissance units.³⁵¹ In Figure 12 horses are shown pulling vehicles out of the deep mud on the Eastern Front; this is just one of the many use of horses by the German Army.³⁵²

³⁴⁵ Glantz, *Stumbling Colossus*, 159.

³⁴⁶ Glantz, *Colossus Reborn*, 262.

³⁴⁷ Winchester, *Hitler's War*, 130.

³⁴⁸ Lucas, *War on Eastern Front*, 107.

³⁴⁹ DiNardo, *Mechanized Juggernaut*, 26.

³⁵⁰ Jeffrey T. Fowler, *Men at Arms: Axis Cavalry in World War II* (London: Osprey Pub., 2001), 14.

³⁵¹ *Ibid.*, 6.

³⁵² Johnson, *Horses of German Army*, 235.



Figure 11

When their own horses began to fail due to conditions on the Eastern Front, the German Army impressed Polish-Russian farm animals known as *panje*. These horses were small but hardy. They needed little care and were insensitive to changes in temperature.³⁵³ While *panje* horses were used in transportation, they were unsuitable for heavy lifting and could not even pull the standard German Army horse-drawn vehicle because it was made of steel. Troops had to use the Russian wagons and sleds the *panje* horses were accustomed to.³⁵⁴ In Figure 13 German soldiers pose with two *panje* horses and their wagon.³⁵⁵

³⁵³ Ibid., 6.

³⁵⁴ DiNardo, *Mechanized Juggernaut*, 46.

³⁵⁵ Johnson, *Horses of German Army*, 263.



Figure 12

Reconnaissance units consisted also of armored cars, motorcycles, and bicyclists. Horses and bicycles were preferred because they did not create dust clouds that signals troop location.³⁵⁶ The German Army divided horses into two basic categories: mounts and draft horses. Mounts consisted of mounts for officers, cavalry-mounted vehicles and infantry-mounted vehicles, and mounts for miscellaneous uses. Draft horses were divided into light, middle/leading horses, and machine gun horses. Heavy and extra heavy draft horses pulled artillery and other extremely heavy supplies.³⁵⁷ Every horse purchased or requisitioned by the German Army was registered and given an identification number and detailed records were kept on an index card stating the horse's name, age, description, and important medical information.³⁵⁸ The Red Army relied heavily on its horse cavalry during the opening days of the war because of its tank situation being in complete disarray. Horse cavalry forces contributed significantly in the victories at Moscow in the winter of 1941-42, at Stalingrad in November and December 1942, in the Ukraine during the winter of 1943-44, in Belorussia during the summer of

³⁵⁶ Fowler, *Axis Cavalry*, 8.

³⁵⁷ DiNardo, *Mechanized Juggernaut*, 14.

³⁵⁸ *Ibid.*, 12.

1944, and in Manchuria during August 1945.³⁵⁹ German horse battle casualties accounted for approximately seventy-five percent of the total losses. Breed and color determined a horse's survival rate on the Eastern Front. Brown horses had the highest casualty rate as well as Thoroughbreds and German cold bloods (draft). Mixed breeds and the French cold bloods had the best survival on the Eastern Front with a loss rate of about thirty percent compared to the more than fifty percent loss rate experienced by other breeds.³⁶⁰ The German Army went to great lengths to keep horses from falling into Soviet hands during the retreat back to Germany. The most interesting example happened in 1944 when the 17th Army systematically shot and hurled 30,000 animals into the Bay of Severnaya after receiving the order to evacuate the Crimean peninsula. The German Army was unable to transport the animals on their retreat and, thus, chose to liquidate its entire stock before leaving.³⁶¹

The invasion of the West gave Germany access to breeding regions in the Low Countries and France as well as the French Army's entire stock of horses.³⁶² By 1 August 1940, some 34,000 horses had been sent back to Germany from the West.³⁶³ France was the most valuable region in terms of horseflesh for the German Army. By early 1942, occupied France had sent 153,000 horses to the German war effort.³⁶⁴ The horse situation was much worse in the Soviet Union because of forced collectivization and terror-famines during the Interwar period. From 1928 to 1933, the Soviet Union's horse population declined from 32 million to 17 million. There were three ways that the

³⁵⁹ Glantz, *Colossus Reborn*, 237.

³⁶⁰ Fowler, *Axis Cavalry*, 33.

³⁶¹ Piekalkiewicz, *Cavalry of WWII*, 227.

³⁶² DiNardo, *Mechanized Juggernaut*, 30.

³⁶³ *Ibid.*

³⁶⁴ *Ibid.*, 72.

German Army supplied replacements on the Eastern Front: requisitioning from occupied territory either by confiscating or purchasing, employing captured animals, and shipping in replacements from the fatherland.³⁶⁵ All captured Soviet Army horses were to be sent to German Army veterinary services for examination and captured Soviet Army veterinary officers and blacksmiths were employed as well.³⁶⁶ Usually, horses were requisitioned by the German Army with any consideration for the Russian peasant's plight. However, some units found the policy of hiring farmers to be more effective against partisan groups. Farmers were hired along with their wagon and horse. They were usually released during the planting and harvesting seasons to work their own land and in some cases German soldiers were assigned to help the farmers bring in their crops if fighting allowed.³⁶⁷

Heavy and extra heavy draft horses suffered most from air strikes because they were in close proximity to artillery line, which are a major target for the enemy. Heavy warm bloods and extra-heavy cold bloods are more susceptible to extremes of temperature and required more fodder and water, which added to their high casualty rate.³⁶⁸ The greatest number of horses were lost on the Eastern Front by shell-fire or by aerial machine-gunning, and only seventeen percent died of heart failure brought about by overexertion. Disease and exposure killed the remaining eight percent.³⁶⁹ Fodder was also a difficult problem in the Soviet Union. The Soviet Union provided little in the way of oats and fodder for the German Army. Germany had to ship its own fodder by rail, which placed more burdens on the already strained railway system. Space was the

³⁶⁵ Johnson, *Horses of German Army*, 42.

³⁶⁶ DiNardo, *Mechanized Juggernaut*, 39.

³⁶⁷ Fowler, *Axis Cavalry*, 24.

³⁶⁸ DiNardo, *Mechanized Juggernaut*, 45.

³⁶⁹ Lucas, *War on Eastern Front*, 114-5.

biggest issue because a ton of gasoline takes up only five cubic feet of space while a ton of fodder occupies five hundred cubic feet.³⁷⁰ Horses were housed in any available stables, barns and sheds; and even underground stable facilities like foxholes.³⁷¹ The foxholes had to be large enough to house either two or three animals at a time. Each foxhole measured approximately “3.25 meters long, from 3.5 to 4.5 meters wide, and 4.5 meters deep” and included an incline from the animals to enter and exit quickly. Soldiers observed that “horses soon learned to enter the holes themselves whenever they heard artillery fire.”³⁷² In Figure 14 two horses take shelter in one of the many German foxholes on the Eastern Front.³⁷³



Figure 13

Horses had a similar medical system like that of the German soldiers. Mobile hospitals near the front performed triage and horses recovered in larger facilities to the

³⁷⁰ DiNardo, *Mechanized Juggernaut*, 49.

³⁷¹ Fowler, *Axis Cavalry*, 33.

³⁷² Johnson, *Horses of German Army*, 42.

³⁷³ *Ibid.*, 320.

rear.³⁷⁴ Military horses required an extensive system of maintenance including farriers, veterinarians, training bases for new troopers, and an extensive procurement and remount system. Approximately 13,000 men served in the cavalry support services, including 5,650 veterinarians; 8,100 NCOs and enlisted personnel; and 3,700 farriers. Each doctor was responsible for between 300 and 400 horses and mules.³⁷⁵ Another invaluable section of the Germany Army was remount training. Remount training was mainly conducted by women in riding clubs and in army riding schools.³⁷⁶

During the first year of the war on the Eastern Front, the German Army lost some 264,954 horses that were either killed, sick, or otherwise unfit for service.³⁷⁷ It has been estimated that an average of about 700 horses were lost each day during the four-year Russian campaign.³⁷⁸ During World War II, the German military used 2.75 million horses.³⁷⁹ The Germany Army used approximately 3 million horses and mules during the Second World War with more than 1.7 million dying during the course of the war. Many of the survivors were confiscated by the victors, never to return to their homeland.³⁸⁰ The Soviet forces used a total of 3.5 million animals during World War II.³⁸¹ Regions other than Germany and the Soviet Union experienced major losses in their horse population. During the war, Poland lost thirty-six percent of its total horse population.³⁸²

Despite the mechanization on the Eastern Front, the horse closed the war once again in a front and center position in the Soviet Union. Before the Soviet Victory

³⁷⁴ Fowler, *Axis Cavalry*, 23.

³⁷⁵ *Ibid.*, 22-3.

³⁷⁶ Johnson, *Horses of German Army*, 79.

³⁷⁷ DiNardo, *Mechanized Juggernaut*, 50.

³⁷⁸ Fowler, *Axis Cavalry*, 33.

³⁷⁹ Livingston, *War Horse*, 33.

³⁸⁰ Johnson, *Horses of German Army*, 6.

³⁸¹ Livingston, *War Horse*, 33.

³⁸² DiNardo, *Mechanized Juggernaut*, 73.

Parade in Moscow, Joseph Stalin asked to see one of his most prominent generals, Marshal Georgii Zhukov. According to Zhukov, Stalin asked him if he had forgotten how to ride since it had been many years since his cavalry days. Zhukov replied that he still remembered and continued to do so. Stalin's next request shocked the general. Stalin asked Zhukov to open the ceremonies by riding a horse into Red Square. To this, Zhukov replied, "Thank you for the honour, but wouldn't it be better for you to take the salute? You are Supreme Commander-in-Chief and by right you should take the salute." Stalin ended the conversation by simply saying, "I am too old to review parades. You do it, you are younger." And with that, Marshal Zhukov entered Red Square riding a white, Akhal-Teke horse (an Arabian mix) on 24 June 1945 to celebrate the Soviet Union's defeat of Nazi Germany.³⁸³ After the show of might by the Soviet Union, the horse now has been relegated to dressage spectacles, parades, and the memories of noble knights, wild cowboys, and gallant cavalries.

³⁸³ Marshal Georgii Zhukov, *The Memories of Marshal Zhukov*, trans. APN. (London: Jonathon Cape, 1971), 652-4.

CHAPTER V

EPILOGUE

The decline of the horse in European and American warfare was not a single line of obsolescence, but one of many avenues, led by the development of numerous innovations in warfare. During the Crimean War, horses were the most important war machine; however, by the First World War motorized vehicles like the automobile, the tank, and the airplane had begun to supplant the horse on the battlefield. By the end of the Second World War, the horse had been completely removed from the art of war. The rapid progression of technology from the Crimean War to the Second World War ended the horse's effectiveness in the military, especially with the invention of the railroad, the car, the tank, the machine gun, and the airplane. Each invention played a major role in ousting the horse from the military. With each successive war between 1850 and 1950, armies added new and novel technologies to their arsenal, leaving the horse no place to go but back to the home front. These inventions first removed the mounted cavalry, then the horse-drawn artillery before finally forcing the horse off the battlefield altogether. After the Second World War the war horse became completely obsolete to the art of war, formally demoted to a mere symbol of prestige, gallantry, status, and bygone days. The war completely mechanized the military, roads, and farms. The Crimean War began the

war horse's rapid descent into obscurity. Over the next 100 years the war horse experienced a form of obsolescence, delayed by the traditional mentality that horses are a necessity and by new technology that took many decades to root in society due to man's straggle-hold on that traditional mindset. Thus, because of man's tendency to shy away from change, the war horse experienced delayed obsolescence, remaining an integral part of society until after the Second World War.

After the Second World War, society changed its view of the horse from an animal of labor to a pet. The 1950s saw a massive shift in horse numbers from farm animals to family pets due to the changing perception and accessibility of automobiles and tractors. Communities experienced the economic boom of the decade, allowing farmers to replace their horses more readily with machines. In Britain, automobiles and agricultural machines surpassed the number of horses remaining in the countryside. By 1950, only 494,000 horses remained in the British Isles and only seventy percent of those remaining were still used in agriculture. By 1965, only 21,000 horses were still employed in the British agricultural sector.³⁸⁴ After the war, Britain possessed 4,409,000 motorized vehicles and 387,000 tractors.³⁸⁵

The horse became obsolete in terms of public transportation, farming, and warfare. Some communities did retain their horses for traditional reasons such as the Amish and the Mennonite communities, who shun modern technologies. Nostalgia is the main reason why horses remain a major part of man's society and conscience. This nostalgia manifests itself in multiple ways including ranches, rodeos, horse-drawn carriages, and parades. There still exists a need for working horses, mainly as mounted

³⁸⁴ H.F. Marks and Denis K. Britton, *A Hundred Years of British Food and Farming: a Statistical Survey* (New York: Taylor and Francis, 1989), 146.

³⁸⁵ Mitchell, *British Historical Statistics*, 557-8.; Marks, *British Food*, 19.

police in large cities such as New York and New Orleans and on working ranches. The mounted police remain a valuable asset to the force because of their ability to tower over mobs, intimidating them into submission as well as having a better view of the situation. Draft horses are now mainly reserved for horse shows, parades, and heavy horse competitions. Hot bloods and warm bloods are now mainly pleasure horses either pets or competitions and races. The warm bloods have seen the biggest increase in horse-owning society because of their versatility and amiable disposition. They have found a place among humans before as a pleasure horse and as a working horse.

The horse was relegated to recreational roles as well as parade spectacles. The horse became a pleasure animal used only for the occasional riding and yet still commanded attention during parades, while still retaining its symbolism and status in society's eyes. The end of the war brought about a change in the symbology of the horse from one of gallantry to an object of mockery; however, the horse still remains in the hearts and minds of all humans. For most, it conjures up images of dueling knights and proud cowboys rather than the beast of burden that it was for thousands of years. The war horse did not quietly slink quietly into oblivion; however, the Second World War sealed its fate: for whom the bells toll... they toll for thee, old pal.

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Major Field: History

Scope and Method of Study: Research in primary and secondary sources that pertain to the period from 1853 to 1945.

Findings and Conclusions: The industrial revolution and the rapid advancement of technology that it fostered created a swift decline in the employment of horses in warfare. Beginning during the Crimean War, the employment of recent technological innovations gradually edged the war horse out of its traditional use in shock tactics and transportation. During the American Civil War, the innovations of widespread railroads and higher powered weapons continued to remove the logistics of warfare from the hands of the war horse. The invention of the machine gun and the automobile ended the war horse's monopoly on transportation and reduced the effectiveness of the European cavalries during the Franco-Prussian War and the Anglo-Boer War. Technology began its takeover of transportation and shock tactics during the First World War with the employment of the airplane, the tank, and the automobile on the massive scale. Despite this massive employment of recent mechanized technology, the war horse remained pertinent to European warfare due to the relative novelty of these innovations. The European war horse fought its last war in 1939. The horse was used very little on the Western Front while the Germans and the Soviets were forced to de-modernize their armies by reintroducing the war horse to the battle field. Technology completely replaced the war horse by the end of the Second World War with its widespread accessibility, quick production turnover, and cheaper maintenance costs.

ADVISER'S APPROVAL: Dr. Joseph Byrnes
