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On the Backs of Horses: The Great Epizootic of 1872

Jeffrey Michael Flanagan

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On the Backs of Horses: The Great Epizootic of 1872

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A Thesis presented to the Graduate Faculty of the College of William and Mary in Candidacy for the Degree of Master of Arts

Lyon Gardiner Tyler Department of History

The College of William and Mary
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the requirements for the degree of

Master of Arts

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Approved by the Committee, February, 2011

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During the fall and winter of 1872-73, a wave of equine influenza infections spread from Canada into and throughout the United States. The cause and method of the contagion's spread were unknown at the time and infection rates approached 100 percent. Conservative estimates show that only one to two percent of horses died, though urban areas generally saw higher mortality rates, with some as high as ten percent. While it proved less than fatal in most cases, the influenza managed to incapacitate nearly every horse it infected. The Great Epizootic, as the collective event came to be known, was so debilitating that many infected horses could not even stand, let alone be put to work. With the animals unable to leave their stables, city life ground to a halt. Virtually every aspect of American society hinged upon the uninterrupted existence of horse labor, but interrupted it was.

Nowhere were the effects of the Great Epizootic more profoundly felt than in the great metropolitan cities of the Northeast. The city of Philadelphia possessed one of the most extensive horse-drawn street railway systems in the nation, was heavily reliant upon horse labor for everything from intra-urban transport of both people and goods to powering machines on construction sites. But what of the South? Still recovering from the Confederacy's defeat in the Civil War, its economy broken and in the throes of radical transformation, the South was neither as industrially developed nor as industrially dependent as the North.

Still, Southern cities were industrializing. One such city was Richmond, Virginia. Well on its way to recovery, Richmond had nearly matched its 1860 manufacturing output by 1870. Furthermore, the city enjoyed a healthy shipping trade as its location at the head of the James River and the multitude of railroads running through it made it a natural trading hub for the South. As the chief motive power in the city, the horse was involved in most aspects of Richmond's trade, delivering coal, raw materials, and workers to factories and then hauling finished products to rail depots and docks. As Richmond's manufacturing and shipping industries grew, so too did its reliance upon horse labor.

Richmond experienced the Great Epizootic differently than did Philadelphia. Richmond was a much smaller and less populated city. Richmond was inherently less dependent upon the horse and therefore less susceptible to the epizootic. The effects of the epizootic were almost always drastic, but they were also generally proportional to each city's horse population. This comparative study focuses on Philadelphia and Richmond in roughly equal measure and uses their examples to indicate how the seamless incorporation of the horse in the industrialization of nineteenth-century American cities made them not only wealthier but also more complex, interconnected, and fragile.
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“Human Power in Harness” – Introduction

Pedestrians in a typical nineteenth-century American city had to be acutely aware of their surroundings. On top of maneuvering around street vendors, shoppers, a variety of workers, and each other, they also had to dodge, duck, and otherwise avoid the multitude of drays, carts, wagons, carriages, and streetcars that further crowded the streets. On November 13, 1872, however, the people of Richmond had clear streets to walk upon, as the horses that pulled these vehicles were curiously absent, prompting some to remark that the city looked like “Richmond in by-gone days.” Others witnessed things on this day that would not fit the profile of either by-gone or contemporary images of Richmond. On Fourteenth Street, onlookers marveled at a rare sight as wagons owned by the Storrs & Co. general store set out with teams of oxen rather than horses. Rarer still was the wagon that set out with a team of bulls. Those on Twelfth Street beheld perhaps the rarest sight of all, however, as they watched a team not of animals but of men struggle to push and pull a wagon full of flour to its destination.1

These are but a few of the many bizarre scenes on display in Richmond and other American cities during the fall and winter of 1872-73, as a wave of equine influenza infections spread from Canada into and throughout the United States. The cause of the malady and its method of spreading were unknown at the time and infection rates approached 100 percent. Conservative estimates show that only one to two percent of horses died, though urban areas generally saw higher mortality rates, with some as high as ten percent. While it proved less than fatal in most cases, the influenza managed to temporarily incapacitate nearly every horse it infected. The Great Epizootic, as the collective event came

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1 “The Epizootic Catarrh – Again,” The Richmond Dispatch, November 13, 1872.
to be known\textsuperscript{2}, was so debilitating that many infected horses could not even stand, let alone be put to work. With the animals unable to leave their stables, city life ground to a halt. In rail depots and docks throughout the nation, train cars and ships sat dormant, waiting for their cargo to be unloaded. Cargo that was unloaded did not make it far without horse teams to deliver it. Boxes, bales, and barrels formed miniature pyramids in front of businesses and storage facilities and on the sidewalks along the wharves and rail yards. Food supplies in urban areas dwindled while countryside farmers sat on huge stores; some had no way to transport their produce, but others feared the influenza too much to risk their animals’ health. Sparsely stocked merchant carts were pulled through the markets at a great expense of manpower. Doctors, of which there were relatively few, could not reach their more distant patients. City passenger railways suspended service in most cases, and when cars did run, they were overloaded to the point of absurdity. In Boston, a significant portion of the city burned as men struggled to haul the normally horse-drawn fire hoses. The Great Epizootic represented the greatest equine epidemic and possibly the greatest energy and transportation crisis the United States has ever experienced. Virtually every aspect of American society hinged upon the uninterrupted existence of horse labor, but interrupted it was.\textsuperscript{3}

\textit{“The Industrial North and the Industrializing South” – Philadelphia and Richmond}

Nowhere were the effects of the Great Epizootic more profoundly felt than in the great metropolitan cities of the Northeast. The city of Philadelphia, which possessed one of

\begin{footnotesize}
\textsuperscript{2} The influenza epizootic of 1872 has been referred to by more than thirty aliases – from hippo-malaria to blitzkatarh to the equine epizooty – but “The Great Epizootic” has been the most common and persistent of these. James Law, “Influenza in Horses,” \textit{Report of the Commissioner of Agriculture, 1872} (Washington: Government Printing Office, 1874), 8; “Star Beams,” \textit{The Evening Star}, November 5, 1872.

\end{footnotesize}
the most extensive horse-drawn street railways systems in the nation, was heavily reliant upon horse labor for everything from hauling goods to powering machines on construction sites. The city hosted firms in manufacturing, shipping, insurance, and other industries which connected Philadelphia to a number of other cities throughout the nation. Philadelphia suffered under the epizootic’s visitation for only six weeks, but felt its presence for months afterward, as these interconnected businesses, already having endured the immediate frustrations of the epizootic in their home city, continued to feel its repercussions as it swept throughout the rest of the United States.

But what of the South? During this period, southern cities were still recovering from the Confederacy’s defeat in the Civil War. Its economy broken and in the throes of radical transformation, the South was neither as industrially developed nor as industrially dependent as the North. Southern loyalists resisted the influence of northern “carpetbagging interlopers” while Northern investors’ interests were being drawn away from the lofty goal of Reconstruction by events like the Fisk-Gould Scandal of 1869 and the Great Chicago Fire of 1871. This erosion of political and economic interest in the South would be further exacerbated by the Great Epizootic.

In spite of the North’s diminishing interest, Southern cities nonetheless became increasingly urban and industrialized in the years leading up to the Great Epizootic. One such city was Richmond, Virginia, which linked its future to the growth of its trade and transportation industries. Richmond enjoyed access to a number of railroads, including the then-recently finished Chesapeake and Ohio Railroad, as well as the James River and Kanawha Canal, which connected the city with western trading partners, though it never quite reached its intended endpoint at the Ohio River. Even before the Civil War, Richmond
had been one of the most industrial cities of the South, but its burning at the hands of the
Confederacy in April 1865 left virtually nothing standing save the Tredegar Ironworks.
Thus, Reconstruction efforts in Richmond had largely been focused on the literal
reconstruction of the city rather than on industrialization.4

In spite of the war and rebuilding process, the city was well on its way to recovery.
By 1870, it had nearly matched its 1860 manufacturing output.5 Furthermore, Richmond
enjoyed a healthy shipping trade as its location at the head of the James River and the
multitude of railroads running through it made it a natural trading hub for the South. As the
chief motive power in the city, the horse was involved in most aspects of Richmond’s trade,
delivering coal, raw materials, and workers to factories and then hauling finished products to
rail depots and docks. As Richmond’s manufacturing and shipping industries grew, so too
did its reliance upon horse labor.

Still, Richmond experienced the Great Epizootic differently than did Philadelphia.
Most importantly, Richmond was a much smaller and less populated city. In fact, there were
nearly as many horses in Philadelphia as there were people in Richmond.6 Having only
recently begun in earnest its trend toward industrialization, and with a far smaller

4 "The Late Fire," *The Richmond Whig*, April 10, 1865; "Untitled," *The Richmond Whig*, April 12, 1865; "The
Tredegar Works," *The Richmond Whig*, April 12, 1865; "Sufferers by the Late Fire," *The Richmond Whig*,
April 15, 1865; George E. Waring, Jr., "Report on the Social Statistics of Cities, Part II, The Southern and the
Office, 1887); *The Advantages of Richmond as a Manufacturing and Trading Centre* (Richmond: Richmond
Chamber of Commerce and Commercial Club, 1882), 11; Wayland Fuller Dunaway, *History of the James
River and Kanawha Company* (New York: Columbia University, 1922).
6 In 1870, 674,022 people were reported living in Philadelphia and 51,038 people were reported living in
Richmond. Horse population estimate based on count found in Philip M. Teigen, "Counting Urban Horses in
the United States," *Argos* (Utrecht) 26 (2002), 273; Philadelphia and Richmond populations in U.S. Census
1872).
population, Richmond was inherently less dependent upon the horse and therefore less susceptible to the epizootic. The effects of the epizootic were almost always drastic, but they were also generally proportional to each city’s horse population. Examining the differences between the effects of the epizootic upon the more populated city of Philadelphia and the smaller city of Richmond helps illuminate ways in which the industrialization of the South differed from that of the North.

The residents of the two cities dealt with the epizootic differently. The prevailing attitude toward animals in the nineteenth century, often associated with René Descartes, was that animals were purely mechanical and soulless beings, lacking the capacity for reason, emotion, or even pain. This philosophy was integral to the spread and maintenance of industrialization. As such, it is possible to conceive of a city’s level of industrialization as indicative of the strength with which the city’s residents held to the notion of the animal as a machine. If Philadelphia’s citizens held more firmly to this attitude toward the horse than did the people of Richmond, based on the cities’ disparate levels of industrialization, questions of proportional effect arise. To answer these questions, this study examines the ways in which the residents of the two cities differed in their treatment of animals and in doing so, helps to reveal how the Great Epizootic can illuminate some of the ways in which industrialization helped to shape and transform attitudes toward animal use and abuse. Furthermore, it helps to demonstrate how the Great Epizootic itself contributed to a shift away from animal power and toward more predictable, controllable, and available sources of energy.

This comparative study focuses on Philadelphia and Richmond in roughly equal measure. Using these cities as models for the social and economic fallout of their respective regions, it reveals how the seamless incorporation of the horse in the industrialization of nineteenth-century American cities made them not only wealthier but also more complex, interconnected, and fragile.

“A Note on the Horse” – The Great Epizootic in American Historiography

Despite the sweeping and highly disruptive effects of the Great Epizootic, it is not well represented in the historiography of nineteenth-century America. Although some scholarship discusses the epizootic within the context of the importance of the urban horse, there has been virtually no extensive research on the event itself. Prompted by outbreaks of equine influenza in Japan and Australia in 2007, amateur historians CuChullaine O’Reilly and Basha O’Reilly published a study of the Great Epizootic, entitled Running like Wildfire, on the website of the Long Riders’ Guild Academic Foundation. Little more than a summary, the study is short on detail and rife with minor inconsistencies and outright errors. It focuses more on the spread of the disease than its effects on the economy and infrastructure of America, and therefore serves primarily as a springboard for further scholarship.  

There are many studies of the role of the urban horse in the nineteenth century, which together provide a comprehensive account. Joel A. Tarr and Clay McShane write extensively about Gilded Age city life with a particular focus on the importance of urban horses. Their work explicates the various ways in which the horse made possible the construction of the large cities characteristic of the North, examining the importance of hauling and stationary power especially. They refer to the epizootic primarily as an agitating

8 CuChullaine O’Reilly, Running Like Wildfire, www.lrgaf.org/medical/epizootic.html
factor in the delayed suppression of the Great Boston Fire. Leah Grandy, in her Master’s Thesis at the University of New Brunswick, uses the Great Epizootic as a vignette to demonstrate the importance of the urban horse in nineteenth-century Canadian cities. John Due and George Hilton refer to the epizootic as one of many factors in the transition to electric interurban railway systems. Eric Morris cites the Great Epizootic as evidence of poor sanitation in urban stables and further discusses the environmental fallout of reliance upon horse labor; ironically, horse waste was such a problem in urban areas that the automobile was actually heralded at one point as an environmental savior. Ann Norton Greene assigns more importance to the Great Epizootic than most, writing that “only a general strike by every teamster, worker, and municipal employee could have produced the same effect,” but even she spends little time on the epizootic in her analysis of the ways in which the horse contributed to American industry and industrialization in the nineteenth century.9

“A Characteristic Cough” – Modern Medical Explanations of Equine Influenza

It is difficult to say how often equine influenza has appeared throughout history, as it has likely been misdiagnosed a great number of times. The illness seems to have been quite common, however, with suspected outbreaks noted as far back as 465 B.C.10 The disease appeared in England at least a dozen times in the fifty years preceding the 1872 American


10 Law, 2-3.
outbreak and was seen in the United States several times between 1856 and 1872.\textsuperscript{11}

Although equine influenza has proven somewhat common, the variance in the severity of its symptoms and infectiousness has been great. The strain that spread throughout North America in 1872 was particularly virulent and the contagion was aided in its spread by the increase in horse population densities and interstate mobility necessitated by industrialization.

Equine influenza is an endemic respiratory illness that is generally found in groups of horses. With an incubation period of only one to three days, it spreads quickly through inhalation, aided by the coughing generally associated with respiratory maladies. It is caused by any of a group of related viruses, although more often than not the culprit is either type A-equi-1, identified in 1958 by Czechoslovakian researchers, or type A-equi-2, identified in 1963 in Miami, Florida. Modern veterinary manuals define the symptoms as a fever of 101-106 degrees, loss of appetite, drowsiness, weakness, a watery nasal discharge, tacky mucus, shortness of breath, and most telling, a “characteristic” cough. The cough is referred to as “characteristic” because it has two stages found to be almost entirely specific to influenza infections. The first stage is marked by a dry, frequent cough in which the epithelium (the lining of the upper respiratory tract) is damaged, leaving sores in the lining through which secondary bacterial infections can invade. The second stage is marked by a wet, less frequent cough that lasts anywhere from three weeks to several months – however long it takes for the animal to regenerate a new, functional epithelium. Equine influenza is contagious during both stages of the disorder. Modern veterinary science has produced a vaccine, but it is not widely used due to a relatively short period of effectiveness. When

infections occur, equine influenza is treated very simply – most cases require only extensive
periods of rest in clean, well-ventilated, quarantined environments, although especially
young and aged horses are often treated with antibiotics to prevent secondary infections
from taking hold.12

Equine influenza is most commonly found in horses, but it has been known to infect
other members of the Equus genus as well. Donkeys and mules served as the most common
alternatives to horses in the nineteenth century, doing much the same work as their larger
genetic relatives. They would have made fine substitutes for the horse during the Great
Epizootic if not for their smaller size and capacity, lower population densities in urban areas,
and nearly equal susceptibility to infection. As a result, they too were sidelined by the Great
Epizootic.13

"The Horse as a Machine" – Organic Technology and Industrialization

When the Man and the Dog came back from hunting, the Man said “What is
Wild Horse doing here?” And the Woman said, “His name is not Wild
Horse anymore, but the First Servant, because he will carry us from place to
place for always and always and always.”14

Rudyard Kipling’s account of the domestication of horses may be a bit oversimple, but it
illustrates a very important point nonetheless. There are several purposes for the
domestication of wild species, but in general terms, domestication of an animal occurs either
“to take advantage of its usefulness while living, or to enhance its value when dead.”15 As
Kipling indicates, in the case of the horse, its usefulness under human dominance was
primarily as a means of transit.

Biologist Jared Diamond defines a domesticated animal as “selectively bred in captivity and thereby modified from its wild ancestors, for use by humans who control the animal’s breeding.” Horses were the perfect domesticable animal. In the wild, they lived in a natural hierarchy, demonstrated a preference for herds, and tolerated other species of animal – making the imposition of human dominance an exceptionally simple task. Furthermore, once under human dominance, the species proved especially genetically malleable, allowing breeders to excise unfavorable features and strengthen favorable ones. Horses were first tamed by humans thousands of years ago for meat, leather, and manure, but eventually came to be used primarily as a source of motive power.16

Thus, horses serve as one of the oldest examples of technology in history. The processes of domestication and breeding recreated horses as biotechnological, organic machines. Refined through breeding over millennia for desirable size, strength, temperament, and appearance so that they would be better agents of transit, stationary power, warfare, and recreation, the horses of the nineteenth century only barely resembled their wild ancestors.17

Genetic genealogy allows researchers to trace the modern horse back to a common ancestor by studying mitochondrial DNA (mtDNA). Stephen J. G. Hall explains the process:

As mtDNA is maternally inherited, there is no recombination. Also, selection on this DNA is thought to be weak. Thus, any difference in DNA sequences between the mtDNA of groups of animals is due to the accumulation of mutations, which would be expected to proceed independently (and at a predictable rate) during the history of the groups as separate entities (‘lineages’). The extent of the sequence

difference indicates how long it is since the groups diverged from their common ancestor.

The use of genetic genealogy on horses demonstrates that while the domestication of horses occurred universally around five to six thousand years ago, there was no single domestication of the wild horse. The mtDNA differed so much that the common ancestor of today’s horses must have lived some 320,000-630,000 years ago. The diversity of mtDNA found in modern horses indicates that domestication must have happened at a number of distinct sites throughout the world, with a number of distinct types of horses, all of which mutated in different ways.\(^{18}\)

Within each type of horse, there were desirable characteristics for which breeders selected the studs and mares used for the refinement of their stock. Horses tasked with hauling grew larger over time, horses tasked with warfare got faster, and so on. Trade between different groups allowed for even more specialization and the creation of new breeds. Instead of selecting horses for refinement of a specific characteristic, the combination of characteristics was the goal. Through thousands of years of this type of manipulation, the horse was an organic machine continuously refined.

Although the horse was known and bred especially for its utility in transportation and work, the animal often proved too costly for most people to own and use. Throughout history, in fact, the horse was primarily an elite animal. This changed, however, in the early nineteenth century with the conceptualization of draft, the amount of power necessary to set an object in motion. Draft measures not just the resting weight of an object, but the amount of force necessary to move that object. For example, a load hauled over a paved, level road

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requires significantly less motive energy than that same load hauled over an uphill, muddy path. With the conceptualization of draft came new methods and technologies aimed at relieving the issue, especially as it applied to horses. With the technologies born of the movement to solve the issue of draft, the use of horse labor became for the first time cost-effective for common usage. Thus, the horse, long understood as an organic agent of work, was shed of its elite status.\(^{19}\)

The guiding notion in virtually all human activity regarding horses in the nineteenth century became cost-effectiveness. There were animal lovers and advocates, such as the Society for the Prevention of Cruelty to Animals, but most people came to see the horse primarily as an instrument of work. For example, one of the most common types of horses was the “draft horse,” bred for strength, endurance, patience, and docility – the characteristics best suited for hauling and plowing. The relationship between humans and horses was not antagonistic, however, as that would have been economically counterproductive. “Mechanical” maintenance upon horses was observed as long as it was cost-effective. Horses had long benefited from such care under humans; they were generally better fed, far larger, and far healthier than their wild counterparts. In fact, absent human dominance, the animals likely would have disappeared like most other large grazing animals whose rangeland had been encroached upon by human expansion.\(^{20}\)

Horses thrived because humans profited from the relationship far more than the animals themselves. Humans needed horses to build and operate the giant, wealth-producing

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cities that emerged in the nineteenth century.\textsuperscript{21} The great force in nineteenth-century transportation is generally considered to be steam power, but this is so only because the horse was so seamlessly blended into human civilization by this point. Only an event like the Great Epizootic, which removed horses from the equation, could highlight the importance of the horse in everyday city life.

Urban horses performed a number of jobs. As the primary means of transport for delivery and collection within city limits, horse labor carried virtually every good produced at some point in its journey to consumers.\textsuperscript{22} Deliveries and collections of all types screeched to a halt during the Great Epizootic. Healthy horses were so rare in Philadelphia that a group of newly convicted criminals was set free, as the authorities had no means of conveying them to their cells at Moyamensing prison. Similarly, in Richmond, prisoners were made to pull wagons carrying supplies to Virginia State Penitentiary. Mail collection and delivery were severely limited. Garbage and ash collectors were shorthanded and incapable of running their normal routes. Undertakers' efforts to perform funeral services were frustrated by the fact that they lacked the requisite number of horses to pull their hearses. Though the mortality rate among infected horses was fairly low, it represented enough of an increase that those whose business was to haul away "defunct horses" were able to raise rates from roughly two dollars per carcass to ten. Still, they could not keep up with the demand. Though manufacturers had long past converted to steam power, coal deliveries were frustrated enough that many companies cut production in the hopes of stretching their supply until the crisis passed.\textsuperscript{23}

\begin{footnotesize}
\begin{enumerate}
\item Ibid., 1.
\item Morris, 3.
\end{enumerate}
\end{footnotesize}
Though steam power was extremely popular in manufacturing by 1872, the construction industry had largely eschewed it for three main reasons. First, the companies generally had little capital and therefore preferred the less costly initial investment associated with horse power. Second, construction workers were naturally resistant to mechanization, fearing that it was moving toward replacing them entirely. Finally, horses were multi-faceted laborers, while steam-powered machines were specialty tools. A horse could be used for tasks as varied as hauling, excavating, lifting via pulleys, and powering machines via treadmill.\textsuperscript{24} For these reasons, the construction industry was still quite dependent upon horse power. The horse's most important task in construction was hauling building materials, as they were the most efficient means of conveyance in urban areas. Gaining access to and transporting the bricks, lime, sand, and other materials necessary to construction work became a logistical nightmare when the epizootic hit, and companies were forced to shut down worksites, putting employees out of work for the duration of the epizootic.\textsuperscript{25}

Many Philadelphians were slow to understand the potential urgency of the epizootic. They knew there was a great deal to be lost, but their first instinct was to focus on the horses as 	extit{property} rather than 	extit{producers}. Several days after the epizootic was first recognized in the city, before it was widely known that the illness was not especially fatal, \textit{The North American and United States Gazette} detailed the "actual moneyed interest hazarded in the disease" by listing the number of horses in Pennsylvania (546,100), the average cost per

\begin{footnotesize}
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\begin{itemize}
\item \textsuperscript{24} Joel A. Tarr, "A Note on the Urban Horse as a Power Source," \textit{Journal of Urban History}, Vol. 25, No.3 (March 1999), 437.
\end{itemize}
\end{footnotesize}
horse ($97.18), and the aggregate dollar amount that could potentially be lost
($53,069,998). These are by no means insignificant figures – the city of Philadelphia held
almost ten percent of the total horses in Pennsylvania, and therefore stood to lose nearly
$5,000,000 in horses alone. In Richmond, there were only around 4,000 horses, worth
roughly $400,000, but because the city was much smaller in physical size than Philadelphia,
the southern city’s horse population density was actually a fair bit larger. In Philadelphia,
there were just under 400 horses per square mile, but in Richmond, there were nearly 600
horses per square mile. Neither city could look upon losses of this magnitude without some
measure of anxiety. These figures do not even include the loss of production income that an
equine work stoppage represented.27

Industrialization had greatly expanded the economy. The estimated real gross
domestic product (GDP) per capita in 1872 had more than doubled since 1800, having
increased from $1,237 to $2,684.28 This amounted to a staggering increase in American
trade and growth in the manufacturing and transport industries, both by this point heavily
reliant upon horse labor. As the primary means of both delivery and collection within city
limits, the horse was involved in the transport process on both ends, delivering raw materials
and finished goods, and often in the manufacturing process itself, either as the deliverer of
cOal to power factory machines or as the motive power for the machines themselves. Most
employees of these industries even relied upon the horse for their daily commutes.29

29 Morris, 3; Clay McShane and Joel A. Tarr, “The Centrality of the Horse in the Nineteenth-Century
American City,” in The Making of Urban America, ed. Raymond Mohl (Lanham: Scholarly Resources Books,
1997), 106, 111.
While industrialization increased the importance of the horse, it also shifted humans’ understandings of the animal. Although by this point horses had already been used for millennia as a source of motive power, the new and heightened demands put upon them by industrial processes skewed the perception of horses further away from the organic and natural worlds and more toward the technological. Even publications that explicitly acknowledged the organic nature of the horse, like *The American Farmer*, included draft calculations and assessments of the “horse, considered as a machine” alongside treatises on horse breeding. Later publications such as *Productive Horse Husbandry* included chapters like “The Horse as a Machine,” which systematically examined horse efficiency based on how much work was produced for each unit of fuel (food). The clearest demonstration of the notion of the horse as machine is the advent of the term “horse power.” Invented by James Watt when he patented his steam engine in 1775, the term was used to describe mechanical power by no later than 1833 in publications like the *Journal of the Franklin Institute*. The term continues to be used to this very day, demonstrating the strength and depth of the concept of the animal as machine in the public consciousness.

Industrialization did not happen overnight, however, and neither did the shift in perceptions of the horse. Although Descartes popularized and has served in many ways as the face of the concept of the horse as more machine than animal, the concept was inherent in the very first domestication and breeding of the animal. While these processes also recognize the biological features of the horse, their goals were almost entirely based on the

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mechanical utility of the animal. Throughout history, this conceptualization persisted, even grew. While not necessarily inevitable, the likely course for human-animal relations was to continue along this path. The process of industrialization did not radically change how people envisioned the horse, but instead concentrated those ideas, focusing humans’ views of the horse on its mechanical role rather than on its organic features.

An additional complication in the human-animal dynamic was the competition for physical space within the urban landscape. Horses may have been seamlessly blended into the conceptual realms of city life, but they were not so easily handled in the physical. As mentioned earlier, Philadelphia and Richmond both hosted several hundred horses per square mile. There were stables in every neighborhood, often more than one per city block. The vast majority of urban horses were workers (recreational riding was generally limited to the wealthy). Working horses generally pulled vehicles of various types, meaning there were nearly as many vehicles as horses. There were light wagons, heavy wagons, drays, cabs, carriages, omnibuses, streetcars, and more. The cities were so crowded with horses and their vehicles that a constant police presence was necessary in highly trafficked areas to maintain some sense of order. As urban horse populations grew in response to the demands for horse labor, the physical space allotted for stables and the like did not grow in equal measure. Where horse populations grew beyond the physical capacity to shelter them in proper stables, many horses found themselves spending their non-work hours in dark, poorly ventilated, and dirty facilities – the perfect centers for the spread of communicable disease.33

“The Impending Contagion” – Early Encounters with the Great Epizootic

The Great Epizootic likely originated in Markham, Ontario in late September, spreading to Toronto by early October, and farther south into the United States throughout October. The residents of Philadelphia suspected it was only a matter of time before “the impending contagion” reached their horses, but once it had, few wanted to admit it. Instead, when the epizootic reached Philadelphia on October 25, 1872, the owners of the first infected horses did their best to cover up the influenza and it was not widely accepted as being present in the city for several days afterward. Richmond may have suffered its first infections as early as late October, though it was more likely the first few days of November. This confusion derives from the fact that Richmond newspapers waited at least several days from the first date of infection to report on the influenza’s presence in the city. It was first noticed at the hack-stand on the corner of Franklin and Fourteenth Streets and was found in virtually every stable in the city by November 5. The owner of the first sick horses was never determined, making it nearly impossible to trace the spread of the malady throughout Richmond. The epizootic earned the name “lightning catarrh” for the rapidity with which it spread, but it still would have taken at least a few days to spread to every stable. Most likely, the owners of the first infected horses misdiagnosed the illness as a milder, more common respiratory malady, either purposefully or out of sheer ignorance, and continued to bring their contagious horses "The Horse Disease," The Philadelphia Inquirer, October 28, 1872.

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34 Canadian infection dates from Law, 5; Philadelphia’s first rumors of the infection, which were later substantiated, were at Free’s livery stable on October 25, 1872, as reported in “The Horse,” The North American and United States Gazette, October 25, 1872 and “The Horse Malady,” The Evening Star, October 27, 1872; The Philadelphia Inquirer did not fully accept the epizootic’s existence in the city until witnessing it on October 27 as reported in “The Horse Disease,” The Philadelphia Inquirer, October 28, 1872.

35 “Last week in October” is the date given for Richmond in Adoniram B. Judson, “History and Course of the Epizootic Among Horses Upon the North American Continent in 1872-73,” American Public Health Association Report of 1873, 99; Newspapers in Richmond first reported the presence of the epizootic on November 5, stating that it had arrived in the city days before the reports; See “The Horse Plague,” The Richmond Dispatch, November 5, 1872; “The Horse Disease,” The Richmond Whig, November 5, 1872; “The Canadian Horse Disease in Richmond,” The Richmond Enquirer, November 5, 1872.
out into the crowded city streets, spreading the disease wherever they went. Unfortunately, a
description of the influenza’s circulation throughout Richmond must be speculative, as the
willing ignorance of horse owners and of the press limited the distribution of information if
not of the virus.

Mapping the spread of the virus throughout the nation is slightly easier, but still
based in some part on conjecture. A close examination of the maps and reports showing the
spread of equine influenza in 1872 demonstrates that the virus largely followed the course of
trade routes and railroad lines. This observation explains why the virus, which had presented
itself a number of times in the United States, had not reached these epizootic proportions
previously. The explosive expansion of railroads and industrialization in the nineteenth
century required huge numbers of horses in concentrated areas and made national travel not
only faster and easier but also necessary. Furthermore, before the 1860s, very few railroads
crossed state lines. The influenza virus was carried throughout the nation as though it were a
commodity going to market, infecting horses everywhere it went.36

In 1872, veterinary medicine was not widely practiced as an occupation nor was it
particularly advanced as a science. In the 1870 census, only ten people in Virginia, 174
people in Pennsylvania, and 1,160 in the United States identified themselves as veterinary
surgeons—a miniscule number when compared to the 90,201 veterinarians currently
practicing in the United States.37 Ignorance in the diagnosis and treatment of equine
influenza, therefore, was not uncommon. Most of those who dealt with horses on a regular

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36 Basha O’Reilly, “Recorded Instances of the Great Epizootic Reported in 33 States, Canada, and Cuba from
Law, 6; Scott Reynolds Nelson and Carol Sheriff, A People at War: Civilians and Soldiers in America’s Civil
War, 1854–1877 (New York: Oxford University Press, 2007), 142. See Appendix I for a map of the
epizootic’s likely spread throughout the Northeast and to Richmond.
Printing Office, 1874); “Market Research Statistics – U.S. Veterinarians,” last modified February 2011,
basis believed they were sufficiently experienced to deal with virtually any of their animals’ problems and believed it beneath their dignity to employ a physician in the healing process. Methods of treatment in both Philadelphia and Richmond ranged from completely ignorant and harmful to surprisingly astute and salutary. Among the worst treatments espoused in Philadelphia were bleeding, blistering, setons (the use of sutures to keep wounds open for “airing out”), drenching, the use of irritant chemicals such as carbolic acid and gas tar, and even electric shock. Because the influenza virus produces debility in its victims from the onset, these inflammatory measures only served to worsen the illness. In Richmond, the advice was generally of a better quality, with the worst suggestion being the use of the highly poisonous carbolic acid as a disinfectant. Otherwise, the advice was surprisingly similar to modern treatments, suggesting stricken horses be removed to clean, well-ventilated areas, wrapped in flannel for warmth, and given drinking water in a bucket raised to their head rather than in a trough.

Advisors in both cities and of both qualities misread two key features of the illness, however. First, they misunderstood the two-stage cough characteristic of influenza infection. Thinking that a less frequent, wet cough was a sign of recovery, they recommended the return to work of still-ailing horses, allowing them to mix with healthy horses. This

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40 While carbolic acid, otherwise known as phenol, has been and is still used to great effect in a small number of medical procedures, it takes a great deal of training and instruction to produce these salubrious effects. Unfortunately, such instruction was not included with the suggestion in Richmond’s newspapers. See “The Horse Plague,” *The Richmond Dispatch*, November 5, 1872; “The Horse Malady,” *The Richmond Enquirer*, November 6, 1872. The reasoning behind using a bucket for giving water is that the position of the horse’s head when drinking from a trough makes swallowing more difficult.
prolonged the influenza infection, aided the contagious aspect of the epizootic, and significantly increased the chances of secondary infections. Second, they misunderstood the cause of the epizootic, believing it to be the result of anything from the weather to atmospheric conditions to the presence of “organic germs of vegetable nature” in the air.41

Although the notion of microscopic creatures that precipitate disease existed at least as early as 34 B.C., and persisted throughout history, it was not proven until 1876, four years after the epizootic. Robert Koch’s experiments anthrax led to the development of “Koch’s Postulates” which serve to this day as the criteria for proving that a specific microbe causes a specific disease. Given the primitive state of veterinary medicine in America and the absence of a proven germ theory in 1872, it is unsurprising that neither the citizens of Philadelphia nor the seemingly wiser citizens of Richmond were able to determine how the influenza spread.42

“Driving Horses to Death for Dollars” – The Great Epizootic in Philadelphia

Of the nearly 220,000 people working in Philadelphia in 1870, roughly half found their employment in manufacturing. Another 8,000 were involved in the horse trade as stable workers, carmen, draymen, teamsters, or employees of street railway and railroad companies. Every one of these workers depended upon horse labor for their wages. Philadelphia was so profoundly dependent upon the horse’s industrial efforts that while citizens took some notice of the abuse of animals, they took very little issue with it.

Draymen were the first to take advantage of the epizootic in Philadelphia. The shortage of

horses meant they could charge exorbitant fees for the transport of goods. *The Philadelphia Inquirer* complained that they were “driving horses to death for dollars,” because the “brutal men...could earn enough, even by killing a horse, to buy another and have something handsome left in the way of a surplus.” The Pennsylvania Society for the Prevention of Cruelty to Animals (PSPCA), an organization created by the State Legislature in 1868 and authorized to police the treatment of animals throughout the state, attempted to combat this practice by assessing fines to those who worked lame, exhausted, and sick animals. But the PSPCA was a small aberration in the face of a near-monolithic force and, even with emergency memberships, lacked the manpower to effectively monitor the city’s animals and animal owners.\(^{43}\) If for the draymen, the horse was more a means of production than a living being, then working a sick horse was more a question of profit than of humanity.

Possibly worse than the draymen, however, were the city’s street railway companies. They continued to run cars with sick horses, arguing that only a horse too sick to eat was too sick to work. Eventually, they were forced to suspend service for a period, but soon resumed by running teams of four horses per car instead of the normal two. Paying lip service to the notion of humane treatment, they explained that using double-teams would alleviate the workload for the horses.\(^{44}\) In reality, however, this practice simply increased the number of horses taken prematurely from the rest they desperately needed. Furthermore, the horses were contagious and should have remained quarantined, but instead were allowed (or forced, rather) to continue spreading the virus.


Further exacerbating the issue was the overloading of streetcars. Horse-drawn trams were built with a capacity of 20 in mind, but reports of as many as 50 or 60 people squeezing into cars were common during the epizootic. Witnesses described horses bleeding from the eyes, nose, and mouth struggling so much with overloaded cars that passengers often had to help push. On November 8, *The Evening Star* began a campaign against this practice, impelling the Pennsylvania Legislature to pass an act that would disallow railway companies from taking on passengers for whom they could not provide a seat, reasoning that overexertion weakened the horses' resistance to disease. That same day, the presidents of the various railway companies asked the PSPCA to police overloading, claiming that their employees did not listen to their direction in this manner. *The Evening Star* carried another story, however, that cast that request in a dubious light. According to this second story, when a customer informed him that the neck of one of the horses pulling his car was "terribly galled," a driver from the Green and Coates line pled with him not to report it, explaining that he had been arrested and fined twice already for driving the horse and that the company not only refused to repay him for the fines, but forced him to take the horse out again, threatening to fire him if he refused.45

The railway companies then changed their approach, defending overloading as good exercise for the horses and arguing that two good horses could easily pull a car carrying 50 persons without suffering injury. There were scarcely two "good" horses in the entire city at this point in the epizootic, let alone in the stables of the railway companies. More importantly, this obvious pretense gave little cover for the railway companies' true motives. Even with the fines inevitably assessed them by the PSPCA, railway company officials

believed working sick horses and allowing the overloading of streetcars to be financially sound practices. Much like the draymen, railway officials believed the potential profits outweighed the potential financial and moral costs of injuring or even killing the sick horses.  

Ironically, the revenues derived from these practices likely did not equal the losses suffered under the far more fatal secondary infections seen in many horses starting in mid-November. Horses that had been seemingly on the mend suddenly succumbed to pneumonia, dropsy, and glanders, an infectious disease characterized by nodular lesions in the lungs and ulceration of the mucous membranes in the upper respiratory tract, two areas already weakened by the influenza infection, in what the papers called a second “dropsical stage” of the epizootic. In reality it was less a second stage than a series of secondary infections, the timing of which was not coincidental. The railway companies (and others throughout the city) put their horses back to work almost immediately after seeing what they considered a sign of recovery, the less frequent cough now known to be a part of the influenza infection rather than an indication of recuperation. Dr. James Law noted that horses that were overworked or returned to work prematurely were especially susceptible to secondary infections, referring specifically to Philadelphia and other large cities where horses were “condemned to draw overloaded street-cars” and “had been worn out by injudicious and exhausting treatment.”

47 Pavord and Pavord, 69, 150.  
The seriousness with which Philadelphians came to regard the epizootic is evident in the tone of its citizens’ writings, the manner in which newspapers reported on the events, and in the plethora of advertisements for products marketed as curatives for the disorder. Even before the equine influenza virus hit Philadelphia, the epizootic was an “all-absorbing topic” for the city’s citizenry. Unsubstantiated reports of the epizootic abounded so much that writers at *The Philadelphia Inquirer* felt compelled to caution Philadelphians “to pay but little heed to rumors” unless “authenticated fully.” So wracked with fear and anxiety were the citizenry that when Edward Free first discovered the infection in his stable on Cherry Street, he was inundated with visitors hoping to gauge the severity of the illness. These visitors suggested so many different methods of treatment that only days after his horses fell ill, Free made the following remark to a veterinary surgeon: “I have now just forty-one prescriptions, each one of which I am to try by the most earnest request of its giver; if the horses are living by the time I get through with that lot, I’ll try yours.”

In Philadelphia, the epizootic was front page news for its duration in the northern metropolis, and even beyond that. The Great Epizootic coincided with the Presidential election in which Ulysses S. Grant defeated Horace Greeley as well as with the Great Boston Fire, but still almost never left the front page. Reporters even drew connections between the epizootic and these seemingly larger, more important events. *The Evening Star* questioned whether the epizootic was a campaign trick, and every paper connected the dearth of healthy horses in Boston to the spread of the conflagration. Furthermore, they commented extensively on the losses Boston suffered, fretted about the likelihood of a

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similar disaster in Philadelphia, and bemoaned the insurance losses of Philadelphia-based insurance companies, whose aggregate losses topped $2.5 million, but were lucky in that none were bankrupted by the fire.52

The Great Epizootic prompted citizens and reporters alike to wax philosophical about the role of the horse in the city. On November 5, *The Philadelphia Inquirer* remarked:

Not during the history of this city has it ever before been made as palpable, nor has it, perhaps, ever been even seriously considered how largely we are dependent upon the labors of the noble animals that are now pest-ridden, and how indispensably necessary their services in the daily round of either social or business life.53

A day later, *The Evening Star* wrote:

People have learned to know that although steam has superseded the horse for heavy transportation and traveling long distances, in our great cities he is a sine qua non—a something vitally essential to the transaction of business.54

Similar treatises on the importance of the urban horse abounded in Philadelphia’s newspapers, written by both readers and reporters. Eventually, both began to question the wisdom of continued reliance upon the horse and to inquire about the development of new technologies for urban transit. This discourse began and would remain focused almost entirely on the economic and social ramifications of the epizootic rather than on the animals’ suffering.55

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54 “Horses in Large Cities,” *The Evening Star*, November 6, 1872.

“Epizootic Poetry” – The Great Epizootic in Richmond

In Richmond, industrialization had not taken the same hold over the city’s infrastructure and economy. Of its nearly 19,000 workers, only 6,500 were employed in manufacturing and 335 were employed in the horse trade. Thus, roughly one-third of Richmond’s workers relied upon horse labor for their wages. In this smaller and less industrially dependent city, horses were not as integral to the city’s daily doings and received far less inhumane treatment than in Philadelphia.56

Much like their Philadelphian counterparts, draymen in Richmond took advantage of the fact that the demand for drays far exceeded the supply. The shortage of horses allowed them to raise their fees by as much as 1,000 percent. Under normal conditions, the cost of hauling a hogshead of tobacco (roughly 1,000 pounds) between depots was fifty cents. During the epizootic, the price jumped to five dollars for the same job. The price of delivering a “twenty-five cent load of miscellaneous goods” jumped to two dollars. Inflation was so rampant that The Richmond Dispatch suggested that the city council suspend the enforcement of the order requiring wagons, drays, and carts to be licensed for hauling purposes. Competition was at an all-time low and prices were at an all-time high. The docks, rail depots, and sidewalks were crowded with freight to be hauled for excessive profits, but by the second week of infection, most of Richmond’s drays had “disappeared almost entirely” from the streets amid an “entire suspension of local transportation.”57

The same potential for profit existed in Richmond as in Philadelphia, but the same abusive “driving to death for dollars” did not occur. Because Richmond was less industrialized and therefore less dependent upon the labor of horses than Philadelphia, the southern city was better suited to withstand the animals’ temporary absence without resorting to working sick horses abusively. Richmond certainly suffered transportation woes and financial losses, but not to the degree to which Philadelphia suffered. Philadelphians were more likely to treat their horses callously out of sheer necessity if not out of ideological reasons. There was little to no malicious intent in the abuse, however; in the hand-to-mouth economy that most urban workers in nineteenth-century American cities experienced, going without work was not much of an option.

Over the course of industrialization, cities developed mass transit networks to handle the heightened concentration of commuters in urban centers and increasingly large commuting distances. Most northern cities developed omnibus networks by the 1830s and upgraded to street railways by the 1840s. Richmond was naturally slow to adopt new transportation technologies and until the late nineteenth century remained primarily a “walking city,” in which most destinations were within a two mile radius of residential neighborhoods – the approximate distance pedestrians could be expected to commute on foot. The city’s first omnibus network and street railway company appeared in 1856 and 1861 respectively, but the street railway would not survive the Civil War. By 1872, however, the street railway had been revived under the auspices of the Richmond City Railway Company.58

Although Richmond remained primarily a city of pedestrians, the escalating industrialization of the city did create demand for street railway service, which could

58 Greene, 184; Michael B. Chesson, Richmond After the War (Richmond: Virginia State Library, 1981), 7.
increase the possible half-hour commuting distance from about two miles to three miles, more than doubling the potential residential area of the city from 12.6 to 28.3 square miles. As the sole provider of railway service, the Richmond City Railway Company became an integral part of many citizens’ commutes and as a result became quite profitable. In spite of this, the company never resorted to running double horse teams or overcrowding streetcars to make up for lost fares. In fact, they suspended all service only two days after the influenza was found in their stables and did not resume service for several weeks after.

The company’s position as the sole provider of true mass transit service produced two fundamental differences from any of the street railway companies in Philadelphia. First, the lack of competition meant that if the company suspended service, it effectively cut off railway commuters from virtually all intraurban travel. This pressure had to weigh heavily on the company officials as they considered how to react to the epizootic. More importantly, however, the lack of competition put them in the enviable position of having little reasonable expectation that they could lose their place at the head of the mass transit industry in Richmond. This position must have made it far easier to weather the pressures to risk the health of the railway’s horses in service to the public. The company was free from the need to chase short-term fares at the risk of the long-term health of its horses.

Richmond’s inhabitants took the epizootic seriously – indeed, had they not, they would have treated their horses less humanely – but the city lacked the ominous atmosphere of Philadelphia. “There is really no danger of a horse dying of the disease if ordinary care be

59 Clay McShane and Joel A. Tarr, “The Centrality of the Horse in Nineteenth-Century American Cities,” in *The Making of Urban America*, ed. Raymond Mohl (Lanham: Scholarly Resources Books, 1997), 111. Although the potential was there, Richmond did not approach anywhere near that size for a long time.
taken of him," reported *The Richmond Whig*. In other newspapers, articles about the Presidential election, the Virginia State Fair, and other, less important topics often bumped the epizootic from the front page to as far back as the eighth. Reporting on the epizootic focused more on the conditions in the city, when the influenza was expected to break, and how horses were treated than on the economic ruin the excision of horse labor represented. Even in articles in which these economic damages were discussed, Richmond's newspapers infused them with a great deal of concern for the animals’ welfare. On November 15, *The Richmond Dispatch* wrote:

> The horse never so much wanted a good master, and the man who owns a horse, if he values him, should be good to him now…There must be kindness to these invaluable animals, and they must be prudently worked and never overtaxed. The public interests as well as those of the owners of teams demand this.

Richmond's citizens were as absorbed in the epizootic as Philadelphia's, but far less panicked. In their letters to newspapers, the southerners offered advice for treating the animals and complained of the inconvenience the epizootic caused, but their absorption with the events took another form as well – epizootic poetry. Several poems about the epizootic, all positive and even whimsical, were penned by Richmond’s citizens and published in the city's newspapers. The following poem, entitled "Hors De Combat," appeared in *The Richmond Enquirer* on November 15:

> Upon my sole I’ve walked so much
> Since horses have been hoarse
> I feel like some pedestrian sport
> In training on the course.
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> I’ve worn my boots to sandals and
> The sand’s all in my feet;
> My calves won’t work, if oxen do,

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For horses on the street.

Such “pilgrim’s progress” as this is
Makes each man’s “bunion” hate;
And though a strict teetotaler,
He’s corned in spite of Fate.

Forgotten now is horsemanship
   And driving’s a lost art.
Hotels can’t furnish carriages;
They’ve nothing but the carte.

The price of leather’s going up
   At a most fearful rate,
And every cow hides quivering
Lest shafts should be her fate.

No car’os now will carry us,
Urged on by driver’s whack;
Oh! For the wings Icarus had,
Although they went by wax!

Then let us hope that horses may
Be freed from present woes,
And running on their feet again,
Instead of at the nose.63

The concerns found in this poem are congruent with those found in Philadelphians’ writings – especially the terrible inconvenience caused by the loss of horse-drawn vehicles. What differs is the tone. Rather than panic, fear, or anxiety, the poem conveys its author’s bemused realization that his or her life relied far more on horse power than previously recognized, a position held by many in the city of Richmond.

“Pari Passu” – The Great Epizootic and Human-Animal Relations in America

The Great Epizootic was a watershed event in the development of human-animal relations in the United States. In cities throughout the nation, the epizootic forced people to realize how dependent upon horse labor they had become. As the editors of The Nation put it:

63 “Hors De Combat,” The Richmond Enquirer, November 15, 1872. See Appendix III for more examples of epizootic poetry.
Our talk has been for so many years of the railroad and steamboat and telegraph, as the great “agents of progress,” that we have come almost totally to overlook the fact that our dependence on the horse has grown almost pari passu with our dependence on steam. We have opened up great lines of steam communication all over the country, but they have to be fed with goods and passengers by horses. We have covered the ocean with great steamers, but they can neither load nor discharge their cargoes without horses.64

With this realization came questions regarding the nature of the relationship between the horse and man. The horse’s undeniable suffering at the hands of the influenza virus, which was eerily similar to manifestations of the same in mankind, forced people to consider the relationship of man and horse as between two organic beings rather than as a man and his property or tool of commerce.

This newfound concern for the physical well-being of the horse manifested itself in two important ways. First, the long-nascent American veterinary profession truly began to solidify only after the Great Epizootic compelled the various commercial entities that relied on horse labor to recognize that providing medical care to horses encouraged their financial health as much as the animals’ health. In the forty years following the Great Epizootic, most American veterinary schools were built in areas with large horse populations and veterinarians themselves were almost entirely engaged in the preventative and palliative treatment of horses in the service of industry.65

The second way in which this concern revealed itself was in the reconsideration of the very place given the horse in urban society. If the epizootic caused people to recognize that the horse was the backbone of urban life, it also caused them to question the wisdom of this state of affairs. Industrialization required consistency and predictability in its machinery.

Over its millennia-long history of work, the horse had proven itself a reliable and stalwart toiler, but the Great Epizootic demonstrated its unpredictable fragility.

By 1880, the horsecar remained the principal means of transportation in cities, but it was nearly universally recognized as inefficient and inadequate. Horse-drawn cars moved only six miles per hour, derailed frequently, and proved troublesome on graded streets. Horses cost roughly $100 each and transit companies needed to own between five and eight horses per streetcar, as the animals averaged only four to five hours of service per day. Each horse consumed nearly thirty pounds of feed per day and hostlers, blacksmiths, and increasingly veterinarians had to be employed to care for the animals. Even with such care, however, the life expectancy of a horse that worked on street railways was short.66

Other drawbacks of the use of horse labor added to the desire to discover alternative power sources. The urban horse was an environmental disaster. Each horse produced between fifteen and twenty pounds of manure and up to a quart of urine in a single day. Multiplied by tens of thousands, it became a logistical nightmare just to clean up after them. These waste products were not only unseemly, but detrimental to the health of the general public. Horse manure hosted bacteria like E. coli, which can be contracted through contact with the skin. In addition, manure is one of the most common breeding areas for flies, extremely potent disease vectors in their own right. Horse-drawn vehicles were also involved in hundreds of collisions and other accidents every year. Most importantly, the growing use of “invisible” energy sources like steam power and electricity created a separation between the ideas of production and consumption, which in turn made the public uncomfortable with the quite visible displays inherent in the use of horse power. The American public wanted to enjoy its bountiful “invisible” energies and consumables without

66 Due and Hilton, 4.
being faced with the moral, social, political, and environmental realities involved. For these reasons and with a fresh remembrance of the Great Epizootic, which had demonstrated their over-dependence on the horse and crippled their economic and social structures, city dwellers looked forward to more practical, efficient, and safe modes of transit.67

“An Interesting Experiment” – Alternative Power Sources in the Nineteenth Century

The first and most obvious of these alternatives for transportation was steam power. City residents were hesitant to allow steam-powered vehicles within city limits, however, as they were concerned about smoke and noise pollution, dangerous speeds, and the potential for explosion. Steam-powered vehicles, often called dummies, were not allowed in Philadelphia until the city council and mayor passed a temporary order during the epizootic crisis. This order amounted to little more than experimentation, however, as the vehicles were ill-suited to the existing rails and especially the cobblestone roads of the city. The president of the Fifth and Sixth Streets Railway Company argued that by the time dummies could be made to work with the city rails, the disease would be gone. There is no record of Richmond firms experimenting with steam power during the Great Epizootic, but reports of its use in Philadelphia, New York, Chicago, and other cities sparked a great deal of interest.68

Far more successful than the steam-powered “dummy” vehicles was the cablecar. In the 1880s, cable railways were built in many American cities, but not all, owing to the prohibitive costs of constructing and maintaining the cable systems. Furthermore, entire lines could be tied up if a cable snapped, as it was the only motive power involved. Still,
cable power proved more suitable than horse power in especially hilly cities like San Francisco.\textsuperscript{69}

Surpassing both the cablecar and the horsecar, the electric streetcar came to dominate the straightline transit of American cities. The electric streetcar system was superior to the horse-drawn system in virtually every way. Because electric streetcars were faster, transit companies could locate their facilities on cheaper real estate outside of the main urban areas. The companies no longer needed to purchase and feed scores of horses, nor did they need to employ the stablemen, blacksmiths, and veterinarians that had once been required. Although it was clearly an attractive alternative to horse power, the electric streetcar was not universally and immediately adopted in many cities.

The concept of path dependence helps to explain why this obviously superior technology was not immediately adopted by all candidates. Path dependence is the “dependence of outcomes on the path of previous outcomes, rather than simply on current conditions.” In a path dependent process, history matters – the choices made at earlier stages in the process influence, even define, the options available at later stages.\textsuperscript{70} Thus, the technological comparison of electric streetcars and horse-drawn streetcars can be only part of the decision making process.

Philadelphia and other highly industrialized cities with multiple horse-drawn railway lines found it difficult to justify the upgrade to electric power, as they had invested quite heavily in the construction of their horse-drawn railway networks. The costs associated with such an upgrade would have been exorbitant, as the process would involve first dismantling the existing rails installed throughout the city and divesting of the tools specifically suited

\textsuperscript{69} Due and Hilton, 4-5.
for horse-drawn systems, then installing the new electric rails, procuring the tools suited for
the electric cars and rails, and training employees in the operation of such a system.

Ironically, the first successful electric streetcar system in America was installed by
Philadelphia native Frank Sprague in the former “walking city” of Richmond in 1887.
Having experienced the Great Epizootic as a watershed moment early in its industrialization,
Richmond turned from animal power before it had constructed an extensive and expensive
horsecar system. Thus, the transition was relatively painless. Sprague’s installation proved
successful and within three years, 200 such systems were built or ordered for cities
throughout the nation. By the early 1900s, there were roughly 15,000 miles of electric
railway in the United States and 97 percent of the nation’s urban street railways were
electric. Just over a decade earlier, 70 percent had been powered by animals.71

In the wake of the Great Epizootic, several new technologies came to erode the
position of the horse as the primary mover in urban areas. The horse was not replaced all at
once, but function by function, and thus persisted as a viable means of transit and stationary
power into the twentieth century. By the 1920s, however, the horse had been more or less
retired in favor of the automobile, at the time hailed as an ecological savior for urban
areas.72 The great story in transportation in the late nineteenth and early twentieth centuries
was the transition from animal to mechanical power, resulting in the construction of a new
energy landscape that no longer rested on the backs of horses, but had been built on the
foundations of a system that had.

71 Due and Hilton, 4-7; Earle Lutz, “You’ve Missed the Last Trolley,” The Richmond Times-Dispatch,
November 27, 1949.
72 Morris, 8.
“The Crisis Probably Past” – The Economy after the Great Epizootic

By the end of 1872, the cities of Philadelphia and Richmond were slowly but surely returning to a state of normalcy, although neither their horses nor their economies would be completely free of the epizootic’s influence for months or even years. For the horses, it would be a long recovery made longer due to lack of rest. The cities’ economies would never truly be the same, as they were linked to the many cities that would suffer under the Great Epizootic’s visitation until late in the spring of 1873. Furthermore, the epizootic was only one of a long string of economic setbacks that plagued the United States in the nineteenth century, each aggravating the burgeoning yet fragile post-Civil War economy. First, the Fisk-Gould Scandal, a conspiracy to corner the gold market, caused drastic inflation in the price of gold, which then plummeted on September 24, 1869 (the Black Friday of 1869), ruining the fortunes of banks and individual investors both. Next, the Great Chicago Fire of 1871 burned over four square miles of the city, doing over $200 million in damages. The Great Boston Fire did another $90 million in damages, not counting the costs to other cities whose business interests depended on the goods and services Boston could no longer furnish. The Great Epizootic and its associated economic damages followed in late 1872 and early 1873. Later in 1873, European economic difficulties brought on by a period of overindulgence in mortgaging and speculation as well as unexpected international competition from American commercial interests combined with the previously mentioned events in the United States economy to cause the widespread failure of American railroad interests and the banks that had over-invested in them. The Panic of 1873, as this crash was called, was sparked by the failure of Philadelphia-based railroad speculator Jay Cooke & Co. to pay its debts. While the Panic was not directly caused by the Great Epizootic, it was
accelerated by a subsequent decreased interest in investment and by the financial losses
suffered by railroad companies, which rather ironically employed more horses than any
other industry. This collection of events, along with a number of other factors, brought about
the Long Depression that would afflict the nation for over twenty years.73

“Exit Epizooty” – Closing Thoughts

Of all epidemic diseases it is the most universal, and the rapidity of its march
and extent of its range over land and sea, sometimes in both hemispheres and
in different climates, in opposite seasons and in all varieties of weather,
among people of all classes, naturally led to the supposition that some
extraordinary influence could alone give rise to such a wide-spreading
malady.74

The Great Epizootic is undoubtedly an intriguing topic, but is it important? For many, it is
an altogether unfamiliar historical event, long forgotten or cast aside in favor of more
“important” histories, yet its name cannot help but pique curiosity in most who hear it. The
Great Epizootic did not radically change much of anything. It did not create a sudden shift in
veterinary medicine. It did not result in a sudden, widespread animal rights movement. It did
not instigate the desire for new transportation and industrial technologies. It did not bring the
economy to a crashing halt.

It did, however, play a role in each of these trends and events. Here, in its wide
influence, is where the Great Epizootic’s value as a historical topic truly lies. The immense
outbreak of equine influenza in 1872 could not have occurred without the convergence of a

73 Woodrow Wilson, A History of the American People (New York: Harper & Brothers, 1902), 64-66; Robert
Wendell Jackson, Rails Across the Mississippi (Champaign, IL: University of Illinois Press, 2001), 173-174;
Alfred L. Sewell, The Great Calamity! (Chicago: Alfred L. Sewell, 1871), 43; George B. Abdill, This Was
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74 Hence, the name “influenza.” John Forbes, Alexander Tweedie, John Connolly, and Robley Dunglinson,
ed., The Cyclopaedia of Practical Medicine: Comprising Treatises on the Nature and Treatment of Diseases,
Materia Medica and Therapeutics, Medical Jurisprudence, Etc., Etc., Vol. III (Philadelphia: Lea and
Blanchard, 1845), 17.
number of dynamic forces and events. As a product of agriculture, industrialization, and
disease and of complex ideologies concerning animals, labor, physics, economics, and urban
planning, the Great Epizootic sheds light on the lived experience of the nineteenth century in
ways that few events can.

The story of the Great Epizootic is the story of a great many things, but none more
than the horse itself. The horse has never left the American public consciousness, but its role
has been in flux for at least a century. In the nineteenth century, the horse was at the center
of the masculine world of industry and work, but with the ascent of steam, electric, and
gasoline energies, the horse as a source of power became a distant memory if not a forgotten
one. In the twentieth century, the horse became a recreational luxury, primarily associated
with young girls, and has returned to its traditional position as an elite animal, symbolic of
wealth and prestige. What little work the horse does now is principally of a boutique quality,
as in the case of the horse-drawn carriages that operate in and around parks in many cities or
convey newlywed couples on their wedding days. During the Great Epizootic, it was a great
spectacle to witness normally horse-drawn vehicles being moved by manpower. Today, it is
something of a spectacle to see a horse-drawn vehicle at all. This contrast says a great deal
about the tendency to forget and demonstrates the importance of historical inquiry. The
historian’s job, after all, is not just to document the past, but to draw connections between it
and the present.

The study of horses in the nineteenth century, especially through the lens of the
Great Epizootic, demonstrates that the period is better characterized by the importance of the
organic horse than of the steam-powered “iron horse.” Moreover, the influences of both the
horse and the Great Epizootic are still felt today. For the horse, modern conceptions of
transit networks and transportation and stationary technologies are built upon the knowledge gleaned from the governance of their horse-drawn predecessors. All of these are still couched in terminology that invokes the image of the animal hard at work. Sharing the streets with horses forced humans to deal with the issues of accessibility, waste, sanitation, and traffic, informing the fields of civil engineering and urban design.

The Great Epizootic was quite possibly the greatest energy and transportation crisis the United States has ever experienced. It frustrated travel, construction, deliveries, and collections within and between virtually every city in the nation. From this, citizens, governments, and companies alike learned to plan for such possibilities in the future. The Great Epizootic also represents the most sweeping threat to the nations’ animals ever faced. Countless newspaper articles and several medical inquiries probed the causes and events of the influenza epizootic, from which a great deal about medicine, veterinary and otherwise, and about epidemiology was learned. Finally, the Great Epizootic has allowed historians to study the nineteenth century from a new perspective. In these and many other ways, the Great Epizootic’s legacy persists.
Appendix I

The Likely Route of the Equine Influenza’s Spread to Philadelphia and Richmond

[Map showing the route of the spread from Markham to Toronto, Syracuse, Rochester, Buffalo, New York, Philadelphia, Washington, D.C., and Richmond]
Appendix II

*Philadelphia’s Insurance Losses in Boston’s Great Fire*

<table>
<thead>
<tr>
<th>Company</th>
<th>Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Fire Insurance Company of Philadelphia</td>
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</tr>
<tr>
<td>Fame Insurance Company of Philadelphia</td>
<td>24,600</td>
</tr>
<tr>
<td>Franklin Insurance Company</td>
<td>420,000</td>
</tr>
<tr>
<td>Girard Insurance Company</td>
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<tr>
<td>Insurance Company of North America</td>
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<tr>
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<tr>
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</tr>
<tr>
<td>Union Mutual Insurance Company</td>
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</tr>
</tbody>
</table>
Appendix III

“Untitled Poem.”

Icarus fell into the sea,
He went too near the sun;
But Daedalus did safely flee—
He cared for number one.

Old Daedalus did make for Crete
To dodge that Athens row;
And after he was on his feet,
Constructed there a cow.

And when he made his work of art,
And folks extolled its beauty;
He might have made a horse and cart,
If they’d had there epizooty.\(^{75}\)

“Epizootic.”
[Adapted.]

Excited horse-fancier, loquitur:

I.

“Gayly the cavalier mounts in the morning,
Dashes the spurs in the sleek, glossy side,
Pedestrians pitying, railroad trains scorning,
Swift on his thoroughbred charger he’ll ride.
Ah, mettlesome rider, brave charger, beware!
Each breeze bears distemper, There’s Death in the air.

II.

“And here comes an elegant equipage, drawn by
The very best pedigree’d span in the town.
Trace back their blood, and you’ll find you have gone by
All trace of their owner’s—and his comes far down.
What’s this! They are coughing? And what is that flows
From that fine-muzzled, red-nostrilled off- horse’s nose?

III.

“Oh whence comes it? Why is it? Wherefore, and what is it?
Smiting the lowly, nor sparing the high;
Worse than the rinderpest or the sheep-rot. Is it
Never to cease till the horses all die?
What shall we do for it? What is the best?
Cider, warm blankets, or plenty of rest?

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\(^{75}\) “Epizootic Poetry,” *The Richmond Enquirer*, November 16, 1872.
IV.

"Low is the head that so proudly was rearing,
And dropping the neck that was curved in his pride.
Dimmed the fierce eye, and deadened the hearing,
Faint throbs the once wildly-pulsed purple tide.
Shake down his bedding; spread the clean straw;
Mix him a draught; he no longer can draw.

V.

"Nobly he toiled on the route to the Fair Grounds,
Or whirl'd the swift ear o'er the Hollywood line;
Strike now the car bell, its note will be lost on
The ears that are chilled, and give back no sign.
Disease has now marked him, his powers are fled;
Care for him kindly—he yet is not dead.

VI.

"Mix the bran mash! If you ever would use him,
Stir it as never you stirred it before!
We learn to esteem him in fearing to lose him—
Bring the hot water, and steam him some more!
There! He is better now; sponge off that lip—
Harness him up again. Get down the whip."

76 "Epizootic," The Richmond Dispatch, November 14, 1872.
Appendix IV

The following scenes from the Great Epizootic appeared in the New York Times.
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**Dissertations**


**Maps**