

Ubiquitous *Mulomedici*:

The social, economic, and agronomic significance of the veterinarian to the Roman world

by

Lindsey Nicole Elizabeth Brill
B.A, Queen's University, 2009
B.Sc., Queen's University, 2008

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

MASTER OF ARTS

in the Department of Greek and Roman Studies

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Supervisory Committee

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Abstract

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Animals were integral to the ancient world. Quadrupeds, particularly the horse, were vital to the Roman world for the military, the circus, and the *cursus publicus*. Livestock, especially oxen and sheep, were deeply ingrained in this agrarian culture both as a work animal and as a food source. Due to the nature of their duties, these animals suffered injuries and illnesses. In order to combat these ailments, the Romans employed animal doctors known as *mulomedici*, *veterinarii*, or ἵππιατροί. Until recently, scholarship for the Roman veterinarian has focused on philology and medicine. The veterinarian, however, is a part of Roman society and thus requires study within context. The veterinary treatises – *Hippiatrica*, the works of Vegetius and Pelagonius, and the *Mulomedicina Chironis* – and archaeological evidence attest to the animal doctor as a profession and further indicate that the veterinarian was socially, economically, and agriculturally significant to the Roman world.

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Acknowledgments

I am most fortunate in my supervisor Dr. Geoffrey Kron, to whom I extend my heartfelt gratitude. Without his guidance, support, and inspiration, my small idea would never have bloomed into a thesis. His endless enthusiasm encouraged me throughout the long process, and prompted me to explore avenues of research I had not previously considered. His comprehensive knowledge and expertise were indispensable in my research and writing. I express my sincere appreciation to Dr. Kron for the hours spent reading numerous drafts and revisions, and his insightful comments and critiques. Many thanks are due to Dr. John P. Oleson for the hours he dedicated to reading through my drafts as incoherent as they could be at times and for his invaluable comments and suggestions.

I would like to recognize also two of the faculty at Queen's University: Dr. Bernard Kavanagh for inspiring me to enter into Classical studies and Dr. George Bevan for enlightening me about the existence of the *Hippiatrica*, which prompted me to explore Roman veterinary medicine.

I extend my sincerest appreciation to my fellow graduate students Jessica Romney, Katie Ongaro, and Kristen Koester; their support, friendship, and encouragement were invaluable. I especially thank Jessica for her willingness to look over various drafts. To my friend Anna Melnik I give warm thanks for your understanding, empathy, and friendship. I am grateful to Sam and Shiloh for providing inspiration when it was lacking.

Lastly, I thank the Department of Greek and Roman Studies and University of Victoria for providing the opportunity to learn from so many brilliant scholars.

Abbreviations

Authors not listed below follow the abbreviations as set out by the *Oxford Classical Dictionary*.

Vegetius *Ars Vet.*

Ars Veterinaria

The *Hippiatrica*

Add. Lond.

Additamenta Londinensia

Exc. Lugd.

Excerpta Lugdunensia

Hipp. Berol.

Hippiatrica Berolinensia

Hipp. Cant.

Hippiatrica Cantabrigiensia

Hipp. Paris.

Hippiatrica Parisina

Exc. Lugd.

Excerpta Lugdunesia

Inscriptions, Papyri and Ostraka

Ashm. G.O.

*Catalogue of the Demotic Papyri in the Ashmolean
Museum*

CIL

Corpus Inscriptionum Latinarum

CIgr.

Corpus Inscriptionum Graecarum

CPR

Corpus Papyrorum Raineri

IGRR

Inscriptiones Graecae ad Res Romanas Pertinentes

O. Florida

Florida Papyri

P.Hib

Hibeh Papyri

P. Lips

Papyrus Collection Leipzig

P.Oxy

Oxyrhynchus Papyri

P. Ross Georg.

Papyri russischer und georgischer Sammlungen

PSI

Papyri graeci e latini

RIB

Roman Inscriptions of Britain

SB

Sammelbuch griechischer Urkunden aus Aegypten

SEG

Supplementum Epigraphicum Graecum

Tab. Vind.

Vindolanda Tablets

TLL

Thesaurus Linguae Latinae Epigraphicae

Introduction

The study of animal anatomy was one of the earliest forms of veterinary science; when Egyptian priests performed sacrifices and read entrails, they recorded in-depth anatomical details. Since the agricultural revolution, people relied heavily on domestic animals for subsistence, which resulted in a need to physic livestock. Roman herdsmen were capable of treating common ailments and instituting preventative measures. In some cases, however, they did not have the knowledge or skill to heal an ailment, and in that situation, the herdsmen turned to a trained animal health practitioner, a veterinarian. I ascertain the social, economic, and agronomic significance of the veterinarian to the Roman world in an investigation of the roles and duties of the animal doctor in four diverse facets of the Roman Empire: the military, the *cursus publicus*, the circus, and private practices. The attention given to the sophistication of the veterinary art will be limited due to the focus of the thesis, which centralizes on the veterinary practitioner and his interactions with Roman society. Limitations will also be placed upon discussions of the philological import of veterinary medicine to aspects that are relevant to this thesis. A combination of literary, archaeological, and epigraphical evidence will be utilized to examine the veterinary professional.

The earliest record of a professional animal doctor is an inscription concerning a ἵππιατρός (horse doctor) from Lamia in Thessaly dated 130 BC.¹ Unambiguous

¹ Fischer 1981, 216. There is also a reference to doctoring animals in the *Iliad* (10.481) when a doctor is instructed to take care of the men, while the speaker indicates that he will take care of the horses. The fact that the speaker indicates that he will focus on the treatment of the horses alone indicates a specialization

evidence for the veterinary surgeon practicing in Rome, however, does not appear until the first century AD.² During the Roman Empire, animals, especially the horse, became more significant to society as public institutions were created, battles were waged, and trade thrived. As society became more reliant upon animals, so did the need for individuals to provide health care to the beasts. The veterinary profession was economically and agronomically important, particularly in a culture that relied upon animals for not only its subsistence but also its entire way of life. Animals were involved in almost every part of society from food, food supply, transport, and entertainment. As government institutions dependent upon animals became more industrialized, the Emperors recognized the benefits of employing individuals whose sole concern was the health of the beasts. It was fiscally more advantageous to treat ill animals than to slaughter them and purchase replacements. Therefore, by the fourth century AD the veterinarian surgeon had become prominent throughout the Roman Empire.

Until recently, academic interest in the veterinary profession has been focused principally on philological and medical studies.³ The vulgar and medical Latin in the veterinary texts is of interest to philologists. J. N. Adams, one of the chief scholars on ancient veterinary medicine, published a monograph on the philology of the Latin veterinary treatise of Pelagonius.⁴ While Adams' focus is the language of the veterinary profession, which is irrefutably significant to the study of veterinarians, he shows little interest in the study of the profession within context of the ancient world. A. McCabe, another prominent scholar in the field, similarly lacks interest in studying the social

particularly since he is speaking to a human doctor providing a division between human medicine and animal medicine without any mention of groomsmen.

² The first Roman reference to a *ἰππιατροί* is in Varro *Rust.* 2.7.16.

³ Fischer 1988.

⁴ Adams 1995.

history of the veterinarian, but provides an in-depth discussion of the *Hippiatrica*, the Greek veterinary works, in terms of its manuscript tradition, adding important insights into the authors.⁵ A. M. Doyen-Higuet, continuing the philological tradition, is working on a translation of the *Hippiatrica*.⁶ K.D. Fischer, another principal scholar, is one of the few to show a brief interest in the role of the veterinarian, providing surveys of scholarship, examining specialized areas of the profession, and editing an edition of Pelagonius' treatise.⁷ Medical studies are ongoing in Munich to assess Roman veterinary medicine in light of modern science.⁸ Scholars incorporating archaeozoology into veterinary medicine, such as J. Peters, provide insights into the medical procedures, supplementing the literary evidence.⁹ All these studies, however, show little interest in examining the profession as a whole and its significance in Roman society. Due to the lack of studies in this area, the profession of the veterinarian appears as a disparate group of individuals from a variety of social classes associated only by their interest in animal medicine.¹⁰ The professional animal doctor, however, had permanent positions in the government in both the military and working on the *cursus publicus*, two of the largest organizations of the Roman government. The veterinary professional became essential not only in the government, but also in animal husbandry, where the health of the animal was crucial. It is in the areas of the Roman Empire heavily reliant upon animals that the most evidence for the veterinary practitioner is concentrated. This thesis places the

⁵ McCabe 2007. The *Hippiatrica* is now printed in an edition edited by Oder and Hoppe called the *Corpus Hippiatricorum Graecorum*. For difficulties with this edition of the text, see McCabe 2007.

⁶ Doyen-Higuet 1984.

⁷ Fischer 1999, 1988, 1981, 1980a, 1980b.

⁸ Fischer 1988, 203 – 204.

⁹ Peters 1998.

¹⁰ Adams is a particularly strong advocate of the idea that the veterinarians were not a unified professional group (Adams 1995, 50, 56).

veterinary surgeon in the framework of Roman society to assess his significance in Roman culture.

In the first chapter, I examine evidence of the veterinarian in the military. The Roman military was a massive organization that required not only soldiers but also labourers and specialists. Thousands of animals were involved not only in transportation of military goods but also in battle manoeuvres. By Late Antiquity, the Roman military had well over 150,000 horses employed in the cavalry alone.¹¹ In the development of this chapter, I establish the importance and number of horses in the military, particularly those involved in the cavalry.¹² The significance of an individual knowledgeable in animal medicine will be shown by examining the logistics of remounts and the injuries associated with military activities. The organization and training of the profession are discussed in an examination of the evidence of the veterinarian in the army.

The second chapter examines the role of the veterinarian in the *cursus publicus*. This part of Roman society was important both as a transport and courier service. Horses were not the only animals necessary for this organization, but also oxen and mules. Before arguing the existence of the veterinarian in the *cursus publicus*, I briefly discuss the organization of the system and the role the animals were expected to fulfill. Then I will consider the employment of veterinarians in *cursus publicus*, providing both literary and archaeological evidence to support my observations.

The circus, the third aspect of Roman society I investigate, required skilled medical professionals to attend the expensive racehorses. Although mule and donkey

¹¹ Treadgold 1995, 52. The exact number of cavalry horses in the Roman military is a rather lengthy and complicated discussion, which I cover briefly in Chapter 1.

¹² The medical issues associated with the equids involved in transportation are covered in Chapter 2 where there is a discussion of the *cursus publicus*. As the injuries associated with battle can be related back to veterinarians clearly associated with the military, I will focus on the cavalry horses.

racing did exist, it was not as popular as the fast-paced chariot races, and accordingly the focus for this chapter will be on the equines.¹³ Horseracing has a long history, as evidenced by Homer in the *Iliad*. Despite the long tradition chariot races held in Greece, racing did not become prominent in the Roman world until the Roman Empire. Racehorses were expected to compete in dangerous races while pulling a lightweight chariot behind them. These animals endured numerous injuries from such races and thus required medical care. In this chapter, I first discuss the evolution and organization of the circus with the aim of examining the importance of animal medicine. The breeds of horses that were desired for chariot racing will lead into a discussion of the equines and the injuries they received from racing; the wounds racehorses received during competition reveal the need for a veterinarian. Although the evidence for veterinarians in the circus is not as extensive as it is for the military and the *cursus publicus*, I will show the importance of these animal doctors in horseracing and provide further insight into the role of the veterinarian.

The last chapter discusses private veterinarians and their duties. I focus on livestock, as opposed to equines, and utilize both the veterinary manuals and the agricultural treatises as sources. The agronomists such as Cato, Varro, and even Columella were concerned with farming, whereas the veterinary authors concentrated on treatments for ill or injured animals. Both of these types of works discuss the types of animals, particularly the horse, and training techniques to teach the animal its duties. The agronomists' texts contain medical information, which is useful for the herdsman to handle day-to-day injuries and ailments, but does not provide extensive details regarding the treatment of infrequent illnesses, nor a detailed theoretical framework of their medical

¹³ Camp 1998, 23.

practices. As I indicate in Chapter 4, one of the agronomists' focuses was in preventing the illnesses and ailments from occurring so that veterinary intervention was not required. The advances of veterinary medicine will become clear as the agricultural and veterinary authors are examined. Archaeological and epigraphical remains provide evidence of private veterinarians.

Limitations

Agricultural treatises were the first Roman writings concerning animal medicine. Unfortunately, the most significant agricultural treatise, composed by the Carthaginian Mago, has not survived. The works of Cato the Elder, Varro, Columella, and Vergil contain descriptions of remedies and treatments for ailing livestock. These agricultural works briefly refer to a professional veterinarian but maintain their focus on farming and animal husbandry.¹⁴ In the fourth century AD, a number of manuals were written centered on veterinary medicine, with a major focus on the equine. The veterinarian treatises were concerned with the technical aspect of animal medicine, whereas the agricultural treatises concentrated on animal care.¹⁵ Around the tenth century AD, excerpts from the many veterinary treatises composed in Greek were compiled together to form the *Hippiatrica*, which remained one of the most extensive veterinary works until the thirteenth century AD.¹⁶ The compilation included the authors Apsyrtus, Anatolius, Theomnestus, Hippocrates, Hierocles, and Pelagonius. Other veterinary works, which were not associated with the *Hippiatrica*, are the *Mulomedicina Chironis* and the works

¹⁴ For references to the professional veterinarian in these agricultural treatises, see Varro *Rust.* 2.7.16; Columella *Rust.* 6.8.1, 7.5.14, 11.1.12, 7.3.16.

¹⁵ Bodson 1986, 246.

¹⁶ For information regarding the manuscript tradition, see McCabe 2007, 17 – 48; Smithcors 1957, 91; Doyen-Higuet 1984. The information in the *Hippiatrica* was utilized by veterinary surgeons well into the nineteenth century (Smithcors 1957, 133).

of Vegetius. Not all of these authors were veterinary surgeons, but they were all educated individuals with an interest in animal medicine. The surviving veterinary manuals were presumably those most widely distributed of the many works on veterinary medicine in the Roman Empire. Other veterinary treatises have not survived.¹⁷

The *Hippiatrica*, although integral for this study, involves some limitations due to its nature. As noted in the introduction, the *Hippiatrica* was a compilation of excerpts from veterinary treatises that had been written during different eras and in a variety of locations. The earliest manuscript of the *Hippiatrica* was compiled in the tenth century, several centuries after the fall of the Roman Empire.¹⁸ All the material gathered, therefore, was that which monks had determined was important enough to preserve, influenced strongly by the needs of the Byzantine and Medieval Ages.¹⁹ Given the importance of heavy cavalry as the backbone of the medieval military, it is not surprising that much of the information preserved centered on horse care.²⁰ Archaeozoological evidence indicates that while domestic animals decreased in size after the fall of the Empire, the horse retained its size.²¹ Therefore, information which was not pertinent to equine health care was likely not of interest to the Medieval populace, particularly those who were educated. Only a portion of the corpus of Roman animal medicine has survived.²² The *Geoponica*, a Byzantine compilation of agricultural works, was compiled

¹⁷ Adams 1984.

¹⁸ McCabe 2007, 18; Smithcors 1957, 91.

¹⁹ Smithcors 1957, 91.

²⁰ The crusades in particular provided a great impetus for focus on horse medicine as this was the heyday of the chivalrous knight, for whom it was necessary to have a horse. By the 1300s the Marshal appeared, a position, which replaced the *mulomedicus* of the Roman Empire, but whose focus was solely on the horse (Bullock 1929, 628). See also Fischer 1999.

²¹ Kron 2002, 55, 62 – 72. See also Peters 1998; MacKinnon 2004a; Riedel 1994, 54.

²² An analysis of Pelagonius and Eumelus reveal a common author whose work no longer survives (Adams 1984)

by taking small fragments of agricultural authors and placing them together by topic.²³ Due to the nature of its compilation, some fragments of the *Geoponica* are incomprehensible where there was clearly more written on the topic, which the monks did not copy down.²⁴ Similar to the *Geoponica*, which represents only a small fraction of the literature composed on agriculture and animal husbandry, the *Hippiatrica* only has a small fraction of the works on veterinary medicine. The surviving compilations are composed of small fragments of the works, sometimes taken out of context, where the whole chapter was not copied, but only a small section. An Arabic version of Theomnestus exists, although only a fraction has been translated. The little that has been translated provides a great deal of text not found in the *Hippiatrica*.²⁵ There are records of at least 50 writers on agriculture whose works have not survived; similarly, numerous treatises on veterinary medicine may not have survived.²⁶ Therefore, the focus of the *Hippiatrica* on horses has been biased at least in part, by the preoccupations of the copyists and scholars.

Sophistication of Ancient Veterinary Medicine

The veterinary treatises focus on the treatment and care of animals, particularly the horse. These manuals contain some treatments that were quite effective and sophisticated, such as those that concern surgery.²⁷ The Roman veterinarians were capable of performing simple surgeries such as castration, generally performed by

²³ The *Geoponica*, although a mostly agricultural work does contain a few fragments concerning animal medicine, which was copied mostly from Apsyrtus one of the *Hippiatric* authors (Smithcors 1957, 101). The *Geoponica* was compiled at the same time as the *Hippiatrica* under Constantinus Porphyrogenitus (AD 912 – 959) (Karraszon 1988, 11). Books 16 – 19 in the *Geoponica* cover veterinary medicine.

²⁴ For example *Geoponica* 16.2; 17.18; 17.27.

²⁵ McCabe 2007, 182 – 185. The Arabic text consists of 96 chapters, although many of these chapters are quotations from Apsyrtus, but also includes a large section on recipes (McCabe 2007, 185).

²⁶ Smithcors 1957, 56.

²⁷ Kron 2008a, 185; Walker 1991, 20 – 25; Fischer 1980; Smithcors 1957, 92.

herdsmen, as well as complex eye surgeries, for which a veterinarian was called.²⁸ The veterinarians performed surgeries such as phlebotomy, suturing wounds that were difficult to access such as on the tongue, removal of hernias, docking tails, and operations on the feet.²⁹ In addition, the Romans had a special machine to restrain horses for surgery.³⁰ Compared to human doctors, the *veterinarii* were not as heavily focused on theory, although they did borrow numerous ideas from human doctors.³¹ Some of the theories the Roman veterinarian authors described, however, remained popular as explanations well into the nineteenth century.³² The Roman veterinarians and farmers were capable of identifying common diseases, such as glanders, laminitis, and colic, and providing relatively useful treatments for them.³³ The Romans recognized the fact that there were contagious diseases, for which the only real cure was to cull the herd.³⁴ They were able to prevent tetanus by burying the animal in the sand, which aided in killing the tetanus organism.³⁵ The sophistication of Roman veterinary medicine is furthered in a discussion of the origins of modern veterinary medicine. After the fall of the Roman

²⁸ Fischer 1980; *Mul. Chiron*. 64 – 82; Peters 1998, 209 – 210.

²⁹ Moulé 1891, 154 – 161. I have only listed a few examples of the surgeries that Romans performed, the list is rather extensive, see Moulé 1891, 147 – 166 for more details. Note that feet operations were risky if the surgeon did not have the appropriate knowledge since equines require mobility in all their legs. In the case of horses, the hooves have an intricate series of arteries, which could be nicked. Additionally, the post-surgery care of feet was also important as it could become infected with laminitis, as was the case with Barbaro, a famous racehorse.

³⁰ Kron 2008a, 185.

³¹ The concept of humors became popular among veterinarians including Apsyrtus and Pelagonius (Adams 1995, 39 – 40). Other reasons given for diseases were heat (Pelagonius 33.2, 183.2), cold (Pelagonius 33.2, 141.2, 216.2, 270), damp (Pelagonius 30.4, 226), deprivation of hunger (Pelagonius 4, 188.1) or excessive toil (Pelagonius 26, 33.2, 34.2, 34.3, 183.2, 196.2, 226, 306). For further information on Pelagonius' theoretical stance, see Adams 1995, 36.

³² Smithcors 1957, 95.

³³ A description of the most common diseases in horses and livestock is in Appendix B. Even today, there are few cures for laminitis (Heymering 2010 and Smithcors 1957, 92). For further discussion of glanders and the Roman veterinarians, see Adams 1995, 41.

³⁴ Verg. *G.* 3.460ff. The Romans recognized diseases such as strangles in young horses (Smithcors 1957, 94).

³⁵ Smithcors 1957, 93.

Empire, veterinary medicine fell to the domain of animal caretakers.³⁶ As was stated earlier, the Byzantines only preserved information regarding horse care, the principal quadruped of the medieval aristocracy. Although Arab horse medicine flourished with translated copies of Roman veterinary treatises, animal medicine in the rest of Europe declined.³⁷ The oxen and mules, which the Romans had treated with expert veterinary care, were left to cow leechers and folk remedies. It was not until the 18th century that veterinary schools were established in Europe and Britain.³⁸ Animal medicine only grew in the first half of the nineteenth century, but the students were not as well educated as the Romans, especially the individuals who wished to become involved in the military. The British army required a large number of veterinarians and, consequently, the veterinary school had to educate individuals within a matter of months.³⁹ The basic test for certification was basic understanding in animal anatomy. Furthermore, Britain did not acknowledge the veterinary surgeon legally as a profession until 1881 with the Veterinary Surgeons Act.⁴⁰ It was not until 1948, however, that the education for the profession was brought into the university system; all those who practiced animal medicine without certification, such as cow leeches, were declared as unqualified.⁴¹ Advancements in animal medicine moved at a similar pace in other countries including the United States of America, Australia, and Canada.⁴² The advent of penicillin and knowledge of microorganisms produced rapid advances in medicine in the late nineteenth century, advances which had not been observed in the veterinary field since the

³⁶ Smithcors 1957, 117.

³⁷ Peters 1998, 38; Smithcors 1957, 108, 120. Smithcors, a veterinarian by training, deplors the degenerate state of veterinary medicine after the fall of the Roman Empire.

³⁸ Smithcors 1957, 225.

³⁹ Pattison 1984, 8.

⁴⁰ Pattison 1984, 196.

⁴¹ Pattison 1984, 197.

⁴² Maxwell 2008.

Romans.⁴³ Although Roman veterinary practices have been termed “veterinary art” by scientists, the Romans had a large store of knowledge concerning animal ailments and treatments. Despite their ignorance in microbiology and the science of antibiotics, the Romans correctly recognized numerous diseases that afflicted livestock.⁴⁴ The efficaciousness of Roman veterinary medicine, although interesting and important to recognize, is not the main purpose of this thesis. I adopt a broader perspective and concentrate on the veterinarian in the context of Roman society.⁴⁵

Terminology

Animals capable of performing labour and transporting goods became particularly important to the Romans. As can be observed from the *Hippiatrica*, the central focus of Roman veterinary medicine was the horse, and by relation, the mule and donkey. The veterinary profession also reflects this concentration on horses, as records of such veterinarians appear in facets of the Roman Empire where horses were widely utilized. The focus on horses will be manifest in this thesis, although there will be brief descriptions of other animals when it is applicable. Considering the emphasis on horses, there are a few terms that should be noted: “equine” will refer to the horse (*Equus caballus*); “equid” will refer to members of the *equidae* family including the horse, mule and donkey. The horse and mule had a higher status than the donkey, and it was more

⁴³ Pattison 1984, 109. Apsyrtus was able to recognize the relationship between farcy and glanders, a connection the majority of veterinarians of the 18th and 19th centuries failed to comprehend (Smithcors 1957, 95). Similarly, Apsyrtus knew that the horse did not have a gall bladder, a fact that was not widely acknowledged until the nineteenth century (Smithcors 1957, 95).

⁴⁴ The Romans were able to treat tetanus, which is caused by a bacterium called *clostridium tetani*, by burying the animal in sand, which obviates the pregnant source of the bacteria (Smithcors 1957, 93). Similarly, the Romans recognized anthrax was incurable and culled their flocks when it was observed (Smithcors 1957, 93). The ancient veterinarians were well aware of common diseases such as glanders, laminitis, scabs, and farcy. In addition to recognizing the diseases, the Romans also recognized the cause of many of these diseases.

⁴⁵ For information regarding the science and effectiveness of Roman veterinary medicine see Kron 2008a, 183 – 185; Smithcors 1957, 57 – 109; Adams 1995, 35 – 99; Adams 1992, 481 – 482; Walker 1991, 20 – 30.

cost effective to replace the donkey than to provide medical treatments. The horse and the mule, therefore, will be discussed more prominently throughout this work than the donkey. Oxen will also become important as areas of transport and farming are discussed. Animals feature prominently in Roman organizations where heavy labour, transportation, or speed was required, and thus I investigate the involvement of veterinary surgeons in these areas.

The veterinary surgeon was known by a number of names in the Roman Empire. In Greek, he was generally known as ἵππιατρός. As can be deduced from the name the veterinarian was a ‘horse doctor’, although this term came to describe animal doctors in general. In the early Empire, the veterinarian was known generally as *veterinarius*. The etymology of *veterinarius* is a complex subject, which would require numerous pages to begin to understand.⁴⁶ Until recently the term is believed to have been connected with *veho* (to draw, pull), which would relate *veterinarius* to the *bestia veterina* (beasts of burden).⁴⁷ Adams, however, argues that *veterinarius* is not related to *veho*, but to *vetus* (old), particularly in reference to horses who lived to old age, as opposed to the cattle, which were slaughtered at a young age.⁴⁸ By the fourth century AD, the term *mulomedicus* had become the accepted term for an animal doctor. The term *veterinarius* does appear more often in militaristic contexts, although it does not necessarily denote a military animal doctor. The term *mulomedicus* was more common in the later veterinary

⁴⁶ For an extended discussion of the etymology of the term *veterinarius*, see Adams 1992.

⁴⁷ Adams 1992, 70.

⁴⁸ Adams 1992, 89.

works, such as Vegetius and Pelagonius, and in legal contexts was observed with relation to the *cursus publicus*.⁴⁹

The neglect of previous studies concerning the ancient veterinarian has prompted a biased view of the Roman animal doctor. A wider view of the profession will be taken in this study, placing the professional veterinarian in context of the society of which it was a part. In examining veterinarians in such a manner, I hope to clarify preconceptions of Roman veterinary medicine and provide an unambiguous picture of the Roman *veterinarii*.

⁴⁹ Hyland considers that the term *veterinarius* as only a military term as it was observed numerous times in militaristic contexts including inscriptions. The term *mulomedicus* was mostly utilized in the later period of the Roman Empire. Inscriptional evidence indicates that there was not as rigid a distinction between these terms as Hyland indicates. It is likely that *veterinarius* was the older term, which slowly fell out of use and was replaced by *mulomedicus*. For the purposes of this paper all three terms – *veterinarius*, *mulomedicus*, *ἵππιατρός* – will be utilized.

Chapter 1: Animal Doctors in the Military

Introduction

The military was a significant characteristic of the Roman world, intricately entrenched in both economy and politics. The Roman Empire relied on the military for increasing its wealth and protecting the borders, and consequently it was essential that the army remain organized and operational. As a result, a significant percent of the Roman treasury was focused on providing funds for the military to wage campaigns and protect the borders. The army, however, was comprised not only of soldiers, but also of individuals necessary for everyday operations. This well-organized industry had specialists such as doctors whose focus was the health of the troops, engineers who organized and developed architectural plans, and the baggage team responsible for the transport of necessities. The cavalry, which is the focus of this chapter, was an important fighting division of the Roman army, and within it, there were numerous specializations. The cavalry employed individuals whose specific duty was to train the equines and their riders, as well as stable hands, and decurions (cavalry commanders). One of the important professions associated with the cavalry was the horse doctor. These individuals, similar to the modern veterinarian, cared for injured or ill cavalry horses and pack animals. The role and professional status of these individuals will be the focus of this chapter.

For the Romans, equines were required more in the military than in agriculture, as the cavalry required speed, whereas agricultural practices required endurance.⁵⁰ The

⁵⁰ Swabe 1999, 51, 55

military utilized the horse offensively for direct attacks on the enemy and for non-offensive roles, such as pulling the baggage trains, although these non-offensive roles were more the domain of the mules. The cavalry was not initially a major part of the military but was necessary to repel attacks from any enemy cavalry. The Republican army had small cavalry units in the legions, which consisted of approximately 11% of the force.⁵¹ In one case, however, there is record of an extensive number of equines within the Roman military (225 – 224 BC) when Rome summoned 70,000 horses to fight for her against the Gauls.⁵² Although this number is likely an exaggeration, the order of magnitude is massive for Republican Rome. In general, auxiliary troops were rallied only when necessary, notably during the Second Punic War. Then, at the beginning of the Roman Empire, auxiliary troops became a permanent establishment of the military. With the invasions of nomadic and equine-dependent enemies such as the Persians, the Romans were forced to rely increasingly on their mounted forces. It has been estimated that during Late Antiquity approximately 50% of the *limitanei* troops and 20% of the *comitenses* were cavalry.⁵³ In these campaigns, military horses were expected to perform in extreme conditions including drastic temperature ranges, a large range of geographical landscapes, and arduous marches.⁵⁴ In order to survive such circumstances, the horses needed to remain healthy and in good condition. Although stable hands and the cavalrymen were the main caretakers of these animals and expected to handle general

⁵¹ Sidnell 2006, 253.

⁵² Polyb. 2.23 – 4. The Gauls were known to have an excellent cavalry with horses that were capable of enduring harsh conditions. The emphasis of the Gauls and Celts on their cavalry can be observed also in Caesar's *Bellum Gallicum*.

⁵³ Sidnell 2006, 283. In Late Antiquity there was another reorganization of the military into two types of troops, the *limitanei*, were posted to the borders so that they could protect the Empire from the invading enemy. The *comitenses*, a more desirable division, were the main army situated to move where necessary for battle.

⁵⁴ Elton 2007, 377; see Sidnell 2006, 271 for winter conditions.

health issues, the major illnesses and wounds were delegated to those who were more knowledgeable concerning equine medicine.⁵⁵ The individuals trained to care for the more extensively wounded or ill equines were known initially as *veterinarii* and, along with their medical staffs, they were a part of the *immunes*.⁵⁶ These individuals oversaw the health of the equids – the cavalry horses, the cavalry camels, the baggage animals, and livestock.⁵⁷

The *veterinarii* do not exist only in theory, but physical and literary evidence attest to the existence of this profession in the military. The evidence for the existence of such animal doctors includes literary works, epigraphy, and even graffiti. The *Hippiatrica*, the compilation of several authors, remains one of the best sources of Roman veterinary medicine.⁵⁸ The *Hippiatrica* does not focus on animal medicine in the military, but several of its authors provide details on this topic. Inscriptions also provide information on *veterinarii* in the military. These sources of information, along with additional literary and archaeological evidence, will be analyzed to argue for the significance of the role and the professional status of the animal doctor in the Roman military.

⁵⁵ An example of a health issue that was considered simple enough for the groomsmen and cavalrymen is colic, which is common in horses in conditions they were exposed to in the military. Horses that are overheated and drink too much cold water tend to colic. Although colic can become complicated depending on its cause, for more information, see Appendix B.

⁵⁶ Hyland 1990, 50.

⁵⁷ Although these individuals are not equivalent to the modern veterinarian, the term ‘veterinarian’ will be used in the loose sense of the word of an individual who has had some type of training regarding animal medicine and practices treating animals in a professional status.

⁵⁸ The date when these treatises were compiled is debatable. McCabe (2007, 258 – 296) provides the best analysis of dates, but considers the tenth century as the date of compilation. See Introduction for more details.

Horses in the Military

Numbers and Organization

The focus of a veterinarian practitioner in the military was the equids and other pack animals. In order to have successful military campaigns, it was necessary that the horses were in good health; during the American Civil War, General Lee's army suffered significantly due to unhealthy cavalry mounts.⁵⁹ Ill or injured horses reduced the size of the cavalry, which meant that the strength of the cavalry charge was decreased and the general lost the advantage of his most mobile force. The Roman cavalry, which initially consisted of mostly auxiliary troops, had evolved to become one of the most important units in the Roman army by the 4th and 5th centuries AD.⁶⁰ The structure of the cavalry force evolved as the need for diverse cavalry units became apparent. Under the Republic, the cavalry was a small force of the upper class who could afford to purchase an equine and perhaps a remount, representing approximately 11% of the legionary units.⁶¹ Auxiliary cavalry units were summoned only when required and consisted of non-Roman troops. The early legion, before the second century BC, had approximately 300 cavalry.⁶² After the battle of Actium, Augustus reorganized the army, which eventually included permanent auxiliary forces.⁶³ Every legion included a small mounted force of approximately 120 men.⁶⁴ The number of legions varied depending on the time period. Octavian had 60 legions at his command in 31 BC following the battle of Actium but

⁵⁹ Ramsdell 1930, 726.

⁶⁰ Dixon and Southern 1992, 27 – 28.

⁶¹ Sidnell 2006, 254.

⁶² Livy provides this estimate for 340 BC and Polybius provides the same estimate for the second century BC. See also Coello 1996, 1.

⁶³ Sidnell 2006, 253. Sidnell suggests that this was more likely the result of the need to keep auxiliary troops in the fields for increased periods of time.

⁶⁴ Coello 1996, 1. Hyginus *De Mun. Cast.* 1. Coello also indicates that he believes that the cavalymen were utilized primarily as messengers and scouts (1996, 1). The cavalry was a small portion of the legion, only 120 out of 5,240 troopers or 2%, although the legionary cavalry were not the only mounted troopers.

recognized that there was little need for such a large force, and he promptly reduced the legions to 28 units, or 3,360 legionary cavalrymen.⁶⁵ The number of legions does not appear to change until the beginning of the third century AD, when it rose to 33 under Septimius Severus.⁶⁶ At this time, a reserve army, including a cavalry force, was formed.⁶⁷ Constantine added several more legions of his own, but there was a decrease in the total number of men in a legion from 5,000 to 1,000 around this period, although the cavalry numbers appear to remain the same.⁶⁸ In addition to these legionary forces, Constantine had field armies, which were mobile units. By AD 395, out of the 325 field units, there were approximately 85 cavalry units, representing 26% of the field units.⁶⁹

The most basic unit of the Roman cavalry division was the *turma*, which consisted of approximately 32 men, under the power of the decurion.⁷⁰ The second in command was the *duplicarius* (double pay man) and under him was the *sesquiplicarius* (one and a half pay man), and Sidnell suggests that each officer had direct control over a section of nine troopers.⁷¹ The cavalry forces were divided into three different groups under Augustus: the legionary forces, the *ala* (a pure cavalry unit) and the *cohors equitata* (a mixed unit of infantry and cavalry); the *ala* and *cohors equitata* were both

⁶⁵ Sidnell 2006, 253. Note that Augustus additionally did not wish to continue to provide wages to such a large force.

⁶⁶ Coello 1996, 12; Diocletian added several new legions, particularly special units, although the exact number Diocletian added is debatable. Some scholars such as E. Nischer (1923) and J. Casey (1991) have argued for an increase of only a few legions, whereas R. Tomlin (1981) argues that the legions were actually doubled as Lactantius in *De Mortibus Persecutorum* argues. See also Coello, 1996, 15.

⁶⁷ Coello 1996, 13.

⁶⁸ Coello 1996, 15; Jones 1964, 681.

⁶⁹ Coello 1996, 16. The cavalry then was approximately 26% of the field unit strength.

⁷⁰ Although uncertainty exists regarding this number, it could range from 30 to 36 men according to the source. Dixon and Southern (1992, 23) have a long discussion regarding the exact number of men in the *turmae*. It seems likely that the size of the *turma* of a quingenary unit was 32 including the officers (Dixon and Southern 1992, 23).

⁷¹ Sidnell 2006, 255; There were also the standard-bearer and trumpeter in addition to the 32 cavalrymen. Individuals such as these are discounted in all estimates, but it is important to remember mounts were also be required for them (Sidnell 2006, 255).

divisions of the auxiliary forces. It was not until the early Imperial period that the auxiliary forces became a more permanent and important part of the Roman military.⁷² Under Gallienus (AD 253 – 268) other cavalry units were formed: detached legionary cavalries called the *equites promoti* and the *equites stablesiani* (mounted legionaries), as well as further auxiliary forces the *scutarii* (‘shield bearers’) and *equites sagitarii* (‘horse archers’).⁷³ Within these groups, there were different companies of cavalry including the legionary and the auxiliary units: the *ala milliaria*, the *ala quingenaria*, the *cohors equitata milliaria*, and the *cohors equitata quingenaria*. The division of each of these cavalry units is shown in Table 1. The *ala milliaria* was an elite cavalry force that consisted of 24 *turma*, 768 men, although it is possible that there were 42 *turmae* or 1008 men.⁷⁴ The *ala quingenaria* consisted of approximately 16 *turmae*, or approximately 512 men; this was one of the most common units.⁷⁵ The *cohors equitata milliaria*, a mixed unit of cavalry and infantry, had 240 cavalymen, and the *cohors equitata quingenaria* had 120 cavalymen.⁷⁶ There were approximately 512 cavalymen in an *ala quingenaria*, and Hyginus claims that there were 546 horses in these units and 1096 horses in the *ala milliaria*.⁷⁷ The *cohors equitata milliaria* had 240 horses and the *cohors equitata quingenaria* had 120 horses.⁷⁸ In addition to the military horses, each unit had a number

⁷² Coello 1996, 2.

⁷³ Coello 1996, 14.

⁷⁴ Hyg. *De Mun. Castr.* 16; Dixon and Southern 1992, 23; Coello 1996, 2 -3; Roth (1999, 336) indicates that this number could possibly be 32 *turmae* or 1024 men due to corruption in Pseudo-Hyginus’ text.

⁷⁵ Dixon and Southern 1992, 24; Roth 1999, 337, this number likely includes the decurions and upper level officers

⁷⁶ Dixon and Southern 1992, 26; Hyginus states that the *cohors milliaria equitata* had 240 cavalry (*De Mun. Castr.* 42.1 – 2), whereas Josephus in the *Bellum Judaicum* (Jewish Wars) states that there were 120 cavalry in the *cohors quingenaria equitata* (3.2.67); Roth (1999, 337) gives credence to the estimate of 120 cavalymen.

⁷⁷ Hyg. *De Mun. Castr.* 8; Coello 1996, 59.

⁷⁸ Davies 1989, 153; Davies 1969, 429.

of draught and work animals including donkeys, mules, ponies, and, in the east, camels.⁷⁹ There were approximately 160 mules for the *cohors equitata* and 320 mules for the *cohors milliaria*.⁸⁰ The *cohors equitata quingenaria* had approximately 230 mules, and the *cohors equitata milliaria* had approximately 460 mules.⁸¹ By the latter half of the second century AD there were between 350 – 400 auxiliary units.⁸² By AD 122, it was calculated that in Britain alone there were 18,503 equids, including both warhorses and pack animals.⁸³ It was not until the fourth century AD, however, that there was a massive increase in the number of cavalry. Within Rome, there were also the *equites singulares* who were the personal contingent of the Emperor and the Praetorian Guard.⁸⁴ In the early Empire, there were three units of the Praetorian Guard in Rome, representing a total of 1,500 men.⁸⁵

⁷⁹ Davies 1989, 153.

⁸⁰ Roth 1999, 85.

⁸¹ Roth 1999, 85.

⁸² Coello 1996, 12.

⁸³ Hyland 1990, 89.

⁸⁴ Dixon and Southern 1992, 31. The Praetorian Guard consisted of mounted horsemen, who were generally entrusted with defense and policing of the city, as well as protecting the emperor.

⁸⁵ Coello 1996, 12.

Table 1: Summary of the Cavalrymen and Horses in the Roman Military⁸⁶

	Men	<i>Turmae</i>	Units	Total Men	Total Horses	Ancient Source
Legion	120	-	25	3,600	3960	Hyginus <i>De Mun. Cast.</i> 1.
<i>Quingenary alae</i>	512	16	90	46,080	50,688	Hyginus <i>De Mun. Cast.</i> 8, Vegetius, Arrian
<i>Milliary alae</i>	768	24	8	6,144	6,758	Hyginus <i>De Mun. Cast.</i> 8
<i>Quingenary equitate cohorts</i>	120	4	130	15,600	17,160	Hyginus <i>De Mun. Cast.</i> 24.4 – 5; Josephus 3.2.67
<i>Milliary equitate cohorts</i>	300	10	22	7,040	7,744	Hyginus <i>De Mun. Cast.</i> 24.1 – 2; 42.1
Total				84,200	86,310	

Considering there was more than one unit of each of these contingents, the Roman army contained a large number of cavalry.⁸⁷ Altogether these troops, including legionary forces, consisted of approximately 84,200 men (Table 1). The number of horses is greater than the number of legionnaires, as several individuals had more than one equine. The decurion had three horses, and the *duplicarius* and *sesquiplicarius* had two each.⁸⁸

Around the middle of the fourth century, the Roman military was reorganized into *limitanei* and *comitenses*.⁸⁹ Coello argues that by AD 395 there were 85 units of cavalry in the legions, which totalled approximately 17,000 to 34,000 cavalrymen.⁹⁰ It is

⁸⁶ The number of cavalrymen and horses in each legion under the Early Empire is summarized in this table. Note that the sources for numbers are noted in the far right column. Horses are estimated as 10% more than the number of cavalrymen to account for the commanding officers' horses and the remounts.

⁸⁷ The estimate in the number of each unit is provided by Coello 1996, 1 – 11.

⁸⁸ Hyg. *De. Mun. Castr.* 16.

⁸⁹ Coello 1996, 17.

⁹⁰ Coello 1996, 16.

believed that at this time the cavalry were in units of approximately 400 men.⁹¹ Ammianus Marcellinus supports this estimate, recording that two units of Danubian cavalry contained 350 men each.⁹² The *Notitia Dignitatum* published late in the fourth and early fifth centuries AD provides some of the most detailed information regarding military units in Late Antiquity.⁹³ It records 51 legions (with varying numbers of soldiers per unit) of approximately 104,000 men, and frontier units of approximately 248,000 men in the eastern armies.⁹⁴ Jones provides a different calculation of approximately 250,000 *limitanei* (border troops) in the eastern half of the Empire, with a grand total of 352,000.⁹⁵ The western half of the Empire had a field army of 113,000 men and frontier army of 135,500 men, for a total of circa 250,000 men.⁹⁶ Treadgold provides an estimate of approximately 600,000 men total for both the eastern and western Empire.⁹⁷ He also estimates approximately 25,000 cavalry for the field army of the eastern half and approximately 97,500 cavalry for the eastern frontier armies, for a total of 122,500 cavalry, representing 40% of the eastern army.⁹⁸ With these estimates, the Late Roman army consisted of 150,500 cavalrymen, as shown in Table 2. If Sidnell's estimate that 50% of the frontier units and 20% of the field armies were cavalry is taken into consideration with Coello's estimates, then there were approximately 235,150

⁹¹ Coello 1996, 16.

⁹² Amm. Marc. 18.8.2.

⁹³ Coello 1996, 42; note that the *Notitia Dignitatum* provides information for the eastern half of the Empire for the end of the fourth century, approximately AD 395, whereas for the western half of the Empire, it provides information for AD 425. For further discussion on the numbers of the Late Roman army see also W. Treadgold 1995, 284 – 1081. Note that caution must be utilized when examining the *Notitia Dignitatum* due to corruption of text and an inability to verify its sources.

⁹⁴ Coello 1996, 43.

⁹⁵ Jones 1964, 682.

⁹⁶ Jones 1964, 683.

⁹⁷ Treadgold 1995, 49.

⁹⁸ Treadgold 1995, 50 – 52.

cavalrymen throughout the whole Empire.⁹⁹ Other estimates, utilizing the number of units, provide a much smaller estimate of 34,000 cavalry, consisting of 42 units in the west and 43 units in the east.¹⁰⁰

Table 2: Summary of Horses throughout Roman History¹⁰¹

Year	Total Cavalrymen	Total Horses (Estimated with extra 10%)	Source
Early Empire	84,200	92,620	Hyginus
Second Century AD	51,460	56,606	Treadgold 1995, 56
AD 395	150,500	165,550	Treadgold 1995, 27
AD 395	235,150	258,665	Sidnell 2006, 279
AD 500	51,000 + 15,375 in mounted infantry	56,100 Total 73,013	Zosimus
AD 559	60,000 field army	66,000 for field army	Agathius

In order to show how massive the Roman cavalry was, I will briefly compare the composition of later cavalries to the Roman cavalry.¹⁰² President Abraham Lincoln during the American Civil War (1861 – 1865) established twenty-eight regiments of dragoons (cavalry), which required approximately 100,000 equines.¹⁰³ Lincoln's army then had approximately the same number of animals in the Roman Empire during the first

⁹⁹ Sidnell 2006, 283. It can be noted that 20% cavalry for a field unit is a rather large percentage, greater than either Alexander the Great's Macedonian army or Hannibal's Carthaginians.

¹⁰⁰ Coello 1996, 43, each unit had less than 500 men.

¹⁰¹ A brief summary of the estimates for cavalry horses throughout the Roman Empire. Unless otherwise noted the total cavalrymen includes all cavalrymen during that time. Note that Hyland's estimate of approximately 10% for the additional horses of the commanding officers and the extra remounts for the units was utilized in determining the total number of equids. This estimate includes only the warhorses utilized, but does not include the baggage and work animals.

¹⁰² The cavalries were tactically utilized in different manners: the Roman cavalry was generally used for flanking and charging the enemy, whereas the American cavalry was utilized for breaking infantry charges. The American and British cavalries inevitably had to contend with gunfire and cannonballs, whereas the Roman cavalry had to contend with arrows.

¹⁰³ Quigley 2001, 34.

century AD.¹⁰⁴ The Romans, therefore, even at the beginning of the Empire had a significant number of horses in the cavalry. As another point of contrast, the British, at the beginning of the Napoleonic war in 1807, had only 8,000 – 10,000 cavalry in reserve.¹⁰⁵ The late Roman army had approximately 25,000 cavalry in reserve in the eastern half of the empire.¹⁰⁶ The late Roman cavalry had more than double the number of cavalry in reserve as the 19th century British Empire. These contrasts indicate that the Roman cavalry utilized a large number of cavalry horses even by modern standards.

Breeds of Cavalry Mounts

Due to the large number of animals required, Rome relied upon both its own horse farms and the provinces to provide enough animals for the military. The cavalry horses were not chosen for beauty, but instead for utility and ability, as an equine incapable of withstanding the rigors of military campaigns put the cavalry at a disadvantage.¹⁰⁷ The Romans recognized the advantage of strong, fast, and hardy equines in battle. After the Second Punic War, the Romans recognized the advantage of hardy mounts such as the Carthaginian and Spanish horses; similarly, during the Gallic Wars, they obtained remounts from the Gauls and Germans when they observed the endurance of these animals.¹⁰⁸ The willingness to adapt and incorporate foreign stock

¹⁰⁴ Quigley 2001, 35. It is interesting to note that both the Union Army and the Confederates lost an extensive number of animals through a contagious disease called glanders. The Union Army had several depots, which held horses to be distributed to the soldiers; the largest of these, Giesboro depot, handled over four years 170,622 horses, 38% of which were unsuitable for service after being affected by glanders (either dead or inadequate for warfare). Glanders is a disease caused by the bacterium *Pseudomonas mallei*, which is highly contagious among horses. It was noted by ancient veterinary authors including Apsyrus. It is characterized by nodules in the organs including the lungs, liver, and spleen and can be chronic or acute. For those without modern antibiotics, the best manner of dealing with it is separating and culling those affected. For more information, see West 1988, 286.

¹⁰⁵ Hall 1992, 154.

¹⁰⁶ Note that this was for the field army, which was the mobile force that the Emperor moved as was required.

¹⁰⁷ Hyland 1990, 26.

¹⁰⁸ Hyland 1990, 74 – 75.

enabled the Roman Empire to acquire some of the best equines of the time.¹⁰⁹ This practice of incorporating enemy cavalry breeds continued, so that by the Late Roman Empire, the Romans relied upon a wide mix of equines from various locations. The army relied upon remounts from Libya/Numidia, Spain, Gaul, Italy, Sicily, Thessaly, Thrace, Syria, Erembia, Armenia, and Sarmatia, and from the Huns and Neseans.¹¹⁰ The highest rated military chargers, in the fourth century AD, were the Hunnish, followed by the Thurgian, Burgundian, and the Friesian.¹¹¹ The most popular Roman charger was a dark horse with a white blaze down the nose, which is a characteristic of the crossbreeds consisting of Asian, North African and Spanish horses.¹¹² This extensive list of locations from which the Romans drew remounts for the military provides further indication of the large number of cavalry animals the military required.

The German and Gallic horses, considered inferior by the ancient authors, were hardy, fast, and rather small, particularly on the north side of the Danube.¹¹³ The Gallic horses were small, ugly hardy animals that were closer to the modern pony than any type of modern horse. There were also the Sarmatian horses, which were small and fast, but difficult to control, similar to the modern Appaloosa in terms of temperament.¹¹⁴ These horses were in excess of 15 hands (152 cm) high, although the nomadic Sarmatian horses seemed smaller (at about 14 hands) because they had less nutrition and more exercise

¹⁰⁹ Ridgeway 1972, 312.

¹¹⁰ Hyland 1990, 13. Note that the Spanish horses were the ancestors of the modern Lusitanian and Andalusian horses.

¹¹¹ Vegetius *Ars Vet.* 4.6.3.

¹¹² Ridgeway 1972, 328. Belisarius had a horse of such a description and if it is reasonably believed that he had one of the best military equines available at the time, this type was one of the most desired types of remounts.

¹¹³ Hyland 1990, 75; Ridgeway 1972, 314.

¹¹⁴ Hyland 1990, 22. Appaloosas are known to be stubborn and independent and are exceedingly difficult to control and train.

than the stable-bred Roman horse.¹¹⁵ The British horses, which Caesar observed, were praised for their speed, agility, and intelligence.¹¹⁶ Thracian horses had been praised since Homer and were capable animals that were rather larger than most of their contemporaries.¹¹⁷ These animals were utilized more for military purposes than for racing.¹¹⁸ Numidian or African horses were known as small, ugly animals built to have high endurance, obedience, and speed.¹¹⁹ Spanish horses were first utilized in the Roman military when Caesar obtained a large number of them for the Gallic War against Vercingetorix.¹²⁰ These animals were sprinters and rather small and were more desirable among the racing circles than the military due to their lack of courage.¹²¹ Crossbreeding between the Spanish and Numidian animals produced one of the best Roman military mounts. The breed was a favourite of the Romans as it provided all the necessary traits for military chargers: high endurance, obedience, courage and speed.¹²² The Numidian/Spanish crossbreed was bred with other popular breeds throughout the Mediterranean, producing a wide range of horse breeds, desired not only for the circuses and military, but also for private owners.¹²³ The top rated warhorse, however, was the Hunnish horse.¹²⁴ This equine was ugly, with a calm temperament and high endurance to cold, illness, and hard labour.¹²⁵ The small head of these horses indicate that they were

¹¹⁵ Hyland 1990, 23.

¹¹⁶ Dio Cass.77.12; Caes. *B.G.* 4.24, 26, 32 – 33.

¹¹⁷ Hyland 1990, 16.

¹¹⁸ Hyland 1990, 13.

¹¹⁹ Hyland 1990, 14; see Strabo *Geog.* 17.3.7, Aelian *de Nat. Anim.* 3.2.

¹²⁰ Caesar *de Bello Gall.* 7.55.

¹²¹ Hyland 1990, 14.

¹²² Hyland 1990, 14, 75; Ridgeway 1972, 314. These equines were the same breed as the Sigynnae.

¹²³ Ridgeway 1972, 114.

¹²⁴ Vegetius *Ars. Vet.* 3.6.

¹²⁵ Vegetius *Ars. Vet.* 3.6. These animals were very similar to the Przewalski's Horse.

likely unintelligent creatures with little brain capacity.¹²⁶ The Hunnish horses having been raised in harsh conditions had evolved to withstand environments such as cold winters, harsh marches, and low rations. These animals were generally hardier than their Roman counterparts and could endure wounds and injuries more stoically than the well-bred chargers.¹²⁷ Vegetius is adamant that the Roman equines were more delicate and require the same care with which they had been raised.¹²⁸ Vegetius' comment on the Roman breeds, however, is common, as equines generally require the same level of care throughout their life. A horse that was born and raised in a moderate climate residing in a barn stall has difficulty adjusting to outdoor board without any defense from weather. For example, a horse such as a Quarter Horse, which has spent the majority of its life outside in the frigid mountains, will survive such conditions in better health than a Thoroughbred racer from a barn in Kentucky.¹²⁹

The Romans thus only drew upon equines of certain breeds for the military. Every equine required an extensive examination for health and conformation, especially those bound for military service.¹³⁰ A senior officer inspected the equine, and if it passed

¹²⁶ Hyland 1990, 28.

¹²⁷ Vegetius *Ars Vet.* 3. prol.1.

¹²⁸ This is not to say that the Roman remounts were cared for like Barbaro, a modern racehorse, who after winning the 2006 Kentucky Derby broke his leg in the Preakness and received lavish care until his death, but they were not expected to endure the harsh environments of nomadism.

¹²⁹ In personal experience, I have observed a horse, which was barn-raised, turned to outdoor board, and become ill enough to require ample medication. The Romans did not have the antibiotics of modern medicine and such conditions were far more difficult to cure. In contrast, I have seen Quarter Horses, who are accustomed to outdoor board, endure the frigid Albertan winters with only their winter coats and a shelter, and not become ill.

¹³⁰ Davies 1989, 155. The baggage animals also underwent examinations, but not as rigorously as those equines drafted for battle. Conformation, in terms of horses, is a term used to describe how the animal is shaped. Even today, horses are judged on the appearance of their body. The horse with the best conformation was considered one with a small head, black eyes, open nostrils, short ears, flexible neck, broad and muscular chest, and straight shoulders (Hyland 1990, 6 – 8).

the examination, it was recorded and entered into military service.¹³¹ According to the *Codex Justinianus* there were regulations governing the size, build, and age of the military horses.¹³² One of the veterinary authors, Theomnestus, provides evidence that the Romans preferred well-bred chargers for the military. In this passage, Theomnestus is describing a soldier who had glutted his horse by forcing him to consume salt. In order to remedy this condition, Theomnestus took the horse away from the owner:

κλαίοντι καὶ ὀλοφυρομένωι ἔδωκα ἵππον, εὐγενῆ μὲν οὐδαμῶς, ὑγιῆ δέ. καὶ ἔλαβον τὸν ἵππον, καὶ θεραπεύσας ἔσχον πάλιν ἀγωνιστήν, ὡς ἀρέσαι τε βασιλεῖ καὶ ὑπ' αὐτοῦ κατασχεθῆναι.¹³³

“I gave to the weeping and wailing [soldier] a horse, that although not at all well-bred, was healthy. And I took his horse, and treating it, I had once again a champion fit to please an emperor and to be possessed by him.”

The horse replacing the one the soldier had lost was inferior to the one Theomnestus had treated. The focus on this passage is not the weeping soldier, but the fact that Theomnestus acknowledges that he had provided the soldier with a sturdy, if lesser, equine and that soldier's horse itself was a well-bred animal. Since he describes the soldier as στρατιώτης, it is likely that the man was not a high-ranking individual.

The Romans preferred sturdy equines that were able to withstand the trials and tribulations associated with war, including marching and fighting. Certain equine breeds were known for enduring harsh conditions better than others were; the Romans particularly favoured the Spanish/Numidian horses. Despite the endurance of these sturdy breeds, it was necessary to supply fresh horses to the cavalry in order to maintain a constant number of adequate warhorses. The next section will discuss how the Romans

¹³¹ Davies 1989, 156. The Palmyrenorum documents provide evidence for the examination and purchase of animals. The examination of the mount was generally done by the *stratoes consularis*, but there were situations such as at Dura the *eques* approved of his animal (Amm. Marc. *Res Gest.* 29.3.5; Davies 1989, 166-167). See also Gillam 1950; Davies 1969.

¹³² *Cod. Just.* 6.31.1.

¹³³ *Hipp. Berol.* 7.7; translated by McCabe 2007, 189.

supplied the cavalry with a sufficient number of acceptable equines and the difficulties surrounding such an endeavour.

Resupply

The Romans required a large number of equines to conduct their military campaigns, and this placed a heavy requirement for an effective and reliable supply of mounts for the cavalymen.¹³⁴ In his archaeological study of Carnuntum-Petronell, a Roman auxiliary fort in Lower Austria, Kunst found that the equine remains were from horses between 4 and 11 years old, and the majority of the horses were from the 4 and 5 year old group.¹³⁵ In other studies, he found the average age of the equines to be 5 – 9 years.¹³⁶ As horses were not trained until they were two years old, after training there was an average of three or four work years per horse.¹³⁷ Breeding periods also imposed time constraints upon the army's ability to restock its cavalry forces. A mare has a gestation period of 11 months, and the foal nurses for at least another year following its birth. A mare can thus foal only every two years, assuming that she is healthy. In order to maintain a large, and still genetically healthy, stock to draw upon, Columella recommends that a stallion impregnate no less than fifteen mares and not more than twenty.¹³⁸ Due to the amount of time, energy, and money to train the animal and a price of approximately 250 gold *solidii* per horse, it was economically beneficial to attempt to

¹³⁴ The importance of maintaining a cavalry is observed during the American Civil War, when a lack of equines to supply General Lee's army after the first year of active warfare contributed to the Confederacy's loss to the Union, whose cavalry was better supplied (Ramsdell 1930, 726).

¹³⁵ Kunst 2000, 115; There is also an archaeological site at Hod Hill, an old military base, where the horse teeth showed equines between 2 and 5 years old and a battlefield where the majority of the equines were between 4 and 5 years old. At Krefeld Gellep at the battlefield, the majority of bones indicated that the animals were under seven years old (Hyland 1999, 82).

¹³⁶ Kunst 2000, 109.

¹³⁷ Columella *Rust.* 6.29.4; Pelagonius 1; Verg. *G.* 3.182 - 183.

¹³⁸ Columella *Rust.* 6.27.8 – 11.

recover as many injured equines from battle, where the chance of injury was high, as possible. As in modern military campaigns where mechanics are hired to fix military vehicles on site, veterinarians were hired to attempt to save as many wounded equines as possible. The more animals the veterinarians were able to save, the fewer equines the Romans had to purchase to resupply the cavalry. Assuming a turnover of one horse approximately every 4 years, it was a massive undertaking to replace all those who died, either from battle or from sickness, or retired. Speidel estimates that one-third, or 700, of the 2,000 horses of the Praetorian Guard were replaced every year.¹³⁹ If we use the likely number of cavalry horses in conjunction with this estimate, then the Early Empire required just over 30,000 horses every year to replace those that were lost.¹⁴⁰

When these facts are taken into consideration, it is apparent that the army required large quantities of horses on a regular basis. One of the main sources of equines, and also mules and donkeys, during the early Roman Empire were several large imperial farms located throughout Rome, whose main purpose was to resupply the army.¹⁴¹ Early in the reign of Tiberius, the main sources of equines were completely drained in order to provide enough cavalry mounts for the wars against Arminius.¹⁴² By Late Antiquity, however, the Romans had organized an efficient remount system, under the control of Belisarius, which was praised by Procopius.¹⁴³ The Romans had to look outside Italy for most of their mounts, for despite agricultural practices of importing grain and roughage, Italy could not sustain the massive equine farms required to produce the numbers

¹³⁹ Speidel 1994, 108.

¹⁴⁰ This is a rough estimate, particularly if one considers the fact that the Praetorian Guard fought in different conditions than the average cavalryman, but it does provide an estimate of how many animals the Empire might need every year to replace those lost.

¹⁴¹ Hyland 1990, 76.

¹⁴² Tacitus, *Ann.* 1.65, 69, 8; Hyland 1990, 75.

¹⁴³ Elton 2007, 380.

required by both the military and entertainment industry.¹⁴⁴ Although animals could be seized from the enemy during military campaigns, the Romans still required a steady supply of equines during eras that were more peaceful.¹⁴⁵ Beyond commandeering animals from the enemy, the Romans had several other methods of obtaining equines. Many mounts were provided by imperial horse farms (*saltus*).¹⁴⁶ Some of the equines, who either survived to old age or were wounded in such a way as to become useless for military endeavours were retired and likely used for breeding purposes.¹⁴⁷ These alone, however, could not keep the military supplied with animals, as the gestation period of a mare is eleven months and horses needed to be replaced every four years or so. The majority of the animals found at Carnuntum were stallions, which may indicate that mares were required for breeding.¹⁴⁸ The military records of the *Cohors XX Palmyrenorum* from AD 251 indicate that 8 of the 13 horses were male, with three females and two equines of unknown gender.¹⁴⁹ The most productive foaling years for a modern Thoroughbred mare are between 3 and 10 years old, and despite the differences in eras and breed of equine, it is likely that fertility still depended upon the age of the mare.¹⁵⁰ The age of the modern Thoroughbred stallion has been found to have no effect on fertility, making it more likely that a stallion served on the battlefield before retiring to stud.¹⁵¹ Columella indicates that the stallion is suitable for breeding between ages three to twenty.¹⁵² Therefore, as Hyland argues, in order to provide a continuous supply of

¹⁴⁴ Lindner 1981, 11 – 16.

¹⁴⁵ Davies 1989, 154.

¹⁴⁶ Elton 2007, 379.

¹⁴⁷ Hyland 1990, 208.

¹⁴⁸ Kunst 2000, 115.

¹⁴⁹ Hyland 1990, 82.

¹⁵⁰ Brück, Anderson, and Hyland, 2008, 299.

¹⁵¹ McDowell, Powell, and Baker 1992, 365.

¹⁵² Columella *Rust.* 7.27.9.

equines, mares generally were better utilized in breeding programs.¹⁵³ A stallion could provide numerous years of service and still be suitable for breeding even if he retired after he was 15 years old.

These facts do not mean that only stallions were utilized in battle, as literature indicates that the Romans favoured female equines for remounts. Pliny and Varro both state that mares were commonly utilized for warhorses.¹⁵⁴ It may be, as Davies argues, that the mares in military service were never utilized as brood mares, but that there were fewer mares utilized than stallions for the cavalry, as most of the mares were required for breeding purposes.¹⁵⁵ When a mare was injured to the point where she was no longer suitable for military duties, however, it was logical that she retired to become a broodmare if she was still young enough to breed.¹⁵⁶ This was only one way, however, to replace cavalry horses, and the Empire supplemented this through direct purchase of equids and through taxes, levies, and tribute.¹⁵⁷

After taking into account all these factors, it is clear that the Romans required an efficient remount system and a method of ensuring that an equine remained on the field as long as possible. If a wounded horse could recover from its wounds, it was in the best interest of the Romans to ensure that the animal did so. The trooper himself was encouraged to ensure his mount's survival through monetary incentives. For a horse, the cavalryman in an *ala* had to pay one-half of his yearly wages.¹⁵⁸ Despite inflation, the

¹⁵³ Hyland 1990, 81 – 82.

¹⁵⁴ Pliny *HN* 8.42; Varro *Rust.* 2.7.1.

¹⁵⁵ Davies 1969, 454.

¹⁵⁶ Hyland 1990, 76.

¹⁵⁷ Elton 2007, 379.

¹⁵⁸ Speidel 1994, 109. The Romans provided their soldiers with mounts unlike the American Civil War when soldiers were expected to provide their own equine, for which the army paid him forty cents a day. Additionally, if the animal was killed in action, the soldier was paid out for the loss. See Ramsdell (1930) for more detail. It is likely that the difference between the Romans and the Americans was that the Romans

price of horses did not rise, and eventually a cavalryman only had to pay one-seventh of his yearly wage to obtain a mount.¹⁵⁹ If a trooper managed to return a horse at the end of his service, he was refunded the amount he paid for the horse.¹⁶⁰ The cavalryman thus attempted to ensure that his equine remained in service as long as possible.

The monetary reward for ensuring the health of his equine was not the only encouragement for a cavalryman, but there was an emotional attachment to the animal. In one situation, Theomnestus describes a cavalryman as κλαίοντος καὶ ὀλοφυρομένου, “weeping and wailing,” when he had to exchange an injured horse for another.¹⁶¹ Additionally, on an *ostrakon* from Contrapollonopolis, Thebes from the second century AD reveals further the admiration of a soldier for his horse, ἐρρῶσθαί σε εὔχομαι μετὰ τοῦ ἀβασκάντου σου ἵππου, “I pray that you are well with your horse, which is free from the ‘evil eye’”.¹⁶² In this case, both the recipient and sender are associated with the military.¹⁶³ The sender clearly wishes that the *horse* be well. There was even a situation where an *eques*, cavalryman, at the end of his term of service was upset to leave his mount behind.¹⁶⁴ Theomnestus indicates that one of his animals was important to him and when it was ill that σφόδρα οὖν ἐμέλησέ μοι σῶσαι τὸν ἵππον “It was very much a concern to me to save the horse”.¹⁶⁵ In all these situations, the individuals involved clearly have some emotional attachment to their mount. This emotional attachment,

were able to organize a system of remounts that easily allowed equines to be replaced if lost. As the Romans required more cavalry, infantry soldiers were promoted to the cavalry, which means that animals had to be acquired for them from external sources. In fact, in America the need for cavalry resulted in difficulty in procuring horses by the end of the American Civil War.

¹⁵⁹ Speidel 1994, 109. Note that the soldiers’ wages were constantly increased.

¹⁶⁰ Speidel 1994, 109.

¹⁶¹ *Hipp. Berol.* 7.7.

¹⁶² *O.Florida* 15.

¹⁶³ Adams 1995, 64.

¹⁶⁴ Speidel 1994, 109.

¹⁶⁵ *Hipp. Berol.* 34.13.

along with the monetary incentives, induced a cavalryman to seek aid for the animal when it was ill or injured, particularly if the service was readily available.

Although the Romans had numerous methods to resupply the military, it did not mean that horses were easily replaced. In the next section, the injuries and ailments that plagued cavalry horses will be discussed, particularly those received while on campaign.

Cavalry Tactics and Resulting Injuries

Any illnesses obtained while on campaign or injuries inflicted in battle required attention in order to enable the horse to continue on active duty within the military. The grooms and cavalrymen could care for basic injuries, such as small slash wounds, but the more serious injuries required more than a rudimentary knowledge in horse care. Initially, when the cavalrymen were little more than dispatch riders, the most common injury was lameness either from sprained limbs or bruised feet. As horses became a more in battle, such as riding in charges, the dangers increased. The most dangerous tactic utilized by the cavalry was to charge against the enemy to break the battle line. If the enemy did not break, the cavalry wheeled around in order to start another charge.¹⁶⁶ The cavalry charged in regiments between 5 and 10 men deep, and trotted towards their enemy to remain in line.¹⁶⁷ While charging against the enemy, the cavalryman was in range of enemy arrows for about 33 seconds during his charge.¹⁶⁸ Upon impact, if the enemy line did not break, the horse risked being slashed or punctured by the enemy's weapon. Slash wounds came from swords or spears tearing open the skin, which could be deep or shallow. Slash wounds were far easier to heal as generally an antiseptic

¹⁶⁶ Elton 2007, 378. It is interesting to note that cavalry tactics remained the same for thousands of years following the collapse of the Roman Empire. A book written in AD 1862 by Philip Cooke provided very similar tactics to those described by Vegetius.

¹⁶⁷ Elton 2007, 378. Note that at a trot the horse could approach the enemy at 16 km/h.

¹⁶⁸ Elton 2007, 378.

poultice (generally rust and verdigris) sufficed.¹⁶⁹ A horse still could possibly die from such a wound through blood loss or infection, but someone with knowledge of antiseptics and stitches could treat the animal. Puncture wounds, caused from stakes hidden in pits, caltrops, and the upwards thrust of the enemy's spears and swords, were far more dangerous.¹⁷⁰ Not only could puncture wounds go deep and hit internal organs, but the horse also risked tetanus. Tetanus today is rare, cured with tetanus shots, but without these, it was rare the animal survived.¹⁷¹ The veterinary writer Pelagonius was not able to understand the cause of tetanus, but provided an accurate description of the infection.¹⁷² In some mild cases of tetanus, the animal was able to survive, but it is likely that the prescribed treatment of cauterization and sweating of the animal did little to aid in curing the infection.¹⁷³

Once the enemy broke, the cavalry chased them down.¹⁷⁴ In this situation, it was likely that the cavalryman sped after the enemy along unknown terrain, increasing the potential for injury. The horse could rupture a tendon, dislocate its shoulder, or cause stress or fractures to its joints.¹⁷⁵ Hazards such as holes in the ground or loose weaponry could be hidden by undergrowth. A horse that fell into a hole could potentially break its leg, at which point it was necessary to put the animal down.¹⁷⁶

¹⁶⁹ Hyland 1990, 125. Verdigris is the green patina, mainly consisting of copper sulfate that appears on copper, brass, or bronze surfaces when these metals have been exposed to the atmosphere.

¹⁷⁰ Hyland 1990, 126.

¹⁷¹ Hyland 1990, 126.

¹⁷² Pelagonius 17.267. The symptoms according to Pelagonius include the fact that the head is extended and unable to bend, his features are rigid and he is not able to open his mouth, his joints are stiff and the horse has difficulty urinating.

¹⁷³ Hyland 1990, 126.

¹⁷⁴ Elton 2007, 379.

¹⁷⁵ Hyland 1990, 127. Ruptured tendons take a month to heal.

¹⁷⁶ Modern veterinarians still have difficulty treating broken legs in horses, and, in most cases, the horse does not survive. Even if the owners have sufficient funds to afford extensive veterinary care, many complications could arise. This was the case with Barbaro, a famous racehorse, fractured three bones in his

Numerous historical accounts describe the failings of a battle or military campaign due to an illness in the beasts. Polybius, describing one of the marches of Hannibal, explains how the horses had become lame, and thus unable to fight, due to heavy marching in the marshes.¹⁷⁷ The ancient veterinary writers often mention marching situations which caused illness in horses, such as colic caused by drinking cold water after a hot, long day.¹⁷⁸ Any horse caretaker was aware of these illnesses, yet they might not have the expertise to deal with extreme cases. There is one case where Ammonius had asked Apsyrthus to provide information on treatments for laminitis.¹⁷⁹ Yet beyond the basic illnesses and wounds, other factors affected horses, especially their hooves. In one battle against the Persian cavalry, the Romans retreated up into the hills, where they found the cavalry could not follow due to the fact that the horses went lame when their hooves could not endure the hard stone after their accustomed soft dirt.¹⁸⁰

Evidence of Veterinarians

Veterinarians in the Legal Texts

The susceptibility of equines to diseases and injuries argue for a serious demand for animal health care. There is evidence of such service providers throughout both literary and archaeological evidence. One of the most important pieces of evidence regarding the existence of animal doctors in the Roman Empire, and their status in the military, is found in Justinian's *Digest*. It reads as follows:

Quibusdam aliquam vacationem munerum graviorum condicio tribuit, ut sunt mensores, optio valetudinarii, medici, capsarii, et artifices et qui fossam faciunt, veterinarii, architectus... hi igitur omnes inter immunes habentur.¹⁸¹

right leg. He underwent several surgeries to repair the leg, but eventually laminitis set in and he was euthanized.

¹⁷⁷ Polyb. 2.79.

¹⁷⁸ Colic can also be instigated by rich grasses and other environmental conditions. .

¹⁷⁹ *Hipp. Berol.* 8.1 – 3.

¹⁸⁰ Fleming 1969, 40.

¹⁸¹ *Dig.* 50.6.7.

For those certain individuals this stipulation imparts some exemption from weighty duties, so that those who are surveyors, the assistants of the hospital, the doctors, the dressers [of wounds], and the craftsmen and those who make ditches, the veterinarians, the architect....All these therefore are among the *immunes*.

As it is clearly stated, *veterinarii* not only existed within the Roman Empire, but their duties were considered sufficiently important that they were exempted from all weighty duties and provided with the position of *immunes*.¹⁸² An *immunis* could still identify himself as a soldier, but had exemptions from certain exhausting duties such as setting up and maintaining camp. The *veterinarii*, therefore, were responsible only for the duties associated with animal health care, including dealing with wounds, illnesses, and perhaps even examining mounts.

Hadrian was the first Emperor to recognize *immunes* officially. In acknowledging the position, he also increased their pay to one and a half that of the regular soldier (*miles*).¹⁸³ This was a highly desired position, inasmuch as soldiers bribed centurions to be included among the *immunes*, not for the pay, but in order to reduce their expected duties.¹⁸⁴ The restriction of duties was not the only advantage to being an *immunis*, as these individuals held a certain important legal status within the military, if not within society as a whole.¹⁸⁵ The *veterinarii* were then paid a greater wage than the average *miles*, and they held a higher legal status in society.

¹⁸² The immunity first appeared under Hadrian who exempted them from heavy fatigues and routine duties as their duties called for certain skills that were not as quickly replaced. Webster 1998, 122; Breeze 1974.

¹⁸³ Webster 1998, 122.

¹⁸⁴ Webster 1998, 259.

¹⁸⁵ Webster 1998, 122.

Military Veterinarian Writers

The care of military animals was then essential to military operations, and in order to ensure the animals received the best possible care, the Romans hired an individual who was knowledgeable in animal health care. There were individuals associated with the military, who wrote treatises and letters concerning the healing and care of equids. Although little information is known about the authors, several individuals likely could be identified as military *veterinarii*. It is clear that Apsyrtus and Theomnestus were associated with the military, although we do not know in what precise capacity. These authors have recorded circumstances in which they were both involved with equine medicine and the military, and while this is not irrefutable evidence that these individuals were *veterinarii*, it provides a solid basis for examining how Romans perceived animal health practitioners in the military. Through an analysis of both Apsyrtus and Theomnestus, we can gain further insight into the role of the veterinarian in the military.

Apsyrtus is one of the most informative sources from the *Hippiatrica*. He provides details not only on his life but on also regarding many other authors and veterinarians. At some point in his career, Apsyrtus identifies himself as a ἵππιατρός. Apsyrtus generally wrote in letter format to various individuals including decurions, ἵππιατροί ‘horse-doctors’, and ἵππιотροφος ‘horse-breeders’. Apsyrtus himself provides the most detail concerning his life, supplemented with information from both other *Hippiatric* authors and the *Suda*, a Byzantine Encyclopaedia. The *Suda* provides a brief overview of Apsyrtus’ life, although is not as detailed in his autobiographical information. It indicates that:

Ἄψυρτος Προυσαεὺς ἢ Νικομηδεύς, στρατιώτης· στρατευσάμενος ἐπὶ Κωνσταντίου τοῦ Βασιλέως ἐν Σκυθία παρὰ τὸν Ἰστρον· ἵππιατρικὸν Βιβλίον οὗτος ἔγραψε καὶ φυσικὸν περὶ τῶν αὐτῶν ἀλόγων, καὶ ἕτερα. ¹⁸⁶

“Apsyrtus: native of Prousa or Nicomedia, a soldier. He campaigned under the Emperor Constantine in Scythia along the Danube. He wrote a book on horse medicine and a magical work about horses too, and other things.”

The information concerning Apsyrtus, which the author himself provides, is similar, although the author does not provide details concerning the era in which he lived.¹⁸⁷ It is believed that Apsyrtus was an early contemporary of Theomnestus, placing him around the beginning of the fourth century AD.¹⁸⁸ It has also been suggested that Apsyrtus lived much earlier between AD 150 and 250.¹⁸⁹ As Adams notes, it is not clear what job Apsyrtus had in the military, whether he was a member of the cavalry or a soldier.¹⁹⁰ Apsyrtus, however, clarifies a few details of his life.

Στρατευσάμενος ἐν τοῖς τάγμασι τοῖς ἐπὶ τοῦ Ἰστροῦ ποταμοῦ ἔγνων τὰ συμβαίνοντα τοῖς ἵπποις, ἐν οἷς καὶ διαφωνοῦσιν.¹⁹¹

“While campaigning among the legions on the Danube River I learned the things that befall horses, and those in which they die.”

Apparently, from his statement Apsyrtus was dealing with equine wounds and illnesses while he was campaigning. Apsyrtus utilizes terms such as δέσποτα to address individuals identified as consuls, which was a term utilized by soldiers to address their

¹⁸⁶ Cited from *Suda* in McCabe 2007, 123; Translated by McCabe 2007, 123.

¹⁸⁷ The *Suda* implies that he campaigned under Constantine in AD 323 (McCabe 2007, 25). He encountered the Sarmatians, but it is unknown whether that was as an ally or foe, so it is difficult to determine the campaign he was associated with (McCabe 2007, 126).

¹⁸⁸ Theomnestus utilizes Apsyrtus in such a manner, as it is likely that he knew the manuscript extremely well. It is believed that Theomnestus composed his treatise sometime between AD 312 and 324 (McCabe 2007, 185).

¹⁸⁹ Björk disregards the *Suda* altogether and assigns a date between AD 150 and AD 250 (1944, 9 – 12). McCabe (2007, 126) also indicates a possibility that the *Suda* was referring to Constantine Chlorus or Constantius as opposed to Constantine.

¹⁹⁰ Adams 1995, 82.

¹⁹¹ *Hipp. Berol.* 1.1

superiors.¹⁹² This also suggests that he identified himself as a part of the military. It is clear from both the *Suda* and Apsyrtus himself that he was deeply entrenched in the military and was associated with equines in such a way as to observe their injuries and diseases. Apsyrtus' knowledge of equine illnesses, diseases, and their cures provides ample evidence that he was associated with medicine in a manner that was greater than the basic knowledge of an equestrian. This *Hippiatric* author was well aware of the pharmacopeias and human medical procedures of his time, including splinting and surgeries.¹⁹³ It is perhaps this knowledge that made Apsyrtus so renowned among veterinarians. Later veterinary authors including Pelagonius and Chiron refer to Apsyrtus numerous times in their works.¹⁹⁴ Even modern veterinary scientists refer back to Apsyrtus as the “father of veterinary medicine”.¹⁹⁵ His reputation among horse doctors was well known, even in his own time.¹⁹⁶

Apsyrtus attempts to establish his credibility in his work in a number of ways.

Apsyrtus asserts that:

ἐν ᾧ μὴ ἐπιξητήσης λογιότητα, ἀλλὰ τὴν ἐκ τῆς πείρας φυσικὴν ἐμπειρίαν
ἐπίγνωθι.¹⁹⁷

“In which [treatise] do not seek eloquence, but recognize medical knowledge from experience.”

In this Apsyrtus emphasizes experience as a major factor in medical knowledge.

Vegetius later criticizes Apsyrtus for his lack of eloquence and organization.¹⁹⁸ Further evidence of this is in a brief statement written by Hierocles, another *Hippiatric* author,

¹⁹² McCabe 2007, 133.

¹⁹³ McCabe 2007, 144.

¹⁹⁴ Adams 1995, 5.

¹⁹⁵ Heymering 2010, 2.

¹⁹⁶ Adams 1995, 5.

¹⁹⁷ *Hipp. Berol.* 1.1; translated by McCabe 2007, 128.

¹⁹⁸ Vegetius *Ars Vet.* 1.3 – 4. The manuscripts modern scholars have were compiled sometime in Antiquity.

who was not an animal doctor but was knowledgeable in animal medicine.¹⁹⁹ In a discussion of phlebotomy, Hierocles refers to both Apsyrtus and Eumelus:

εἰ γὰρ καὶ Εὐμήλω δοκεῖ φλεβοτομία, ἀλλὰ Ἄψυρτος ἀποδοκιμάζει.²⁰⁰

For if phlebotomy seems good to Eumelus, but Apsyrtus disagrees by lack of evidence.

The use of ἀποδοκιμάζει “reject for want of qualification” indicates that Hierocles believed that Apsyrtus had not observed any evidence to support phlebotomy. The word is utilized only twice more in the *Hippiatrica*, in both instances referring to Apsyrtus.²⁰¹ Hierocles clearly had the perception that Apsyrtus required evidence to support medical cures and was willing to reject ideas on that basis. Likewise, Apsyrtus claims that he had tested all the pharmaceutical drugs and compounds he mentions in his work.²⁰² Although he does not identify specific medical cases, Apsyrtus clearly had some experience in the application of his remedies. McCabe notes that one of Apsyrtus’ “signpost” phrases was ἡμέτερα δὲ εὐρήματα, ‘our discoveries’.²⁰³ These few words appear to indicate that Apsyrtus had some personal experience in treating or observing illnesses and was able to contribute his opinion on certain illnesses and injuries, which he then imparted in his writing.²⁰⁴ This is not to say that Apsyrtus did not consult other sources, but that he was establishing his expertise with ill and injured equines.²⁰⁵ McCabe argues that Apsyrtus’ experiences are fictional, especially when contrasted with Theomnestus.²⁰⁶ Adams, however, is fully convinced that Apsyrtus’ experience with

¹⁹⁹ McCabe 2007, 208.

²⁰⁰ *Hipp. Berol.* 10.5.2

²⁰¹ *Hipp. Berol.* 20.7.1 and 40.2.13

²⁰² *Hipp. Berol.* 129.2

²⁰³ McCabe 2007, 136.

²⁰⁴ McCabe 2007, 136.

²⁰⁵ See McCabe 2007, 136 – 155. McCabe thoroughly discusses the influence of previous authors on Apsyrtus.

²⁰⁶ McCabe 2007, 199.

animal medicine was genuine.²⁰⁷ A cautious approach is required then in examining Apsyrus' claims of experience, but it is clear that he understood the medicine he was discussing.

Theomnestus, from Nicopolis, is another *Hippiatric* author associated with the military.²⁰⁸ The most complete form of his works is in Arabic, but an abridged version remains in the original Greek.²⁰⁹ He travelled with an Emperor, believed to be Licinius, in the early fourth century AD.²¹⁰ He likely wrote sometime after AD 313, but scholars have not agreed upon *terminus ante quem*. Some scholars indicate that he wrote before Licinius was disposed of in AD 325 since he would not have acknowledged his association with the Emperor after this date, even if he only referred to Licinius as βασιλεύς (king).²¹¹ Despite the debate on the exact date, it is evident by his own words that he travelled with an Emperor from Carnutum to Italy.²¹² It is unclear what position he held while he was travelling with the army. McCabe argues that he may not have been a soldier but just a companion to the Emperor.²¹³ Adams, however, calls Theomnestus a “superior army *veterinarius*”.²¹⁴ One of Theomnestus' most revealing interactions with the military, noted above, was when he took away a soldier's horse so that he could cure it.²¹⁵ Theomnestus provides numerous personal accounts of animal illnesses that furnish

²⁰⁷ Adams 1995, 15, 81.

²⁰⁸ McCabe 2007, 185, 188. The city is believed to be Nicopolis ad Istrum near Carnutum.

²⁰⁹ McCabe (2007, 184 – 185) indicates that the compiler of the *Hippiatrica* removed repetitive material. A study of the Arabic manuscript of Theomnestus is beyond the scope of this dissertation and studies of it are only in their infancy, but a brief outline can be found in McCabe (2007, 184 – 185). In the Arabic edition, Theomnestus refers more to Apsyrus than appears in the *Hippiatrica*.

²¹⁰ *Hipp. Berol.* 34.11 - 14.

²¹¹ See Fischer 1988, 197; McCabe 2007, 190; Adams 1995, 83; and Doyen-Higuet 1984, 111 -114.

²¹² *Hipp. Berol.* 34.11 – 14.

²¹³ McCabe 2007, 190.

²¹⁴ Adams 1995, 83.

²¹⁵ *Hipp. Berol.* 7.7 – 8.

his audience with the impression that he honestly cares what happened to the animal. At one point in his work, he writes:

ὁ καλῶς ἵπποις καὶ ἡμιόνοις τὴν τῆς ὑγείας προφυλακὴν ποιούμενος οὐχ ὡς ἔτυχεν περιποιεῖται.²¹⁶

One who acts correctly to preserve the health of horses and mules does not take care of them in just any old way.

Theomnestus' prose provides clear evidence that he was a learned individual with medical training, particularly when one examines his organization, definitions, knowledge of humoral theory and aetiology.²¹⁷ At some point in his career, Theomnestus appears to have moved away from warhorses and focused his efforts on hunting and race horses.²¹⁸ He is, however, most often associated with a military setting; and we will consider him from this perspective in this chapter.

Veterinary Education

Veterinarii required an education to gain authority in the field. A human doctor generally entered into a certain 'school' of thought and completed his education in the manner specified by that doctrine.²¹⁹ Apsyrtus and Theomnestus were clearly educated in medical procedure and theory. In one letter concerning belly wounds, Apsyrtus writes:

δεῖ γαστρορραφεῖν, ὅνερ τρόπον οἱ ἰατροὶ ἐν ἀνθρώπῳ.²²⁰

It is necessary to suture the peritoneum, in the same manner as that used by doctors on a man.

²¹⁶ *Hipp. Berol.* 97.8; translated by McCabe 2007, 189.

²¹⁷ McCabe 2007, 189.

²¹⁸ *Hipp. Berol.* 7.6; *Hipp. Berol.* 22.9 – 10

²¹⁹ There were several schools of thought in human medicine: Empiric, Dogmatic, and Methodist. For information concerning these schools, see Pioreschi 1998, 95 – 150.

²²⁰ *Hipp. Berol.* 71.1.5 – 7; translated by McCabe 2007, 144.

Further evidence of his knowledge is indicated by his use of terms that are only found in medical texts such as διαστόλιον ‘dilator’ and σαρκολαβίς ‘forceps’.²²¹ Apsyrtus alludes to medical pharmacopeias in his works, which indicates that he was aware of the current medical cures.²²² He even refers to some rather obscure works, such as those by Aspidius and Amasis, who both wrote human medical treatises.²²³ It is likely that Apsyrtus had some medical education so that he was able to understand human medical terminology and pharmacological compounds. Theomnestus, conversely, has a great interest in medical theories and uses them to explain diseases and illnesses. He writes:

ὅταν οὖν αὐτὸ ψύχους, τοῖς χαλῶσι καὶ θερμαίνουσι δεῖ χρῆσθαι. ὅταν δὲ ἀπὸ κόνεως τοῖς ἐκφράττουσιν καὶ καταλαίνουσιν.²²⁴

Whenever it [the cough] is from chill, one ought to use relaxing and warming [drugs].
Whenever from dust, unblocking and softening ones.

As can be observed here, Theomnestus takes into account the causation of the illness in order to cure it. Throughout his work, Theomnestus informs the reader how the horse could possibly catch a cough through cold, such as when a horse is new to the bit and inhales cold air.²²⁵ Additionally, Theomnestus utilizes medical vocabulary such as δυσδιαφόρητος ‘difficult to dissipate’ regarding humours, a rare term appearing with reference to medicine only in Galen.²²⁶

Works by authors such as Columella, Varro, and even Mago the Carthaginian were available to Apsyrtus and Theomnestus.²²⁷ The *Hippiatric* author, Theomnestus,

²²¹ McCabe 2007, 144. McCabe provides some of Apsyrtus' vocabulary he borrowed from doctors.

²²² This is a similar idea to how modern doctors and veterinarians read scientific journals to update their knowledge of medical procedures and cures.

²²³ McCabe 2007, 145.

²²⁴ *Hipp. Berol.* 22.10.

²²⁵ *Hipp. Cant.* 93.18.

²²⁶ McCabe 2007, 206. For common Greek and Latin veterinary terms see Appendix C.

²²⁷ Unfortunately, copies of Mago's works no longer exist, only records remain.

utilized Apsyrtus in his treatise, although this is more apparent in the Arabic manuscript of Theomnestus' work than in the abbreviated Greek compilation.²²⁸ When consulting sources Apsyrtus rarely mentions them by name. Generally, he utilizes terms such as τινὲς δὲ λέγουσιν 'some say' to reference the work of others. Apsyrtus provided his own opinions, however, if he believed that his sources were wrong. He writes, for example:

Τινὲς δὲ λέγουσιν ἐν τοῖς μαινομένοις ποιεῖσθαι τὴν ἀφαίρεσιν ἐκ τούτων τῶν τόπων, ἡμῖν δὲ ἀρέσκει ἐκ τῶν σκελῶν καὶ βραχιόνων, ἔστι γὰρ ὑποκάτω τοῦ πάθους καὶ ἀκινδυνότερον.²²⁹

Some say that among those who are mad they consider amputation from those places, but for us it is pleasing to consider it as from the thighs and arms, for it is below the afflicted area and in less danger.

It is clear here that Apsyrtus disagrees with the previous sources on the subject, and provides a dissenting opinion. However, it is notable that when Apsyrtus considers that a source is correct he mentions them by name, such as is the case when he referred to his contemporary Auxanon.²³⁰ Theomnestus, when citing veterinary authors, also indicates the names of his sources, including individuals named Nephon, Agathetychus, Cassius, and Hippaios.²³¹ Furthermore, Theomnestus even cites Apsyrtus once by name when he is discussing glanders:²³²

Ἄψυρτος γὰρ τοῦτο τὸ πάθος ἐκ τοῦ τόπου ὑποδερματῖτιν μᾶτιν καλεῖ.

Apsyrtus calls this diseases subcutaneous glanders from its localization.

²²⁸ McCabe 2007, 125.

²²⁹ *Hipp. Berol.* 9.3.

²³⁰ *Hipp. Berol.* 35.1.12.

²³¹ Nephon *Hipp. Berol.* 2.23 – 4; Agathotychnus *Hipp. Berol.* 1.25, 2.24, 32.4; Cassius *Hipp. Berol.* 5.4, 29.6, 32.3; Hippaios *Hipp. Berol.* 2.22.

²³² *Hipp. Berol.* 69.16.

From an extensive examination of the texts, it is clear that both Apsyrtus and Theomnestus were well read and well aware of the current medical resources available.

Theomnestus even adds:

ὡς γινώσκομεν αὐτοὶ θεραπεύσαντες ἐκ λόγου καὶ πείρας, εἴπωμεν καὶ τὰ παρὰ τοῖς ἀρχαίοις μηδὲν φθονήσαντες. τὸ γοῦν ἐκ περιουσίας οὐ περιττόν.²³³

Having made treatments from book-learning and experience, we shall also speak of the things that we have from the ancients, not scorning these at all, since ‘too much is never enough.

It is clear that both authors had read books on animal husbandry along with manuals on medicine and pharmacological works.

Although these sources do not provide precise information on the education available for *veterinarii*, they do offer some information on their careers. First, it is clear that both individuals were completely literate and well read in their chosen profession. To comprehend thoroughly the necessary material available, both on husbandry and human medicine, and be competent in applying the knowledge to real situations required numerous hours of study, just as a modern layman would have difficulty comprehending and applying the knowledge found in a quantum mechanics textbook if he were not first trained in basic chemistry and physics. *Veterinarii*, therefore, needed some education to be capable of comprehending and employing information on health care. Apsyrtus proves a valuable source when attempting to gain further insight into the education. McCabe argues that Apsyrtus had some previous medical education while living in Clazomenae, which is close to Smyrna.²³⁴ It is likely that Apsyrtus also went elsewhere

²³³ *Hipp. Berol.* 2.22; translation from McCabe 2007, 201.

²³⁴ McCabe 2007, 126. Smyrna was capable of supporting equines with its fertile fields.

for his education, and given his extensive knowledge in medicine. Because he writes to many Alexandrians, it has been suggested that he was educated in Alexandria.²³⁵

Once the *veterinariii* had received enough education, they went into the field.

Both Apsyrtus and Theomnestus are keen to emphasize their experience in the field. One of the better known experiences of Theomnestus was described in his case study concerning *tetanus*. Part of it is relayed here:

ὁ τέτανος τοῖς ἵπποις καὶ ἄλλοις ὑποζυγίοις οὐκ ἄλλως ἢ ἀπὸ ψύχους γίνεται...τοῦτο δὲ ἔγνω ἔγὼ γενόμενος ἐπὶ ...ἡμέρας κατὰ Κάρνον τῆς Παννονίας...ἵππος οὖν τότε ἐμὸς τῶν σπουδαίων, ἐφ' ᾧ νεανίσκος ἐλήφθη τῷ τετάνῳ. καὶ σφόδρα με τὸ πρᾶγμα ἐλύπει, οὐδὲν γὰρ ἵππου καλοῦ καὶ γοργοῦ προκριτέον. ἦν δὲ ὁ ἵππος Γ α λ λ ι κ ὸ ς ἑτῶν ὀκτώ, τῷ δρόμῳ ἀκατάσχετος περὶ τοὺς ἐλάφους. σφόδρα οὖν ἐμέλησέ μοι σῶσαι τὸν ἵππον.²³⁶

‘Tetanos’ occurs in horses and other beasts of burden from no other causes than when the solid tissues are afflicted...I learned this once when I happened to be at Carnuntum in Pannonia...then a horse of my own, one of the best, who was being ridden by a young servant, was seized by the ‘tetanos’. This upset me very much, for nothing is better than a fine swift horse. This horse was Gaulish, eight years old, and unbeatable in galloping after stags. I really wanted to save that horse.

Theomnestus carries on explaining how he had treated the symptoms and saved his hunting horse. At the end of the case study, he indicates that:

οὐ δὴ καὶ τὴν δύναμιν καὶ τὴν συσταθμίαν ἐκθήσομαι. ἐν δὲ τούτῳ θεραπεύσεις μὲν πάντα τέτανον ἵππων καὶ τῶν ἄλλων ὑποζυγίων, πάντα δὲ κρυμὸν ἀπελάσεις καὶ τοὺς κατεψυγμένους ἰάση, καὶ ἡμιξήρους γεγονότας ἀποκαταστήσεις εἰς τὸ κατὰ φύσιν. καὶ ἕλωσ τούτουθερμότερον οὐδὲν οὐδενὶ οὐδὲ ἰατρῷ οὐδὲ ἵπποῖατρῷ ἀνεγράφη φάρμακον οὐδὲ ἀναγραφῆσεται.²³⁷

“I will set forth the blend and proportions of this remedy, for with it you may treat any ‘tetanos’ of a horse or other beast of burden, and chase away any chill, and heal those that are frozen – even if they are half dead you may restore them to their natural state. No medicine more warming than this has ever been written down by a doctor or a horse-doctor, nor will on ever be written.”

²³⁵ McCabe 2007, 126 – 127.

²³⁶ *Hipp. Berol.* 34.11 – 13; translated by McCabe 2007, 187 - 188.

²³⁷ *Hipp. Berol.* 14.4 – 10; translated by McCabe 2007, 188.

In this case, Theomnestus claims to be advancing veterinary knowledge through his own experiences, observations and personal experiences in the field. Likewise, Apsyrtus makes it clear that he had acquired a great deal of his medical knowledge of horses while campaigning on the Danube.²³⁸ In his pharmacopeia, Apsyrtus reassures his readers that he had tested all the drugs previously.²³⁹ Such detailed case studies helped both these authors convince their readers that they knew the material they were discussing, and had utilized the treatments in their own practices.

Apsyrtus' letters provide more evidence for the continual education of the veterinarian. Most of Apsyrtus' works were written as letters to individuals explaining the medical cures in reply to questions asked or, in some cases, not asked.²⁴⁰ Apsyrtus' letters are addressed to δεκουρίωνοντες 'decurions' (6 circumstances), 'horse-masters' ἵπποτροφοί (1 instance), ἵππιατροί (23 circumstances), and ἰατροί 'doctors' (3 circumstances).²⁴¹ Generally, Apsyrtus' work appears to be in direct response to questions asked by the individual addressed. As for education, it is important to note that Apsyrtus writes a significant number of letters to ἵππιατροί, even more than he does to decurions. It is likely, then, that *veterinarii* obtained further knowledge of animal medicine through such correspondence. It is possible that this was similar to the modern internship, where although the individuals are finished with their formal education, they spend a few months practicing under mentorship of experienced doctors. Apsyrtus describes some basic conditions encountered by the ἵππιατροί, including indigestion,

²³⁸ *Hipp. Berol.* 1.1

²³⁹ *Hipp. Berol.* 129.2

²⁴⁰ *Hipp. Berol.* 35.1.1-2.

²⁴¹ Some individuals believe that the ἰατροί (doctor) in Apsyrtus' works were in fact ἵππιατροί.

which is relatively common among horses.²⁴² Within the first part of Apsyrtus' works, while discussing fevers in horses, he mentions that διὰ τοῦτο οὖν χρή ταῦτα ὑπὸ παντὸς ἵπποϊατροῦ λίαν γινώσκεσθαι “concerning this it is necessary that these things are especially known by every horse-doctor”.²⁴³ There is also the letter to Ammonius the Alexandrian, where Apsyrtus indicates that the ἵππιατρός asked him for information regarding laminitis, which was and still is a common ailment of equines. In fact, it is one of the top diseases among equines even today.²⁴⁴ An experienced horse doctor, especially an individual who observed animals on long marches and through varied environmental conditions, would have observed many cases of laminitis. It is likely that Apsyrtus was acknowledged as an especially learned individual from whom other ἵππιατροί requested advice when they had little experience themselves.²⁴⁵

Similarly, Theomnestus supports the idea of writing to other ἵππιατροί in order to help educate and help them. Although the first portion of his work was accessible for the majority of the horse owning population, the technical portion of his work was beyond their expertise. Theomnestus claims in dealing with mange that:

ἔστι μὲν εὐίατος τῷ τεχνίτηι καὶ ἀκίνδυνος...τῷ δὲ ἀτέχνῳς θεραπεύοντι πολλάκις θάνατον ἐμποιεῖ τὰ προσφερόμενα.²⁴⁶

“Is easy for the specialist to cure and is not dangerous...but the [treatments] applied by one who is without skill often lead to death.”

²⁴² *Hipp. Berol.* 98.1.

²⁴³ *Hipp. Berol.* 1.2.7.

²⁴⁴ Heymering 2010, 7.

²⁴⁵ There is the matter that the *veterinarii* may not have all been literate, although the individuals Apsyrtus addresses are clearly literate.

²⁴⁶ *Hipp. Berol.* 69.16; translated by McCabe 2007, 191.

Thus, Theomnestus' main audience were individuals who already had some education in veterinary procedures. The author is cautioning the reader that it is dangerous to utilize the material unless he is an educated *veterinarius*.²⁴⁷

The correspondence goes both ways; Apsyrtus also turns to other experienced ἵππιατροί for information, such as observed in the letter to Master Ailianus.

Δέσποτα Αἰλιανέ, ἐδηλώθη μοι ἐπεζητηκέναι σε, ὅτι οἱ πλεῖστοι τῶν ἵπποϊατρῶν
τινα πάθη τῶν συμβαινόντων ἐν τοῖς ἵπποις μὴ ἀφορισάμενοι, τάναντία
προσφέρουσι βοηθήματα.²⁴⁸

Master Ailianus, it is clear to me that you have been searching, that most of the horse doctors, having not defined some certain ill from standing with feet together among horses, offer opposing aids.

Note that he refers to “most of the horse doctors”. There are two likely scenarios. In one situation, Apsyrtus knew other horse doctors and discussed the solutions to these illnesses with them. The other scenario is that Apsyrtus was merely referring to individuals who had also written treatises on veterinary medicine. The first scenario is more likely considering Apsyrtus' intended audience, who is the horse owner Ailianus, and the fact that he wrote twenty-three letters to contemporary ἵππιατροί, who are not known as authors of the *Hippiatrica*. Unfortunately, few of those whom Apsyrtus addresses can actually be traced to real individuals. Most of these individuals, whom Apsyrtus refers to as ἵππιατροί, are Greeks, with the exception of four Egyptian names, and six of other origins.²⁴⁹ Other than their origin, little is known concerning these individuals.

²⁴⁷ As a modern comparison, this was similar to television commercials, stunt shows where there are warnings to the viewer not to try the action at home, and that it is for professionals only.

²⁴⁸ *Hipp. Berol.* 33.1.1 – 4.

²⁴⁹ McCabe 2007, 132.

Another example of Apsyrtus citing another ἵππιατρός in his works comes from a letter to Ammonius the ἵππιατρος from Alexandrian:

Αὐξάνων δὲ ὁ ἵπποιατρός εἶπεν δεῖν βάλλειν ροῦν Συριακὴν καὶ τὰς κριθὰς φρύγοντα καταρραίνειν τῷ ὄξει, κατὰ βραχὺ ὡς φρύγωνται. ἔαν γάρ, φησί, μετὰ τὸ φρυγῆναι αὐτάς καταρράνηις, οὐκ ἐσθίει ὁ ἵππος διὰ τὴν ὀσμὴν.²⁵⁰

The veterinarian Auxanon says that it is necessary to throw a Syrian stream and to sprinkle the roasting barley with (poured) wine, for a short time as it roasts. For if ever, he says, you sprinkle it after it roasts, the horse will not eat it on account of its smell.

Apsyrtus mentions Auxanon as if he had communicated in some way with this individual about a specific matter concerning Ammonius' horse. Auxanon mentions a specific method of roasting barley for a horse. It appears that either Apsyrtus had discussed this particular situation in detail with Auxanon, or they had previous communication on a matter similar to Ammonius' issues. Apsyrtus only mentions Auxanon once within his work, although he appears to have some authority in regards to this aspect of horse care. In either respect, it is clear that Apsyrtus was in communication with this ἵππιατρός. Apsyrtus is citing the information given by Auxanon, revealing that he had not only asked advice from this individual but also that he considered Auxanon an expert in that area of horse medicine. In this Apsyrtus may have been learning from Auxanon on how to deal with the issue. This reinforces the idea that the ἵππιατροί were communicating with one another in order to educate one another regarding different medical situations.

Scholars debate whether Apsyrtus was actually composing letters to real individuals or was following a traditional style. McCabe argues that these were not real letters to individuals.²⁵¹ Yet Apsyrtus is likely referring to a real ἵππιατρός when he refers to Auxanon, for his words gain authority if he is indeed citing a practicing

²⁵⁰ *Hipp. Berol.* 35.1.12.

²⁵¹ McCabe 2007, 128 – 129.

veterinarian. There was little reason to refer to an individual who has no authority within animal medicine when referring to him as a source. Dedicating each portion to a different individual could have been Apsyrtus' method of honouring veterinarians he had met.²⁵² In either case, it is important that he referred to a *named* source.

Apsyrtus, who considered himself a ἵππιατρός, was regarded as a soldier in the *Suda*. As an *immunis*, Apsyrtus' duties focused more on equines and their injuries. During Hadrian's reign, as previously discussed, *veterinarii* became *immunes*, but it is important to understand that *immunes* were still considered soldiers.²⁵³ Once the *veterinarii* joined the military, they received training for applying their knowledge of medical theory. Due to a low number of *veterinarii* spread over the Empire, it is likely that a veterinarian seeking advice was forced resort to correspondence with another *veterinarius*. From the previous discussion, it becomes clear that ἵππιατροί communicated various cures and drug recipes amongst each other to learn and further educate one another on animal medicine.

The education system for veterinarians in the 18th and 19th centuries AD provides a good basis for comparison with Roman education. Modern veterinary education has improved dramatically over the past two centuries. Until AD 1796, the British Army relied upon farriers, men who had not been professionally educated. In the American Civil War, in the late 18th century AD, there was one farrier per troop.²⁵⁴ This individual was poorly paid, only one halfpenny a horse per day, and was not included amongst the privates in military documentation.²⁵⁵ In England, however, the need for properly trained

²⁵² McCabe 2007, 132.

²⁵³ Le Bohec 1994, 62.

²⁵⁴ Smith 1927, 6.

²⁵⁵ Smith 1927, 6 – 8.

animal doctors was recognized not long after the formation of the Horse Artillery in the British Army (1793).²⁵⁶ After an outbreak of glanders in 1795, veterinary assistance was recognized, and Edward Coleman was hired to examine the newly recruited horses.²⁵⁷ By the middle of AD 1796, all individuals wishing to practice animal medicine in the military were required to have a certificate from the medical committee of the Veterinary College.²⁵⁸ The problem with these requirements was that the Veterinary College required three years of training before a certificate was issued. In order to solve this issue Coleman lowered the standard of the profession, offering positions to medical doctors after they had briefly studied veterinary medicine at the College.²⁵⁹ The system, however, enabled individuals who did not have a medical degree to take advantage of the short study period and to receive a diploma after a few *months* of study.²⁶⁰ This means that a good number of military veterinarians in the 18th and 19th centuries learned the basics of animal medicine in school and completed their education on the battlefield.²⁶¹ During the 19th century, the newly christened British veterinary schools had a rather high turnover rate, educating students in the most basic knowledge and leaving the majority of their education to experience on the battlefield.²⁶² With a requirement of only three months of lectures and classes before attempting examination, it is likely that the students had only a minimal knowledge of horse medicine.²⁶³ Similarly, Roman *veterinarii*

²⁵⁶ Smith 1927, 32.

²⁵⁷ Smith 1927, 35 – 37; it was not until Lord Heathfield experimented by introducing veterinary surgeons into the army that it was actually considered by the military to have a Veterinary Surgeons in the army.

²⁵⁸ Smith 1927, 40.

²⁵⁹ Smith 1927, 41.

²⁶⁰ Smith 1927, 41.

²⁶¹ In the 18th and 19th Centuries, veterinarians who were headed towards the military had a much short term of education and likely learned most of the practical duties while on the battlefield. As a need for military veterinarians increased, the length of the students' education decreased. Pattison 1984.

²⁶² Pattinson 1984, 8.

²⁶³ Smith 1927, 65.

presumably completed some of their applied education on the battlefield, although it is likely that the theoretical education required more than a few months. The Roman *medicii*, however, required only six months of education.²⁶⁴ One of the most famous *medicii*, Galen, first learned philosophy, literature, art and science before moving into a focused study of medicine at age sixteen.²⁶⁵ It is likely, therefore, that the *veterinarii* had a similar timeframe in their education.

Important information about the ways in which a ἵππιατρός associated with his clients can be deduced from Apsyrtus' writings. From his letters, it is clear that Apsyrtus, and likely other ἵππιατροί, directed individuals on the actions necessary to cure an ailing animal whenever the veterinarian was unable to go to the location. The system of professional veterinarians providing directives for animal owners is also observed today as when an owner is told to give the animal some prescribed medication over an interval of time.

The Role and Organization of Military Veterinarians

Apsyrtus provided detailed information on equids for decurions, the commanders of the cavalry.²⁶⁶ There are at least five letters addressed to decurions. One of the letters concerns a twisting of the gut, which is likely colic.²⁶⁷ Colic was common among military horses, particularly those that were worked hard and were allowed to drink a significant amount of water.²⁶⁸ The others similarly deal with matters that concern cavalry equines. When one considers the number of equines in the military, it is likely

²⁶⁴ Pioreschi 1998, 122.

²⁶⁵ Pioreschi 1998, 307.

²⁶⁶ Le Bohec 1989, 48.

²⁶⁷ *Hipp. Berol.* 36.1 – 2.

²⁶⁸ Hyland 1990, 129. Colic is still one of the most common illnesses among horses. Colic ranges from mild cases, where merely walking the animal around will result in health, but other severe cases require drastic medical action including but not limited to surgery.

that the *veterinarii* were not able to care for every horse in the area. The most likely scenario is that the *veterinarius* advised the decurions and likely the cavalry unit on the methods of dealing with illnesses and diseases of horses. Therefore, unlike the modern veterinarian, who will travel to cure the equine, the *veterinarius*, if he was not able to be present with the animal, sent a letter informing an individual of the actions that one should take. The decurion then ordered the cavalryman or stable hand to treat the animal as the veterinarian recommended. In order to examine this idea further, several letters to decurions will be examined. In the first of these letters, Apsyrtus was writing to a decurion concerning colic, which he begins:

Ἄψυρτος Οὐάλεντι δεκουρίωνι χαίρειν. ἔγραψάς μοι ἐπερωτῶν, τίνα τὰ βοηθήματα πρὸς τὴν ἐπιστροφὴν τοῦ ἐντέρου. γινώσκειν οὖν σε θέλω, ὅτι κάκιστα ποιοῦσιν οἱ διωθοῦντες τὴν χεῖρα ἐνδοτέρω. δοκοῦντες γάρ, ὅπερ ἀδύνατόν ἐστι, τῇ χειρὶ ἀναλῦσαι αὐτό, μᾶλλον φλεγμονὴν ποιοῦσι καὶ πνευμάτωσιν. βοηθεῖται δὲ περιπάτῳ καὶ δρόμῳ τῷ διὰ κάλπης, καὶ κυλιόμενον οὐκ ἐμποδίζουσι.²⁶⁹

Apsyrtus to decurion Oualegtos greetings. You wrote to me asking what resources are there for the twisting of the gut. I wish you to know, that those tearing away at the innermost legs make the worst situations. For those seeming to relax themselves with a leg, just as it is not possible, they have boils and have difficulty breathing. It is cured by a walking about and a run through a trot, and do not impede rolling.

As can be observed by the brief excerpt of Apsyrtus' letter to Valegtos, the decurion sent him a letter requesting information on animals that had a twisted gut. Apsyrtus then provided the decurion with cures for these symptoms include allowing the animal to walk, run, and roll. The decurion then provided this information to his staff, which then performed the necessary treatment.

The other decurions are addressed in a similar manner. Most of the letters to the decurions are rather short, with the exception of one to Rufus Octavius.²⁷⁰ Apsyrtus also addresses letters to six different men: Sabinus, Gallus, Aelian, Romulus, Celer, and

²⁶⁹ *Hipp. Berol.* 36.1.1.

²⁷⁰ *Hipp. Berol.* 96.1.

Ursus, all of whom he calls δέσποτα (master).²⁷¹ These are the names of several consuls recorded in the late third to mid-fourth centuries AD, which means that Apsyrtus was likely in contact with high Roman officials.²⁷² Since he was in the military, it is likely that these individuals were also associated with the military and that Apsyrtus was only utilizing it as a form of address to superiors.²⁷³ It appears common for Apsyrtus, to instruct individuals on the care for their ill horse.

Theomnestus, however, as previously discussed, discourages individuals from conducting the procedures he describes, indicating that only the τεχνίτη should be doing these activities. In describing his case studies, Theomnestus allows for a different perspective of how veterinary medicine was conducted in the military. In one case study, Theomnestus deals with a soldier who was having difficulty with his animal:

στρατιώτης, δοκῶν εἶναι φιλόκαλος, ἴδιον ἵππον ἅπαξ τῆς ἡμέρας ἄλων ὑπέρκoron ἐποίει τοῦτον τὸν τρόπον... τοῦτο γὰρ ἐρωτηθεὶς ἀπεκρίνατό μοι. ὅπερ δρῶν φθισικὸν ἀπεργάσατο τὸν ἵππον, σφόδρα εὐγενῆ τε καὶ δόκιμον ὄντα. τὸ γὰρ ἄλλας ὄν λεπτυντικόν, ἀθρόως ἐμβληθὲν διὰ τοῦ κέρατος, ἐπὶ σχήματος γενομένου τοῦ ἵππου κατὰ τὴν κρέμασιν, κατερρῦη τῶ πνεύμονι, καὶ καταστάζοντες ἰχώρες δριμύτατοι διέφαγον εἰς βάθος τὸν ὑμένα τοῦ πνεύμονος, καὶ ἔλκος ἐργασάμενοι φθίσει περιέβαλον τὸ ζῶον, καὶ μονος, καὶ ἔλκος ἐργασάμενοι φθίσει περιέβαλον τὸ ζῶον, καὶ ἐφ' ἐκάστης ἡμέρας ἰσχυοῦτο. σημειωσάμενος οὖν καὶ γνούς, ὅ τι πέπονθεν, καὶ ὡς οὐκ ἀλλαχόθεν ἢ ἐκ τοῦ ἄλός, κλαίοντι καὶ ὀλοφυρομένῳ ἔδωκα ἵππον, εὐγενῆ μὲν οὐδαμῶς, ὑγιῆ δέ. καὶ ἔλαβον τὸν ἵππον, καὶ θεραπεύσας ἔσχον πάλιν ἀγωνιστήν, ὡς ἀρέσει τε βασιλεῖ καὶ ὑπ' αὐτοῦ κατασχεθῆναι.²⁷⁴

“A soldier, who thought he was being meticulous, made his horse over-gluttled by giving him salt once a week... This is what he replied to me upon being questioned. And by doing that he made the horse (which was very well bred and experienced) consumptive. For the salt, being thinning, when poured all at once through the horn, because of the position in which the horse was tied up, flowed down into the lung, and acrid humours, dripping down, ate deep down in to the membrane of the lung, and creating a sore they inflicted consumption upon the beast, and day by day it grew thinner. Observing and recognizing what it was suffering, and that it was from nothing other than salt, I gave to the weeping and wailing one a horse that, although not at all well bred, was healthy. And

²⁷¹ Sabinus *Hipp. Berol.* 2.1; Gallus *Hipp. Berol.* 104, Aelian *Hipp. Berol.* 33.1; Celer *Hipp. Berol.* 129.1; Romulus *Hipp. Cant.* 49.1 – 6.

²⁷² McCabe 2007, 133.

²⁷³ McCabe 2007, 133.

²⁷⁴ *Hipp. Berol.* 7.7; translated by McCabe 2007, 189.

I took his horse, and treating it, I had once again a champion, fit to please an emperor and to be possessed by him.”

A few important details are obtained from this passage. First Theomnestus had the authority and ability to remove the horse from the soldiers’ care, providing a temporary replacement while he cured the soldier’s mount. This indicates that unlike some of the early veterinarians in the American Civil War, the *veterinarii* had authority in regards to animal care.²⁷⁵ Theomnestus does not give the soldier directions in order to cure his horse, but takes it away for treatment. Unlike Apsyrus, then, Theomnestus emphasizes his role in the case studies. Theomnestus’ style indicates that the veterinary author is enforcing the importance of a professionally trained τεχνίτικη in animal medicine.

It is also important that Theomnestus was directly interacting with the soldier, even ascertaining the situation from him. This concept means that animal doctors were not aloof and disassociated from animal healing, as Apsyrus’ letters could possibly imply. In fact, archaeological evidence corroborates the idea of the *veterinarii* travelling and associating with the soldiers. On a lintel in the temple of Isis and Serapis in Hieras Sykamina is an inscription from a military ἵππιατρός.²⁷⁶ It reads:

Ρόδιος...ἵππεύς [σπείρ]ης ἀ’ Θεβα[ίων]
 ἐποιήσ]α τὸ πρ[ο]σ[κ]ύνημα
 τῶν ἐμ[ῶ]ν π[ά]ντ[ω]ν Γ[ά]ιος Αὐφίδιος
 [ἵ]ππιώατρος [ἦ]λθον καὶ
 προσεκ[ύ]νησα.²⁷⁷

I, a Rhodian cavalryman of the Theban tactical unit, paid respect of my own, I, Gaius Aufidius horse doctor came and worshipped...

²⁷⁵ In one case, the opinion of a trained veterinarian was rejected in favour of a farrier in regards to a case of glanders resulting in the deaths of numerous horses. Had the veterinarian held authority, his opinion would not have been overridden (Quigley 2001, 33).

²⁷⁶ McCabe 2007, 100.

²⁷⁷ *IGRR I 1373/CIGr.* 5117.

This individual Gaius Aufidius clearly identifies himself as a part of the *cohors I Thebaeorum equitata*. He also ensures that the viewer knows that he was a horse doctor. This corroborates the evidence that the ἵππιατροί associated with the soldiers directly as Gaius Aufidius was travelling with the unit, members of whom also visited the temple. A more interesting inference may cautiously be made: Gaius Aufidius does not appear to be a special case within the Roman military as there are no special notations concerning his status. Horse doctors may have been assigned to specific legions.²⁷⁸ There are a few other cases where a *veterinarius* was specifically associated with the military, such the gravestone of a veterinarian assigned to a Praetorian cohort, located in Rome:

Dis manib.
[A]llio Quartion[i]
medico coh. I pr.
veterinario
Vix. Ann. LXXXV²⁷⁹

To the Manes,
to Allius
a veterinary doctor of the First Praetorian cohort of the fourth
division.
He lived 85 years.

This individual was clearly identified with a specific unit, just as Gaius Aufidius was, though he was a part of the Praetorian Guard and not an auxiliary unit as Gaius Aufidius. For the most part, the elite joined the Praetorian Guard, which indicates that this individual was by no means a poor non-Roman seeking citizenship, as was common for those joining the auxiliary units, but a citizen of Rome of higher status. Unfortunately, little information is known about this man. Another inscription completes the picture of

²⁷⁸ This case parallels the situation in modern militaries, such as the Canadian and American ones, where veterinarians are specifically assigned to a unit.

²⁷⁹ *CIL* VI.37194.

veterinarians assigned to the cohorts, demonstrating that *veterinarii* were also associated with the regular legions as well. It reads:

L Cli[ter
nius L. lib[
Veterinarius le[gionis]²⁸⁰

Lucius Cliternius
The freedman of Lucius
Veterinarius of the legion.

Unfortunately, Lucius Cliternius does not offer the unit with which he was associated.

Both the unnamed individual above and Gaius Aufidius were identified by their units, yet for this freedman here no information is given beyond the legion, in which he served.

This could possibly mean that *veterinarii* in the legion were organized according to the needs of the legion and not assigned to any particular unit. It could also possibly indicate that, like the early British Veterinary Corps, there was a lack of organization of *veterinarii* within the legion.²⁸¹ It is also interesting to note that Lucius Cliternius was a freedman. It is unfortunate that there is no more information on Lucius Cliternius than what we can read on his tomb stele, but as it stands it indicates that a *veterinarius* could come from a range of social statuses.

An *ostrakon* from a military encampment from Contrapollonopolis, Thebes, provides further evidence for the existence of *veterinarii* and their duties. It is a letter from one soldier to his son:

Πούπλις Α[. . .]ω[ι] τῶι υἱῶι πλεῖστα χάριεν
καὶ διὰ παντὸς ὑγιαίν[ει]ν μετὰ τοῦ ἀβασκάντου
σου ἵππου. ἔπεμψά σοι διὰ Κουίντου ἵπποιατροῦ τὸν
ἀνδρόμαχα καὶ τὴν ὄρνιθαν ὑλαίαν ἠψημέ-
νην ἐπεὶ οὐκ ἔνει κρέας πωλούμενον.²⁸²

²⁸⁰ *CIL* III.11215

²⁸¹ Smith 1927, 203.

²⁸² *O.Florida* 15.

Pouplis to his son A[] many greetings and health through all (life) with your horse, who is free from the evil eye. I sent to you through Quintus the veterinarian the *andromax* and the boiled wood bird, since there is no meat for sale.

One notable piece of information which emerges from this source is that the *veterinarius* was travelling around. There is little information to be gleaned as to whether the *veterinarius* was travelling of his own accord or was ordered by his superiors to do so. The addressee was likely a cavalry soldier from the second century AD.²⁸³ The *veterinarius*, Quintus, was also likely a member of the army. Since the Florida *ostraka* concern the Roman army in Upper Egypt, it is possible that the *veterinarius* was assigned to this division of the military. It is interesting that the cavalryman requested that the *veterinarius* transport goods to his son. Near the end of the letter, the soldier offers a prayer for the horse: ἐρρῶσθαι σε εὖχομαι μετὰ τοῦ ἀβασκάντου σου ἵππου (I pray that you with your horse, who is free from the evil eye, are well).²⁸⁴ The cavalryman, Pouplis, is clearly concerned to some extent with the horse's welfare, he has repeated twice that he hopes all is well for both the equine and for his son. It is possible that the *veterinarius* was asked to ensure the health of the animal when he met with Pouplis' son. The important observation, however, is the fact that a military *veterinarius* was associated with the military and travelling from one military encampment to another.

One of the pieces of evidence that has intrigued scholars was found on a Vindolanda Tablet. The tablet says:

i.
Chrattius Veldeio suo fratri
Contubernali antique pluri-
mam salutem
et rogo te Veldei frater miror
quod mihi tot tempus nihil
rescripsti a parentibus nos-
tris si quid audieris aut

²⁸³ Adams 1995, 64.

²⁸⁴ *O. Florida* 15.

Quot m in quo numero
 sit et illum a me salutabis
 [s] verbis meis et Virilem
 veterinarium rogabis
 illum ut forficem

ii.
 quam mihi promissit pretio
 mittas per aliquem de nostris
 et rogo te frater Virilis
 salutes a me Thuttenam
 sororem...

Back:
 Londini
 Veldedeio
 equisioni co(n)s(ularis)
 a Chrattio
 fratre²⁸⁵

“Chrattius to his Veldeius his brother and old messmate, very many greetings. And I ask you, brother Veldeius – I am surprised that you have written nothing back to me for such a long time – whether you have heard anything from our elders, or about ...in which unit he is; and greet him from me in my words and Virilis the veterinary doctor. Ask him whether you may send through one of our friends the pair of shears which he promised me in exchange for money. And I ask you, brother Virilis, to greet from me our sister Thuttana...(Back) (Deliver) at London. To Veldeius, groom of the governor, from his brother Chrauttius.”

Virilis appears to be a military veterinarian.²⁸⁶ It appears that he also was supposed to supply Chrauttius with the *forfex*, which Chrauttius was likely going to utilize for medical treatment. Adams argues that the *forfex* was similar to a pair of forceps and could possibly have been utilized for castration or as an emasculator among other purposes.²⁸⁷ It is possible then that the *veterinarii* were the individuals one went to for the purchase of tools for animal care, as well as medications and poultices. The *veterinarius* and the *equiso* (groom) were associated closely enough that Chrauttius could send a letter to the *equiso* and then address the *veterinarius* within it. In the course of their duties, the *veterinarii* likely had to work in close contact not only with cavalrymen,

²⁸⁵ *Tab. Vind.* II, 310; Translation by Bowman, Thomas and Adams 1994, 291.

²⁸⁶ Adams 1995, 59; see Bowman, Thomas and Adams 1994, 289 – 294.

²⁸⁷ Adams 1990, 267 – 271.

but also with the groomsmen. It appears that Virilis was stationed in London with the governor and his men.²⁸⁸

The question remains whether the *veterinarius* was assigned a specific unit, or if he relocated as required. According to the evidence discussed, it is evident that there were individual *veterinarii* who were assigned to specific units in the auxiliary troops and in the Praetorian Guard. We have already discussed on individual, a freedman, who did not indicate that he was assigned to a specific unit, but was apparently associated with the legion instead. There was also Quintus, a *veterinarius*, who appears to have travelled. Virilis, the *veterinarius*, appears to have been stationed in London. Neither Apsyrus nor Theomnestus state a specific unit to which they were attached. Apsyrus, however, does address a number of different superior commanders including one στρατηλάτης (general), and numerous decurions. The author, however, appears to have written to these individuals because he was not in the same location and thus could not cure the equine in person.

In order to understand the organization of the *veterinarii* in the Roman military, it is beneficial to examine the organization of other veterinary corps. Within five years of being introduced, the British Veterinary Corps (established 1796) consisted of only 44 veterinarians for the whole British Army.²⁸⁹ These individuals were initially under the command of the Royal Artillery. By the late 19th century AD, the British military attempted to place the Royal Veterinary Corps under the command of the Remount

²⁸⁸ In one case, the *equiso* was attached to a unit, the *legio II Adiutrix* (TLL V.2 726.33), and it has been suggested that he was the personal groom for the governor. See Bowman, Thomas and Adams 1994, 294.

²⁸⁹ Smith 1927, 52.

Department, which was under the cavalry.²⁹⁰ In comparison, the Roman *medici* were under the command of the *praefectus castrorum* (prefect of the camp).²⁹¹

Although in modern society veterinarians are far removed from medical doctors, the Romans appear to have been less inclined to disassociate between human and animal doctors. An inscription found in Lambaesis lists the hospital staff of the *legio III Augusta* around A.D. 198 or 199, which included *pequari* (herd doctor).²⁹² In the list of *immunes* in the Digests, it is notable that the *veterinarii* were placed immediately following the *optio valetudinarii* (assistant of the hospital), *medici*, and *capsarii*.²⁹³ The *veterinarii* were then possibly associated with the other medical staff. The *optio valetudinarii* was responsible for the everyday organization of the medical hospital, which likely included the veterinary hospitals.²⁹⁴ The existence of an animal hospital is attested by Pseudo-Hyginus, where he states:

*Sed numero suo, ut CXX pedes valetudinarium et reliqua, quae supra tendent, accipiant, hoc est veterinarium et fabrica, quae ideo longius posita est ut valetudinarium quietum esse convalescentibus posset.*²⁹⁵

But they should be in its number, so that the infirmary and the others, which camp next to it, would take 120 [Roman] feet, that is the animal hospital and the work shop, which are positioned further away so that the infirmary is able to be quiet for those convalescing.

The animal hospital, therefore, was located near the *valetudinarium* (infirmary), although far enough away that the sounds from the *veterinarium* would not disturb those in the *valetudinarium*. With the hospitals near one another, it was easy for the *optio*

²⁹⁰ Smith 1927, 203. In this organization the sick and the healthy animals were intermingled causing widespread diseases.

²⁹¹ Davies 1970, 86.

²⁹² Davies 1970, 86; *pequari* is another method of spelling *pecuarii*, which was also a term utilized to describe animal doctors.

²⁹³ Dig. 50.6.7

²⁹⁴ Davies 1989, 212.

²⁹⁵ P-Hyginus *De. Munit. Cast.* 4. P-Hyginus also mentions the *veterinarium* a second time (*De Mun. Cast.* 35) indicating that there were a total of 8 tent lanes given to the infirmary, animal hospital, and workshop.

valetudinarii to oversee both operations. Additionally, considering the relative locations of the two hospitals, it is likely that they shared medical equipment.²⁹⁶ The *veterinarium*, however, likely had its own staff. Davies argues briefly that the *veterinarii* and *pecuarii* were the medical help attached to each unit to treat the equids.²⁹⁷ Yet not all camps required *veterinarii* since some units consisted entirely of infantry. So, as in the British Veterinary Corps, the *veterinarii* was only found where there were equids, including cavalry units and transport animals. To compare once again to the Royal Veterinary Corps, it is worth noting that they had their own organization with a Chief Staff veterinary surgeon on the Headquarter Staff, a staff veterinary surgeon as the administrator, veterinary surgeons, both military and civil, and farriers.²⁹⁸ The list of staff indicates that there were a number of individuals available to aid the veterinary surgeons. At times, a horse required more than one individual to restrain it, particularly considering that there was a limited knowledge of analgesics. It is reasonable to consider then that the *veterinarii* had assistants. The existence of a number of medical staff recorded within the military further provides evidence that the *veterinarii* had aid in their duties.²⁹⁹ On average, then, a *veterinarius* likely had at least one assistant, although the aide could have been a groom.³⁰⁰

The evidence regarding *veterinarii* does not provide a clear idea on numbers. There may have been one veterinarian for every unit, in which case there were approximately 282 *veterinarii* in the Early Imperial Military, which consisted of

²⁹⁶ Davies 1989, 218. In one camp at Neuss, hundreds of medical instruments were found including tweezers, bandage clips, box for ointment, and even medical glassware.

²⁹⁷ Davies 1989, 212.

²⁹⁸ Smith 1927, 155, and 158.

²⁹⁹ Davies 1989, 212.

³⁰⁰ This may perhaps explain the close association between Veldeius and Virilis the veterinarian as the former was a groom and may have aided the later in his duties.

approximately 92,620 equines. In which case, there would have been one veterinarian for every 330 horses.³⁰¹ If this ratio remained valid, there would have been 486 veterinarians throughout the Empire in AD 395. Since there is no manner of verifying this information due to a lack of documentation, it is necessary to consider other military veterinary organizations. After a hundred years of operation, the British Veterinary Corps had only 35 military veterinarians, or approximately one individual to every 340 animals with no reserves.³⁰² Considering that the British military had at the time approximately 11,863 equines, this was far below the number of equines estimated for the Roman military. Yet the ratio of veterinarians to animals is very similar to one estimated for the Roman Empire, which means that it is feasible that so many veterinarians could be a part of the Empire at one time. The American Army Corps, however, had significantly fewer veterinarians in 1863, when there were only 6 in the Union Army, which had more than 100,000 animals.³⁰³ That is approximately 17,000 animals per veterinarian. If the Roman military had a situation similar to the American military then there would be approximately 9 veterinarians throughout the whole Empire, which is significantly less than the almost five hundred estimated for AD 395. Considering the evidence already examined concerning the existence of veterinary practitioners, it is likely that there were more than nine *veterinarii* in the military. The Late Roman military, however, had a large number of frontier forces, which were less likely to have had one veterinarian for every unit. It was more likely, however, to have had at least one veterinarian in all of the military forts with hospitals. The number of

³⁰¹ Considering that today there are approximately 5,222 animals for every veterinarians, the Romans had a high ratio of veterinarians per an animal, even if pack animals are included.

³⁰² Smith 1927, 158; this number does not include the civil veterinarians that were hired, nor the farriers or camp aides who were associated with the Royal Veterinary Corps.

³⁰³ Quigley 2001, 35.

veterinarians in the Empire may differ considerably over time. It is likely that during the early Empire there were far fewer veterinarians per equine, whereas during the third and fourth centuries there were more.³⁰⁴ Although it is difficult to verify the number of veterinarians in the Roman military, there were enough animal doctors for the cavalry to run effectively.

Conclusion

There were *veterinarii* in the military, who were involved with the treatment of animals, especially horses. The Roman army throughout the Imperial period to Late Antiquity had a large number of equids, particularly the cavalry, which had upwards of 100,000 equines at any one time. The cavalry utilized approximately 250,000 animals by the end of the fourth century AD. By way of In contrast, the British Army of the 18th and 19th Centuries had just under 12,000 animals, and the armies in the American Civil War had approximately 100,000 horses. To furnish the military with suitable mounts, it was necessary to have a well-organized remount system, especially during times of war, when many horses were required to replace the casualties. In order to reduce the number of remounts required, not only for the economy of the Empire, but also for the soldiers themselves, animal medicine was practiced. Archaeological and literary evidence remains from ἵππιατροί, including inscriptions and treatises. Justinian's *Digest* provides legal evidence that the *veterinarii* existed and that they were provided with the special privileges of the *immunes* since their duties required their attention to be placed on the ill and injured animals. This law code conferred upon the *veterinarius* a legal status superior to that of the *miles*. The ancient veterinary authors, whose works are collected

³⁰⁴ This is based upon the idea that the medical services were not organized until the Principate. See Davies 1970, 84 for more detail.

in the *Hippiatrica*, provide information regarding the education and duties of the ἵππιατροί. Both Apsyrtus and Theomnestus were clearly well educated, and in order to understand the medical procedures and drugs, it is likely that other *veterinarii* were similarly educated. The *veterinarii* likely did not spend more than a few months learning the medical techniques and procedures, but this is common, as the British Veterinary Corps in the 19th century AD only required three months of education before joining the military. These *veterinarii* were expected to treat ill and injured animals and were likely expected to examine the mounts for medical issues. They communicated with clients how the animal had come to such a state and from there determined a cure. If the *veterinarius* was not present to administer a simple cure for the animal, then he informed the cavalryman or the decurion how to do so. *Veterinarii* also were able to sell medicines and tools such as the *forfex* for use by others. Within the military setting, the *veterinarii* were likely under the power of the *praefectus castrorum* and in particular the *optio valetudinarii*. Unfortunately, no record remains concerning the number of *veterinarii* within the military, but there were likely enough *veterinarii* for every established legionary unit, resulting in an estimate of circa 500 animal doctors.

Although the *veterinarii* were by no means at the top of society, they were not as low on the social ladder as Vegetius' work might suggest.³⁰⁵ Their status as *immunes* provided them with some social standing. Furthermore, there appears to have been a pride within the profession, particularly when one reads the works of Theomnestus. The military veterinarians may have represented a small proportion of the personnel of the Roman military, but they were important for the functioning of the Roman armed forces.

³⁰⁵ See Chapter 4 for further detail concerning Vegetius' opinion of *mulomedici*.

Chapter 2: Animal Doctors in the *Cursus Publicus*

Introduction

One of the most well-controlled and organized industries in the Roman world was the *cursus publicus*, the public mail and transport system. That is not to say that the Roman system operated smoothly without any issues. Postal systems use a great many public resources in order to provide sufficient means to transport mail and goods. Recently, with the failing economy, the financial burden of a federal postal system has become known. This burden is not new, but has been an issue for as long as postal systems have existed. We can see this from the example of the Pony Express, one of the more famous postal systems, and one that quickly closed down as a private endeavour because of the great expense and the advent of both the railroad and the telegraph.¹ The

¹ Bensen 1995, 5. The Pony Express was initiated by William H. Russell, Alexander Majors, and William B. Waddell. The Pony Express was not the first attempt at a mail system in the United States, but it is one of the most famous and well documented. The first attempt to provide an overland express mail route was conducted by the Butterfield Overland Mail Company in 1855 over the Northern part of the United States of America (Hafen 1969, 165). Russell created the Pony Express in order to obtain a contract with the federal government for distributing mail across the United States. A congressman, Senator Gwin, had promised such a contract if he could prove the feasibility of an overland mail route (Hafen 1969, 166; Majors 1950, 185). Although his partners were not keen on the idea, they joined in the endeavour (Settle and Settle 1955, 32).

The Pony Express began on April 3, 1860 (Scheele 1970, 85). The mail was transported through relays: one rider travelled a certain distance, exchanging mounts at every station and then another rider took his place. At first, a rider travelled 48 to 80 km (30 to 50 miles) before he was replaced by another rider, at which point three different horses had been ridden (Hafen 1969, 179). This distance was eventually extended to 120 to 160 km (75 to 100 miles) before the courier was relieved by another rider (Hafen 1969, 179). In order to ensure that there was no more than two minutes between arriving at a station and leaving it, a special saddlebag was developed, the *mochilla*, which could be quickly removed from one saddle and be placed on another. The *mochilla* had four pockets; three contained mail and were locked so that only the stationmasters could open them and the fourth contained the waybills (Scheele 1970, 84). The Pony Express had some famous riders including William Frederick Cody, also known as 'Buffalo Bill'. Buffalo Bill's most notable ride was when his relief rider was killed and he was forced to ride continuously for 320 miles, which he covered in 21 hours and 40 minutes (Hafen 1969, 178). The Pony Express riders, such as Buffalo Bill, faced slightly different challenges than the Romans, including ambushes by Native Americans.

Romans were similarly burdened with the expenses and trials inherent to a postal system, as there were few alternatives to transporting messages and goods overland other than on foot or via animals.² As long as the system remained, towns were heavily burdened to provide resources and funds for its operation. In order for the postal system, the *cursus publicus*, to operate efficiently it was essential to maintain the population and health of beasts of burden – oxen, horses, mules, donkeys and asses – upon which the entire system of transport and the *cursus publicus* heavily relied.³ To accomplish this task, it was necessary that there were caretakers for the animals, including grooms and *mulomedici* (mule-doctors). These ‘mule doctors’, like the *veterinarii* of the military, treated and helped to prevent injuries and illnesses of the animals. This chapter will examine the evidence for the existence of these individuals, their duties, and prominence within the *cursus publicus*.

A Brief Overview of the Cursus Publicus

It is necessary, however, to examine the *cursus publicus* before discussing the *mulomedici* in detail. The *cursus publicus* was an important means of communication in the Roman world. The lack of fast long-distance communications technology necessitated the use of messengers and caravans in order to communicate. In this way,

In one such case, a rider was killed (Bradley 1913, 15). The weather slowed the riders down as well; one account indicates that a rider had to travel across the mountains in thirty feet of snow (Hafen 1969, 173).

Russell, Majors, and Waddell did not intend to earn an income from the project, but were intent on obtaining the contract for the system (Majors 1950, 185). The Pony Express ran until October 26, 1861 when the transcontinental telegraph line was completed in Salt Lake City (Scheele 1970, 85). At this point the companies controlling the Pony Express were heavily in debt and the government gave the contract to the Overland Mail Company, proving Senator Gwin wrong (Settle 1954, 93). After eighteen months of operation, the Pony Express had accomplished 308 runs and carried 34,753 letters across the United States (Settle 1964, 91). For further information on the Pony Express, see Settle and Settle (1955), Scheele (1970), Bradley (1913), Bensen (1995), Hafen (1969), Smith (1969).

² Ships were one of the most efficient means of transporting goods. Due to the nature of this paper, however, the focus will remain on transport over land by means of animals. For information on ships as a means of transport, see Laurence 1999, 109 – 122.

³ Clutton-Brock 1992, 118.

the various institutions of the large Roman government maintained contact, and as such, it was vital for many of these missives and cargoes to reach their destination. If important messages were not received, it negatively affected the operation of the Empire. Both the aristocracy and military officials utilized the *cursus publicus* for travelling on official business. Pliny the Younger, for example, was in constant contact with the Emperor Trajan regarding state business. Similarly, officials sent queries on governing to the current emperor. It was essential that the military along the borders remained in contact, and it is on the frontier that a true relay system of messengers existed.

State-organized postal systems were not uncommon in the ancient world, but had been observed as far back as the Assyrians and the Persians.⁴ Herodotus provides an astonishing account of the Persian postal system, called ἀγγαρήιον by the Greeks, describing a relay system of messengers and their horses.⁵ The system was started under Darius in order to provide an efficient means of communication throughout his sprawling Empire.⁶ Through their relay, system couriers were expected to cover approximately 2,575 km (1,600 miles), the distance from Sousa to Sardis, in no more than a week.⁷ Post-stations were built approximately every 32 km (20 miles) so that the letter could be transferred to a new horse and rider in a manner similar to the Pony Express.⁸ It is believed that Julius Caesar and Augustus planned their postal system based upon the efficient Persian postal system.⁹

⁴ Hyland 1990, 251; Bowie 2007, 186.

⁵ Hdt. 3.28; 6.105; 8.98.

⁶ Reinfeld 1973, 44.

⁷ Hyland 1990, 254. Assuming that the message was carried continuously through the week, riders had to maintain an average speed of 15 km/h, which is a swift trot.

⁸ Bowie 2007, 186. See footnote 1 for a description of how the mail transfer worked in the Pony Express.

⁹ Kolb 2001, 96; Llewelyn 1994, 14. Some have argued, however, that Julius Caesar based the system upon the Egyptian system, see Llewelyn 1994, 14.

For the most part, a government-controlled postal system did not exist during the Republic.¹⁰ Generally, the upper class sent missives either through members of their *familia* or with merchants. The extensive roadways within Rome enabled the swift transmission of messages and letters during the Later Republic, although these missives were sent by private endeavours as opposed to a publicly funded institution.¹¹ These private couriers along with carriage services were organized within the cities.¹² The need for long-distance communications between officials became more apparent as civil war was waged for control of the Roman Republic. Julius Caesar began a system of couriers among his military units, but it was not until the *principate* that the development of an official messenger service came to fruition.¹³ Historians credit Augustus with the establishment of the *cursus publicus*.¹⁴ The *Princeps*' first concern was to send and receive missives regarding the governing of the Empire quickly and reliably, although this organization eventually grew to include a transport system as well.¹⁵ Initially the *cursus publicus* started with a relay of runners, similar to the method of the Persians, who had a relay of horse-riders, but this evolved into a chariot service where the animals were exchanged but the message remained with the same courier throughout its journey from sender to the receiver.¹⁶ Eventually this system came to be utilized for other purposes including the *annona* (the public food supply procured from tax money), the movement of sick soldiers, the shipment of coins, and other valuables for the emperor, and as a

¹⁰ Nicholson 1994; Black 1995, 5; Holmberg 1933, 36 – 37; Ramsay 1920, 79; Llewelyn 1994, 14.

¹¹ Hyland 1990, 250. By this time, most of the Italian roadways were already functional with the first road having been built in 148 BC.

¹² Raepsaet 2008, 600.

¹³ Hyland 1990, 251; Llewelyn 1994, 13.

¹⁴ Hyland 1990, 250.

¹⁵ Kolb 2001, 96.

¹⁶ Suet. *Aug.* 49; Tac. *Hist.* ii.73. This way the messenger could be questioned of the circumstances surrounding such a message. See also Black 1995, 5; Kolb 2001, 96; Hyland 1990, 250.

means of travel for individuals on official government business.¹⁷ Travel and shipment were strongly regulated and individuals were required to have a permit in order to utilize the services provided by the *cursus publicus*.¹⁸ These permits, known as *diplomata*, detailed the contingent of animals and wagons that could be used, the routes taken and the length of time for which it remained valid.¹⁹ Depending on the type of permit, one was able to utilize pack or riding animals, or post wagons, and enjoyed the right to food and lodging.²⁰ These warrants were provided on a case-by-case basis.²¹ It is important to recognize, however, that the *cursus publicus* was not universally available, but was generally reserved for government officials.²² The individuals provided with permits included the Imperial Procurator and his son, those in the military service, Roman senators, Roman knights, and centurions.²³ By the fourth century AD, clergy were added to the individuals who were permitted to utilize the system.²⁴ Each class of permit had a limit as to the number of animals and wagons they were legally qualified to acquire.²⁵ Due to the nature of the permit system, the *cursus publicus* did not operate on a regular schedule, unlike the Pony Express.²⁶ The system, however, was in continual use, so much so that at times officials felt the need to appropriate animals from private farms, because they did not wish to wait for the return of the post animals.²⁷

¹⁷ *Cod. Theod.* 8.5.11; Hyland 1990, 251 – 252.

¹⁸ *Cod. Theod.* 8.6.

¹⁹ *Cod. Theod.* 6.29.2.2; 7.12.2; 8.5.9, 12, 27; 8.5.14, 22, 24, 27, 29, 35; 8.5.25.

²⁰ These types of permits are the *evectiones* (pack or riding horses only), *angariae* (post wagons), and *tractoriae* (food and lodging). See Hyland 1990, 252.

²¹ Kolb 2001, 100.

²² Kolb 2001, 95. This includes both political and military representatives.

²³ Kolb 2001, 97.

²⁴ *Amm. Marc. Res. Gest.* 21.16; Hyland 1990, 262.

²⁵ Kolb 2001, 97. See *Cod. Theod.* 8 for the restrictions on the permits provided.

²⁶ Llewelyn 1994, 18; Pflaum 1940, 229 – 236.

²⁷ van Tilburg 2007, 61.

It is important to understand that the *cursus publicus* developed over time, and it was not until the fourth century A.D. that the system was recognizable as the one described by most scholars.²⁸ The system was not called ‘*cursus publicus*’ until the fourth century A.D., before which it was called the *vehiculatio*.²⁹ Under Septimius Severus, the postal service comprised the *cursus velox* (also the *cursus celer* or ὀξὺς δρόμος) and the *cursus clabularis* (πλατὺς δρόμος).³⁰ As its name implies, the *cursus velox* was a swift service by which messages were quickly transferred. Important materials such as gold and silver were also transported via the *cursus velox*.³¹ Due to its nature, this system employed horses, mules, and asses for its endeavours.³² It was also exploited as a surveillance system in order to ensure that the *mancipes* (the post-station masters) were carrying out their duties, in addition to serving a general policing system monitoring the locals.³³ The *cursus clabularis*, in contrast, was a slower organization and relied primarily on oxen to transport heavy loads.³⁴ The Romans transported goods such as military supplies, marble, and the *annona* via the *cursus clabularis*.³⁵ This system was not a major freight system, which was the domain of other (private) industries, but was used for the transport of important goods for the government.³⁶ Supplies were more regularly transported via the *cursus clabularis* after the time of Marcus Aurelius in the

²⁸ Llewelyn 1994, 13; Holmberg 1933, 42.

²⁹ van Tilburg 2007, 57.

³⁰ Holmberg 1933, 60; Kolb 2001, 100; van Tilburg 2007, 58; Di Paola 1999, 41.

³¹ Holmberg 1933, 65.

³² Holmberg 1933, 60; van Tilburg 2007, 58.

³³ Silverstein 2007, 31; van Tilburg 2007, 61.

³⁴ Holmberg 1933, 60.

³⁵ van Tilburg 2007, 59; Kolb 2001, 102. For military supplies, see *Cod. Iust.* 12.50.2 for arms and *Cod. Theod.* 8.5.33 for *vestes militares*. For marble see Kolb 2000, 96 and *SEG* 16 754. For the *annona*, see Rodriguez 1986. According to Crogiez the organization of the *annona* was superimposed upon the *cursus publicus* (1990, 416).

³⁶ Kolb 2001, 102.

second century AD.³⁷ Eventually due to the expense of the systems, the *cursus velox* and *cursus clabularis* were both reduced or abandoned in certain areas, particularly in more peaceful locales such as Sardinia.³⁸

Although a good portion of those who utilized the *cursus publicus* were provincial governors and military personnel, the government still required couriers to dispatch its official correspondence. Some emperors employed soldiers, centurions, and praetorian guards to carry missives.³⁹ Gaius, known commonly as Caligula, utilized high ranking soldiers and personal bodyguards called *speculatores* as messengers.⁴⁰ There were also the *frumentarii*, men whose main concerns were to act as messengers of the emperor, but were also associated with espionage and assassinations.⁴¹ These men, numbering 200, served as a connection between provincial governors and the emperors.⁴² The *frumentarii* were military personnel under the command of the Praetorian Prefect.⁴³ The Roman people came to dislike the *frumentarii* immensely due to their surveillance activities and therefore they were replaced by the *agentes in rebus*, whose main function was to enforce the law on the road.⁴⁴ The *agentes in rebus* were civil servants, unlike their predecessors, and under the command of the *Magister Officiorum* (Master of the Offices).⁴⁵ This group numbered approximately 10,000 men.⁴⁶ The postal service was

³⁷ Pflaum 274, 277; Llewelyn 1994, 20.

³⁸ van Tilburg 2007, 61; See also Jones 833, Julian abolished the *cursus velox* in Sardinia and Leo abolished the *cursus clabularis* in the diocese of Oriens.

³⁹ Kolb 2001, 99.

⁴⁰ Kolb 2001, 99.

⁴¹ Rankov 1990, 180; Kolb 2001, 99.

⁴² Kolb 2001, 99; Silverstein 2007, 36; Rankov 1990, 180. The *frumentarii* are intriguing as they were utilized for numerous functions including as a courier service, a policing service and as an espionage service. For further discussions regarding the *frumentarii*, see Rankov 1990; Sinnigen 1962; Kolb 2000, 290 – 4.

⁴³ Silverstein 2007, 36.

⁴⁴ Silverstein 2007, 36.

⁴⁵ Silverstein 2007, 36; Chevallier 1976, 183 under Trajan the *cursus publicus* had become a civil institution. The *Magister Officiorum* was the senior administrator during the late Roman Empire.

mostly conducted by the *tabellarii Augusti* and the *cursores*.⁴⁷ These men were imperial slaves and freedmen attached to various government bureaus including financial administration, the *officium annonae* and *statio mamorum* (located in Rome).⁴⁸ Provincial governors sent their own personal staff, the *beneficarii*, and guard cavalrymen, as couriers.⁴⁹ The *beneficarii* were legionary soldiers whose main functions likely included overseeing the *cursus publicus* and ensuring the security of travel.⁵⁰ The Egyptians had the *hyperetai*, subaltern officials, carry their dispatches.⁵¹ Servants, civil officials, and military officials also delivered messages.⁵² Most of these individuals, however, still required permits in order to use the resources of the *cursus publicus*. By the fifth century A.D. the *veredarii*, post horse riders, were known as the imperial couriers. The ἀλιαδίτες ἦτοι γραμματηφόρος, ‘boatmen or letter carriers’, were hired solely for the purpose of couriating missives along the *cursus velox*, although direct evidence for these professionals has only been found in Egypt on four papyri dating A.D. 300 to 360.⁵³ Septimius Severus created the centenarians (those paid 100,000 sesterces) who were responsible for overseeing transport, who evolved into the bicentenarians (those paid 200,000 sesterces) under Marcus Aurelius.⁵⁴ From this brief examination of the individuals and organizations permitted to use the *cursus publicus*, it is clear that

⁴⁶ Silverstein 2007, 36 – 37; See *Cod. Theod.* 6.27.23 and *Cod. Just.* 12.20.3 for the limitation of numbers of these individuals.

⁴⁷ Kolb 2001, 99.

⁴⁸ Kolb 2001, 99.

⁴⁹ Kolb 2001, 99.

⁵⁰ Black 1995, 12. Epigraphic evidence exists for their presence at *mansiones* see *RIB* 88, 235, 602, 725, 726, 745, 1030, 1031, 1085, 1225, 1559, 1696.

⁵¹ Kolb 2001, 99.

⁵² Kolb 2001, 100. The messengers called *equites dispositi* were installed in military zones located at specific stations. They ran a true relay of messages in order to maintain constant contact between headquarters and the various forces and detachments (Kolb 2001, 100). These military messengers relied purely on the resources of the military including horses and the *veterinariii*, the military veterinarian (Kolb 2001, 101).

⁵³ Kolb 2001, 100.

⁵⁴ Chevallier 1976, 183.

there was constant traffic of couriers, relying upon the resources of this postal system along the Roman roads.

The organization and duties of these different messengers is discussed in detail by numerous authors.⁵⁵ All these individuals and organizations, however, placed a variety of demands upon the *cursus publicus*, including a high demand for transport animals. The *cursus publicus* required a great deal from the beasts to operate smoothly. Urgent messages were sent by horseback, as it was the fastest method of transport. The post horses that were utilized along the main trunk roads were called *veredi*, and the equines ridden along the smaller roads were called the *paraveredi*.⁵⁶ The average speed of a horse walking is 6 km/h (4 mph), and 13 km/h (8 mph) when trotting.⁵⁷ A horse can travel for 80 km (50 miles) with an average speed of 13 km/h (8 mph), but that is under very favourable circumstances where the horse is trained for such an event. As a comparison, the Pony Express initially exchanged horses every 40 km (25 miles), but this was decreased so that there were only 16 – 19 km (10 – 12 miles) between relay stations.⁵⁸ The distance between post stations in the Roman Empire averaged around 25 km, so it is likely that the post horses were exchanged at these distances. Six horses were ordered to stand ready at a station for urgent business such as messengers and couriers with time sensitive documents.⁵⁹ A courier possibly travelled for five hours in the morning (about 25 miles) and then another five hours in the evening after a break.⁶⁰ It also has been argued that the couriers travelling along the *cursus publicus* travelled 75

⁵⁵ Kolb 2001, 99 – 100; Kolb 2000, 290 – 294; Di Paola 42; Crogiez 1990, 393 – 396; Pflaum 1940, 122 – 148.

⁵⁶ Di Paola 1999, 60, 66.

⁵⁷ Hyland 1990, 261.

⁵⁸ Bensen 1995, 5.

⁵⁹ *Cod. Theod.* 8.5.35.

⁶⁰ Eliot 1955, 76.

km (47 miles) a day and that the average traveller covered 40 km (25 miles) a day.⁶¹ As is often the case, the Romans did not generally record ordinary travel, but rather they noted many rather extraordinary journeys. In an effort to visit the ailing Drusus in Germany, Tiberius covered 320 km (200 miles) in 24 hours.⁶² During an insurrection in Baetica, the couriers maintained an average speed of 256 km (160 miles) a day for nine consecutive days.⁶³ These journeys all provide an impression of the great speed of mounted travel in urgent situations. Although these journeys are described as extraordinary, it is likely that many urgent messages were passed on at such a rate.⁶⁴ Horses were the fastest animal that the Romans could utilize for such urgent missions. Yet the *cursus publicus* did not exist only for the purpose of rapid communication, but also so that the government officials could travel and important goods were safely transported. The mule was employed for missives and transport missions that were not as time sensitive. Mules travel at a slower pace, but can endure longer journeys than the horse.⁶⁵ A mule can pull a 400 kg wagon for 80 km (50 miles) in one day.⁶⁶ It was expected to draw a 250 – 300 kg cart or carry 100 – 135 kg upon its back while marching with the military.⁶⁷ The weight limit that a mule was allowed to pull, however, as stated in the *Codex Theodosianus*, was well under 400 kg.⁶⁸ In this manner, the mule was not

⁶¹ Chevallier 1976, 194.

⁶² Pliny *HN* 8.84; Wells 1923, 14.

⁶³ Wells 1923, 14. That was an average of approximately ten mounts per day. The Romans were not the only people known for extraordinary journeys, in one feat, a Pony Express rider covered 1,280 km (800 miles) in five days and thirteen hours, driving his horses to complete exhaustion by only exchanging his mount every 160 to 320 miles (100 to 200 miles) (Majors 1950, 186).

⁶⁴ Chevallier 1976, 194. The ancient messengers were not the only ones who could travel such distances. For the Pony Express, which did not generally carry urgent messages, one rider, F.X. Aubery, covered 1,280 km (800 miles) in five days and thirteen hours without stopping achieving an average speed of 10 km/h (6.25 mph) if he did not stop for the night (Majors 1950, 185).

⁶⁵ Laurence 1999, 125; Coulston 2001, 113.

⁶⁶ Laurence 1999, 125.

⁶⁷ Coulston 2001, 113.

⁶⁸ van Tilburg 2007, 60.

exhausted as rapidly and the roads endured less extreme wear. Oxen were also used in transport, particularly to pull heavy loads.⁶⁹ Although oxen travel at speeds slower than mules, they can pull loads that are significantly heavier, up to a total of eight to ten tons.⁷⁰ These animals were utilized to draw heavy loads including marble and army equipment.⁷¹ They also transported the *annona* along the *cursus publicus*, as well as expensive racehorses.⁷² Oxen can reach a top speed of 3.2 km/h (2mph).⁷³ The ox is capable of working continuously for at least five hours a day.⁷⁴ The beasts were *animalia publica*, belonging to the state.⁷⁵ All the beasts and the wagons bore bronze tablets with the words *tabellarius diplomarius*.⁷⁶ The duties and limits of each of these animals were set out within the law code. The weight limits that were allowed is described in Table 2.1. It is important to recognize that the animals were not required to draw loads heavier than each beast was able.

⁶⁹ Coulston 2001, 113.

⁷⁰ Raepsaet 2008, 591 – 592.

⁷¹ For the marble see: van Tilburg 59; Kolb 2000, 96; *SEG* 16 754. For the military equipment see, which included both clothing and weapons see *Codex Fustians* 12.50.2 (arms); *Codex Theodosianus* 8.5.33 (for *vestes militares*); Kolb 2001, 102; van Tilburg 2007, 59.

⁷² *Cod. Theod.* 8.5.13; see also Hyland 1990, 251. For further information on the *annona*, see Rodríguez 1986. For information on the transport of racehorses, see Blancouard and Parsonson 2008, 20 – 21. The racehorses were transported by wagon since the owners did not wish for them to be exhausted or injured by travel before the race.

⁷³ Hyland 1990, 257. At a rate of 10 hours per day, that was approximately 32 km a day. A pair of yoked oxen can comfortably plough a field at 0.3 m/s (Pearson, Lawrence, and Ghimire 1989, 345).

⁷⁴ Pearson, Lawrence, and Ghimire 1989, 347.

⁷⁵ *Cod. Theod.* 8.5.2, 8, 10, 53, 60; *Amm.* 21.26.21; *Procop. Hist. Arcan.* 30.3-4; Pflaum 1940, 376; Di Paola 1999, 48.

⁷⁶ Chevallier 1976, 184. These words were similar to branding an animal and claimed the beasts as owned by the *cursus publicus*.

Table 3: Weight Limits for the *Cursus Publicus*⁷⁷

Carrier	Weight Limit		Year	Source (<i>Cod. Theod.</i>)
	Roman Pound	kg		
Post wagon drawn by oxen (<i>Angaria</i>)	1500	490	368	8.5.28
Post wagon drawn by oxen AD 385-386	1000	327	385 – 386	8.5.48
Travel by mule cart	600	196	385 – 386	8.5.48
Two wheeled vehicle (<i>Rhaeda</i>)	200	65	357	8.5.8
Ridden horse – saddle and bridle	60	20	385 – 386	8.5.48
Ridden horse – saddlebags	35	11	385 – 386	8.5.48
Carriage with gold for the government	500	163	385 – 386	8.5.48
Carriage with emperor's personal money	300	98	385 – 386	8.5.48

All the equids and pack animals described above were limited in the distance they could travel before they became exhausted and required rest. Urgent messages required few delays and could not afford for the courier to stop continuously to breathe the horse. Mules and oxen could only travel so far before they were worn out. Post stations, therefore, were developed along the *cursus publicus* in order to exchange exhausted animals for fresh alert beasts and provide resting places for the couriers and travellers. These rest and relay stations were known as *mansiones* and *mutationes* respectively.⁷⁸ The *mansiones* were places where messengers with non-urgent missives or goods could rest. These places were government-controlled and free for those on official business.⁷⁹ The *mansiones* also allowed travellers without permits to spend the night as long as the

⁷⁷ The weight limits of the *cursus publicus* as described in the *Codex Theodosianus*. The weight is given in Roman pounds and in kilograms. The year the law was decreed is also provided. The weight limits tend to decrease over the years, which was likely in order to increase efficiency.

⁷⁸ Kolb 2001, 97.

⁷⁹ Kolb 2001, 97; see Hyland 1999, 253. There were also private establishments that appeared, but for the purpose of this thesis, the focus will remain upon the stations and institutions of the government.

individuals were willing to pay.⁸⁰ The *mansiones* have been found with three different physical profiles: an enclosed group of buildings located on one side of the road; a group of buildings on either side of the road called the ‘village type’; and lastly, the ‘urban type’ located on the outskirts of towns, and consisting of a single building.⁸¹ The main purpose of the *mutationes*, in contrast, was to exchange worn animals for fresh ones. Despite these differing purposes, however, the *Codex Theodosianus* does not differentiate between these establishments when discussing them.⁸² The position of station master, *manceps*, was initially given to the lowest bidder. The government, however, eventually began to draft low ranking officials to serve as station master for five years.⁸³ These individuals were responsible for ensuring travellers had permits, weight limits were adhered to, and animals were used appropriately, and maintaining the station and the animals, as well as obtaining suitable replacements.⁸⁴ Since animals were so vital to the station, it was necessary for the *mancipes* to know about the beasts, or to trust completely their staff’s knowledge of them.

In the system, one individual displayed a permit and received the appropriate number of animals and wagons, which he used to travel to the next station where he exchanged the animals. The beasts then were returned immediately back to their original station by a staff member of the *cursus publicus*, or, as was done by the Pony Express,

⁸⁰ Silverstein 2007, 35. According to Wells (1923, 13) inns charged approximately 13 asses a night to the private traveller for supper, a bed and breakfast. Another two asses a day provided hay for the mules.

⁸¹ Crogiez 1990, 391.

⁸² Pflaum 1940, 376; Chevallier 1976, 185.

⁸³ Silverstein 2007, 40; Llewelyn 1994, 21; Holmberg 1933, 97 – 103. The first *manceps* was during Hadrian’s reign in the second century AD.

⁸⁴ Llewelyn 1994, 21.

the beasts were returned to their original station by an official travelling in the opposite direction.⁸⁵

Numbers and Logistics

The *cursus publicus* relied completely on animals for its function. Without any beasts, it was nearly impossible to transport heavy loads of marble or to traverse swiftly the country at speeds greater than 13 km/h. At a rate of approximately 50 warrants a year for every governor, not to mention the use of the system by military officials, official messengers of the emperor and a policing staff, a significant number of animals were required for the public system.⁸⁶ The *Notitia Dignitatum* indicates that 182 permits were provided for high state officials.⁸⁷ This official use was supplemented as well by unofficial travel; Pliny the Younger exploited the system in utilizing a warrant so that his wife could visit her aunt after a death in the family, and other aristocrats merged their personal and business trips.⁸⁸ In evaluating the number of warrants, van Tilburg indicates that if corruption was taken into account, approximately 550 official journeys were undertaken every year.⁸⁹ At this rate, there was at least one excursion for every two days throughout the year.⁹⁰ These warrants are for the use of more than one animal, as the travelling officials likely had an entourage.⁹¹ In one account, an official obtained thirty

⁸⁵ Hyland 1990, 255; Black 1995, 6.

⁸⁶ Chevallier 1976, 182. The *Codex Theodosianus* (8.5.12) provides some indication that the post warrants were employed for matters beyond those of the state. Additionally it provides an indication of how the post warrants were divided in the reign of Julian. The law restricts anyone with the exception of the Emperor and the Praetorian Prefect from administrating *diplomata*. At this time, Julian restricted the number of warrants for the governors to two, but gave the vicars ten or twelve each.

⁸⁷ As calculated by van Tilburg 2007, 61.

⁸⁸ Plin. *Ep.* 10.120; Plin. *Tra.* 10.121. This amalgamation of travels is also observed today when businessmen utilize business credit cards and trips for personal gain. See *Cod. Theod.* 8.5.10 for an attempt to cease such activities in the middle of the fourth century.

⁸⁹ van Tilburg 2007, 61. Officials utilized warrants for trips beyond those described in the warrants, and the governors were known for bribing the Emperor for warrants beyond those officially provided.

⁹⁰ van Tilburg 2007, 62.

⁹¹ van Tilburg 2007, 62.

asses and ten horses for a journey, which was the maximum amount he could demand.⁹² A senator with a warrant could employ ten wagons; a knight was able to obtain three wagons and a centurion one wagon.⁹³ By the fourth century AD, a vicar was permitted to demand 10 wagons or 10 horses per journey.⁹⁴ Any of these individuals could exchange the wagon for three mules or for six donkeys.⁹⁵ A senator, therefore, could have thirty mules or sixty donkeys from one station if he preferred. Several senators arriving at a post station at one time likely caused a logistical nightmare. In addition to these officials were the *agentes in rebus*, who numbered more than 10,000 men and had full access to all the resources of the *cursus publicus*.⁹⁶ There were a great number of individuals, therefore, who could use the beasts, requiring large numbers of animals to be available at any given time. There is an inscription from the reign of Tiberius recording that the town of Sagalassus had to provide ten wagons, thirty mules or sixty asses for the *cursus publicus*, enough for one senator to travel.⁹⁷ A *diploma* could give its owner permission to use the resources of the *cursus publicus* for a more than one day, so an individual could be on the *cursus publicus* for numerous days.⁹⁸ The *cursus publicus*, therefore, provided a constant stream of traffic along the Roman roads, employing a great deal of the Empire's resources.

Procopius' *Historia Arcana*, in which he describes the *cursus publicus* of his time, gives us the means to estimate the number of animals working on the *cursus publicus*.

According to Procopius, ἵπποι δὲ ἴσταντο ἐς τεσσαράκοντα ἐν σταθμῶ ἐκάτῳ (and

⁹² SEG 26 1392; Kolb 2000, 219; van Tilburg 2007, 62.

⁹³ van Tilburg 2007, 62.

⁹⁴ Kolb 2000, 219.

⁹⁵ Kolb 2000, 219.

⁹⁶ Silverstein 2007, 37; see *Cod. Theod.* 6.27.23 and *Cod. Iust.* 12.20.3 where Theodosius II and Leo limited the numbers of the *agentes in rebus* in the east.

⁹⁷ SEG 26 1392; Kolb 2000, 219, van Tilburg 62 2007, 62.

⁹⁸ *Cod. Theod.* 8.5.9. There was a time limit for the post warrants, but this was likely for longer than one day.

40 horses stood ready at each station).⁹⁹ It stands then that there was a minimum of 200 horses when one considers that there were five to eight stations within a day's journey when one travelled unencumbered.¹⁰⁰ The law code indicates that a single individual could not mobilize more than 10 horses and 30 mules at a station in one day.¹⁰¹ Kolb argues that Procopius is referring to both horse and mules, and there was likely a minimum of nine beasts and a maximum number of 24 animals per *statio*, with a maximum of ten horses, ten mules and two to four oxen.¹⁰² Other scholars argue that the *mutatio* contained twenty horses and the *mansio* contained forty or more animals.¹⁰³ Utilizing archaeological evidence of stables, there is evidence for a maximum of 7 or 8 horses per station in some areas.¹⁰⁴ Llewelyn estimates that there were between 8 and 40 *animalia publica* supplied for the *stations*, depending on the importance of the route.¹⁰⁵ It is likely that fewer animals were required on smaller, less travelled routes, as opposed to the major routes in and out of the capital.

In order to determine an estimate of the total number of animals utilized for the *cursus publicus*, the number of *stationes*, both *mutationes* and *mansiones*, must be estimated using primary sources and comparative evidence. As the average speed of equids has remained constant, we can use staging distances from other postal systems to supplement the numbers given by the Roman authors. Procopius indicates that there were never less than five stages within a day's ride for the unencumbered traveller, but on

⁹⁹ Procop. *Hist. Arcan.* 30.3 – 4.

¹⁰⁰ Procop. *Hist. Arcan.* 30.3. This was approximately 38 km (24 miles) (Dewing 1969, 347).

¹⁰¹ *Codex Iust.* 12.50.8. Initially the Emperors Valens, Gratian, and Valentinian decreed that no more than five post horses should be dispatched from a post station or village in one day (*Cod. Theod.* 8.5.35). This number was later increased to ten post horses from a station or thirty mules. See van Tilburg 2007, 62.

¹⁰² Kolb 2000, 219.

¹⁰³ van Tilburg 2007, 62.

¹⁰⁴ Pflaum 1940, 376.

¹⁰⁵ Llewelyn 1994, 19.

average there were approximately 8 stages.¹⁰⁶ The distance between the stations likely was determined by the terrain, as it is far easier to traverse open grassland as opposed to forested, mountainous terrain.¹⁰⁷ A day's travel for the unencumbered traveller was approximately 38 km (24 miles).¹⁰⁸ This means that there were postal stations approximately every 4 to 8 km (2.5 to 5 miles).¹⁰⁹ This number appears to be a rather high estimate, as a town likely did not have the resources to stock two stations. By this argument, the stations were approximately 16 to 18 km (10 – 11 miles) apart, which is a distance greater than one person can travel to and return from in one day.¹¹⁰ The Bordeaux Itinerary and the Antonine Itinerary both show that the *mansiones* and *mutationes* were on average 17.6 km (11 miles) apart, where the greatest distance between stations was approximately 24 km (15 miles).¹¹¹ Generally the stations were approximately 13 or 14 km (8 or 9 miles) apart.¹¹² Hyland offers the estimate that the *mansiones* were approximately 32 – 48 km (20 – 30 miles) apart and *mutationes* were every 12 – 20 km (8 – 12 miles).¹¹³ As a point of contrast, the Pony Express initially had stations every 40 km (25 miles), but within a few months, this was found to be too strenuous for the horses.¹¹⁴ Russell, Majors, and Waddell had additional way stations built in order to decrease the distance to approximately 19 km (12 miles), so that the

¹⁰⁶ Procop. *Hist. Arcan.* 3.30.

¹⁰⁷ Hyland 1990, 254.

¹⁰⁸ Dewing 1969, 347.

¹⁰⁹ Silverstein 2007, 34 similarly determined this estimate as well.

¹¹⁰ Silverstein 2007, 35; Pflaum 1940, 340 – 341, 361 – 374.

¹¹¹ Jones 1964, 831 - 2. The Antonine Itinerary provides details a pilgrim's journey from Burdigala to Jerusalem and back in AD 333. The Bordeaux Itinerary, similarly, was a pilgrimage to the holy land from what is now Bordeaux, France to Jerusalem and back in AD 333.

¹¹² Jones 1964, 832.

¹¹³ Hyland 1990, 252. Hyland does not provide any indication of how she approximated these numbers.

¹¹⁴ Chapman 1971, 84.

horses could be forced to run at higher speeds between each station.¹¹⁵ A Pony Express rider mounted approximately 7 different horses during one ride, which was approximately 120 to 160 km (75 to 100 miles) per day.¹¹⁶ The rider was expected to keep a consistent speed of approximately 16 km/h (10 mph).¹¹⁷ Other postal systems, including the Persian and the Chinese under Kublai Khan, maintained similar speeds to those recorded for the Pony Express.¹¹⁸ It is likely that couriers bearing urgent messages along the *cursus publicus* were expected to maintain similar speeds. At a walk, a horse moves between 5 to 7 km/h (3 to 4.5 mph), which means that it took over six hours to travel between postal stations. The average speed observed by most of the postal systems was a fast canter as a horse gallops around 20 km/h (12 mph).¹¹⁹ Mules and oxen were not expected to obtain such speeds, nor were they capable of doing so, since they were employed to draw wagons. Mules pulling coaches during the seventeenth century were expected to cover 195 km (122 miles) in a 24 hour period, which produces an average speed of approximately 8 km/h (5 mph).¹²⁰ At this rate, the mule was expected to cover at least 40 km in one day.¹²¹ One ox in Rome was expected to cover a minimum of 25 km a day.¹²² Whereas horses were exchanged at almost every way station, mules and

¹¹⁵ Chapman 1971, 84; Bensen indicates that the distances were between 16 to 24 km (10 to 15 miles) (1995, 6). The Pony Express had to move mail more rapidly not only for business endeavours, but also for communication with California at the beginning of the American Civil War. The Union Army was hard pressed for money and California was a possibly gold mine of wealth (Settle 1964, 80).

¹¹⁶ Chapman 1971, 85.

¹¹⁷ Minetti 2003, 786.

¹¹⁸ Minetti 2003, 786.

¹¹⁹ Minetti 2003, 785. A trot is a slow jog, a canter is the gait a horse uses to run a moderate speed, and a gallop is the fastest gait a horse is capable of producing. As Minetti (2003, 785) indicates, it is probable that the courier travelled at around 20 km/h (12 mph) during the day, and be reduced to a trot at approximately 10 km/h (6.3 mph) at night.

¹²⁰ Chapman 1971, 79.

¹²¹ This estimate considers the fact that those utilizing the system were travelling for at least five hours a day.

¹²² Black 1995, 13.

oxen were likely be capable of travelling past several stations before they became exhausted, possibly even travelling the entire day.

There does not appear to be a specific rule as to the location of *mansiones* as opposed to *mutationes*; they relied upon the landscape and the towns.¹²³ Considering that the *cursus publicus* included 85,000 km (53,625 miles) of trunk road and a total of 120,000 km (75,000 miles) of public roads throughout the Empire, it is clear that there were a great number of *stationes*.¹²⁴ If the trunk roads are considered, then there were approximately 4,830 stations. At an average rate of 20 *animalia publica* per station, there were around 96,600 animals dedicated to the *cursus publicus*. Although a smaller system, the Pony Express began with 500 of the best horses available, so that there were approximately two horses per station.¹²⁵ Russells, Majors, and Waddell also had a coach business, for which they required approximately 1,500 mules for semi-weekly service along the same line as the Pony Express.¹²⁶ These mules were stabled along with the horses at the way stations employed for both the coach business and the Pony Express. In comparison to these numbers, the Romans, therefore, had a great number of *animalia*

¹²³ Black 1995, 12 for example on the way from Arles to Milan, a traveller came upon two *mansiones* in a row at one point in their journey, and at another two *mutationes* follow each other. At times, the traveller also observed a *mansio* followed by a *mutatio* or vice versa.

¹²⁴ Hyland 1990, 250; Quilici 2008, 551; see Reinfeld (1973, 43) in Italy alone there were over 370 routes and 19,200 km (12,000 miles) of roads; see also Wells (1923, 12) in Gaul there was 13,807 km (8,629 miles) of roads, Spain there was 11,404 km (7,128 miles) of roads, Africa 13,844 km (8,653 miles) of roads, Asia 15,265 km (9,541 miles) of roads, Britain there was 3,820 km (2,388 miles) of roads, Egypt there was 2,222 km (1,389 miles) of roads, Sicily there was 2,077 km (1,298 miles) of roads, Sardinia there was 291 km (182 miles) of roads and Corsica there were 185 km (116 miles) of roads.

¹²⁵ Majors 1950, 184; Chapman 1971, 84. On the other end of the spectrum is the story of Kublai Khan in China, whose system, as described by Marco Polo, was rather extensive. According to Marco Polo, there were post stations approximately every 40 km (25 miles) and at each of these stations were around 400 horses. Half of these animals were on rest during the first part of the month and then they were exchanged for the other two hundred at the end of the month. Accordingly, messengers were able to ride at most two hundred and fifty miles in one day. Throughout the Empire there were over 200,000 horses dedicated to the postal system. The discussion of Kublai Khan's system, however, will be very limited as the Pony Express is far better documented. For further details on Kublai Khan, see *Travels of Marco Polo* 1968, 225 – 226.

¹²⁶ Chapman 1971, 79.

publica dedicated for use in the *cursus publicus*. The Romans, however, utilized their postal system for more than a few letters and so required more resources to transport larger goods.

The cost of the *cursus publicus*, including funds to pay for the mule drivers, wagoners and *mulomedici*, along with the other staff members of the *cursus publicus*, is another important factor to consider.¹²⁷ Unfortunately, few records remain as to the expense of the *cursus publicus*.¹²⁸ One of the best comparative models for estimating the expense of a postal service is the Pony Express. The original purpose of the Pony Express was not to create a profit, but to demonstrate that a communication line could be built from the east to the west.¹²⁹ Unlike the Roman *cursus publicus*, the Pony Express charged for all mail sent. In total, the Pony Express earned approximately \$91,404 (USD in 1860) in fees for the letters carried across the country.¹³⁰ These fees were not capable of balancing the costs the Pony Express had incurred; they were not, in fact, sufficient to pay even one-tenth of the expenses.¹³¹ In order to equip the line before the Pony Express was operational, Russell, Majors and Waddell had to invest \$100,000 (USD in 1860).¹³² This investment paid for 500 horses, equipment, and the construction of extra way stations. The horses that were acceptable for the Pony Express were some of the best

¹²⁷ *Cod. Theod.* 8.5.30.

¹²⁸ There are records from individual towns, such as was the case where the one town was levied enough animals for one senator, but generally there was little accounting of the system as a whole.

¹²⁹ Majors 1950, 185.

¹³⁰ Chapman 1971, 304; See also Scheele 1970, 85; Hafen 1969, 181. At the opening of the Pony Express, letters were charged at a rate of \$5.00 per half ounce (USD in 1860), but were reduced a year later in April 1861 to \$2.00 per half ounce (USD in 1860). After July 1, 1860, however, Russell, Majors and Waddell decreased their fee to \$1.00 per half ounce (USD in 1860) in accordance with the Overland Mail Act. On average, the messengers travelling west carried 41 letters per a trip but this increased between April and July 1861 to 64 letters per trip. By the end of the Pony Express, there were on average 90 letters per trip west. There were far more letters travelling from California to St. Joseph, Iowa: in April 1860 there was on average 205 letters per trip, and by the end of the Pony Express there were 350 letters per trip.

¹³¹ Hafen 1969, 190.

¹³² Chapman 1971, 84.

equids that could be purchased, costing \$150 - \$200 (USD in 1860) a horse.¹³³ Russell, Majors, and Waddell cut costs, though, by using way and coach stations that already existed throughout the central United States. The Romans, however, did not have this advantage and had to construct their way stations as required. This likely was done by the military in some areas, as evidence clearly indicates that they constructed postal stations in Britain.¹³⁴ The Pony Express also required funds to pay its riders and stationmasters, to purchase supplies and horses, and to repair damage accrued on the postal stations due to the Washoe Indian War in Nevada.¹³⁵ It cost \$25,000 (USD in 1860) per month to maintain operation of the Pony Express: the staff was paid between \$40 to \$100 (USD in 1860) per month, and hay was \$0.25 per pound (USD in 1860). In addition, Russell, Majors, and Waddell had to provide food for the way station staff, medications for both employees and animals, and the transport of goods and water to the way stations.¹³⁶ The Pony Express riders were provided with rather high wages of \$50 to \$150 per month (USD in 1860) including room and board.¹³⁷ Wages for the stationmasters alone cost approximately \$17,000 per month (USD in 1860). By the end of its short life, the Pony Express had cost its owners over \$500,000 (USD in 1860).¹³⁸ It is clear that a postal system was a rather expensive endeavour that required constant investment and yielded little profit.

¹³³ Chapman 1971, 89. An average horse cost approximately \$50 (USD in 1860).

¹³⁴ Black 1995, 28 – 29.

¹³⁵ The war cost Russell, Majors, and Waddell approximately \$75,000 (USD in 1860) in damages including several postal buildings, which had been destroyed (Hafen 1969, 182).

¹³⁶ Chapman 1971, 304, 89; Hafen 1969, 180.

¹³⁷ Settle and Settle 1955, 43; Hafen 1969, 179.

¹³⁸ Chapman 1971, 304. The total operating cost alone was \$450,000 (USD in 1860) not to mention the Washoe Indian War in Nevada and other unexpected expenses including lost mail, which had a deficit of \$13 per letter and horse thieves. In addition, there was the initial \$100,000 (USD in 1860) invested in the company, which put the amount Russell, Majors and Waddell owed well over \$500,000 (USD in 1860).

The Roman government similarly had to allocate funds for running the *cursus publicus*. The Empire had to provide staff, animals, and supplies for far more stations than the Pony Express, which consisted of 190 postal stations. The *cursus publicus* was the second most demanding Roman institution, after the military, for a workforce, animals, and the resources required.¹³⁹ Initially the *cursus publicus* was an Imperial expense; however, it was quickly offloaded to the *civitates*.¹⁴⁰ The *civitates* suffered under the weight of the burden and the Emperors attempted to free them from it, although they had little success in this endeavour.¹⁴¹ Provincials under Constantius in AD 354 were ruined by the demands placed upon them by the *cursus publicus*.¹⁴² By Late Antiquity, men joined the clergy in order to avoid the heavy burdens of the postal system.¹⁴³ Due to the heavy costs of the *cursus publicus*, it is unlikely that employees who were not vital to the continuous operation of the system were hired. The fact that the government provided funds to employ veterinarians indicates that the government deemed it a necessary expense; it was important to supply the *cursus publicus* with health care professionals to tend to the ill and injured animals in order to keep the postal system operating smoothly.¹⁴⁴

¹³⁹ Silverstein 2007, 38 – 39.

¹⁴⁰ See Hyland 1990, 251; Kolb 2001, 97; the provincial governor divided the services and duties required by each city or village.

¹⁴¹ Hyland 1990, 251. Nerva did free Italy from the cost of the Imperial Post, although this was at the detriment of the provinces, it relieved Italy, which had many post stations. See also Black (1995, 8 – 9) concerning attempts to place the *cursus* under the public treasury and the creation of more *mansiones* by Hadrian; see also Silverstein 2007, 39.

¹⁴² Hyland 1990, 253.

¹⁴³ *Cod. Theod.* 8.5.40.1; Hyland 1990, 262.

¹⁴⁴ Kolb 2001, 98. Even if the government only had to feed and clothe these individuals, they were providing these amenities to over 2000 individuals.

Evidence of Mulomedici in the Cursus Publicus

In discussing many aspects of everyday life in Rome, it is necessary to remember that ordinary cases were generally not recorded by many of our sources.¹⁴⁵ If *mulomedici* were common along the *cursus publicus*, along with the cartwrights and grooms, there may yet be few records of them. The law codes, however, provide some evidence for the existence of the *mulomedici*. The *Codex Theodosianus* provides an idealized picture of the *cursus publicus*. First, we will examine the *Codex Theodosianus* for all its references to the *mulomedici*, and then we will turn to any further evidence for their role.

Each of the *mansiones* and *mutationes* had a staff devoted to ensuring the smooth operation of the station. The staff included the *mancipes*, mule drivers, grooms, carpenters, and *mulomedici*. By law, there was one mule driver to every three horses, which makes a total of approximately 6,440 grooms.¹⁴⁶ This part of the law does not prove the existence of the *mulomedici*, but it does indicate that the animals should be well cared for in an ideal situation. In the Pony Express, at each station, there was only one individual hired to care for the animals, which could range between two to five horses per station.¹⁴⁷ The *Theodosian Code*, however, does provide direct evidence for the existence of *mulomedici* in the postal system. The law code indicates that:¹⁴⁸

Your Sincerity shall provide that no person shall remunerate any mule driver, wagoner, or veterinarian assigned to the public post, since according to public regulations they obtain subsistence allowances and clothing which We believe should be sufficient for them.

¹⁴⁵ Ramsay 1925, 62.

¹⁴⁶ *Cod. Theod.* 8.5.34.1. "Besides at each changing station We consider that one mule driver is adequate for each three post horses." In order to calculate this, the lowest estimate of horses was taken (about four horses a station), at approximately ten horses per station the number of grooms was 16,100. If the term horse was utilized in the most general form and mules and oxen were included then there were approximately 38,640 grooms. In any case, a great number of grooms had to be hired to ensuring the animals were properly groomed, fed, and prepared for their travels. It is also possible that the grooms were hired to bring animals back to their 'home' station after they had been exchanged.

¹⁴⁷ Chapman 1971, 84.

¹⁴⁸ *Cod. Theod.* 8.5.31.

This excerpt of the *Codex Theodosianus* indicates that veterinarians were employed by the Empire for the *cursus publicus*. They were just as important and necessary to the *cursus publicus* as the wagoner and mule driver were. If the *mulomedici* were as regular to the *cursus publicus* as the mule drivers and wagoners, then there would be numerous *mulomedici* along the *cursus publicus*, as there were mule drivers at almost every *statio*. When taken into consideration with the law concerning grooms and the fact that they were grouped into the same category as the wagoner and mule driver, the consensus of scholars is that this suggests that there was one *mulomedicus* at almost every station.¹⁴⁹ If these scholars are correct in their interpretation, then there were approximately 4,830 *mulomedici* employed by the *cursus publicus*. This number is hypothetical, but even if there were *mulomedici* in half of the way stations then there would have been 2,415 *mulomedici* dedicated to the *cursus publicus*. Conversely, in Britain in the mid-nineteenth century, there were only 1,014 registered veterinarians, and in the United States of America during the 19th century, there were only a handful of veterinarians.¹⁵⁰ In 1847, approximately ten years before the advent of the Pony Express, there were only 15 graduate practitioners of veterinary medicine in the United States.¹⁵¹ Since only one or two individuals staffed each station of the Pony Express, it is likely that they had to rely upon the stationmasters, grooms, and local farriers for medical services. The *cursus publicus* could similarly have relied upon local talent for animal medicine. The law, however, implies that there were *mulomedici* whose primary employer was the government and whose main loyalty lay with the *cursus publicus*.

¹⁴⁹ See Holmberg 1933, 102 – 103; Llewelyn 1994, 21; Black 1995, 10; Hyland 1990, 259; Chevallier 1976, 188.

¹⁵⁰ Pattinson 1984, 62; Mulder 1991, 175.

¹⁵¹ Smithcors 1975, 61. These individuals had attended an academic institution to obtain medical knowledge on animals as opposed to farriers and farmers.

The *mulomedici* were likely a mix of slaves, freedmen, and freemen. There are numerous accounts of *mansiones* staffed completely with slaves.¹⁵² It is clear then that a number of the *mulomedici* along the *cursus publicus* were slaves, but this is not abnormal for the imperial service industry.¹⁵³ Initially the staff of the *mansiones* consisted of the private slaves of the *manceps*, but by the Late Empire, they became *servi publici*.¹⁵⁴ Being a slave does not mean that the *mulomedici* were unskilled, as they were expected to tend to the animals competently.¹⁵⁵ The *mulomedici* were likely the trusted individuals who inspected promising animals for the *manceps*; and if a *mulomedicus* vouched for an unsuitable animal, the *manceps* were held responsible.¹⁵⁶ The *manceps* was responsible for all animals purchased and held accountable when an unsound or ill animal was procured, and if he had no knowledge of animals, he had to rely on the *mulomedicus* and the grooms.¹⁵⁷ In order to ensure that the *mulomedicus* was motivated in his duties, it is possible that the *manceps* provided additional wages.¹⁵⁸ Not all of the staff members at the post stations were slaves.¹⁵⁹

There is one notable case of a non-slave *mulomedicus* working in Britain. On a storage jar recovered along the bank of the Thames River near Taplow, Buckinghamshire, there is an inscription relating to the *mulomedici*. The jar, which is believed to be a cinerary urn, is a plain piece of pottery not meant for display on the

¹⁵² *CIL* II.2011; Pflaum 1940, 377; Llewelyn 1994, 21; Hyland 1990, 259.

¹⁵³ Even the *cursores* and *tabellari Augusti* were Imperial slaves and freedmen, Kolb, 2001, 99; Pflaum 1940, 377.

¹⁵⁴ Chevallier 1976, 188; Jones 1964, 833. The *servi publici* were public servants.

¹⁵⁵ Slaves, in fact, were employed in some of the occupations that today require a great deal of education, such as doctor and teacher. Slaves could also be bankers, bookkeepers, and secretaries (Mohler 1940, 263). For further information on the education of slaves, see Mohler 1940, 262 – 280.

¹⁵⁶ Hyland 1990, 259.

¹⁵⁷ *Cod. Theod.* 6.9.29.I.

¹⁵⁸ The Romans had been bribing their slaves for as long as slavery had existed in order to provide incentives to work better. For further information on the subject, see Carcopino 2003, 56.

¹⁵⁹ Kolb 2001, 99; Wells 1923, 15; Hyland 1990, 257.

mantle.¹⁶⁰ The first line of the inscription of the urn is unreadable, but the second line states “Μάντιος μυλοφισι[κός]” (Mantios the mule doctor).¹⁶¹ Wright argues that this individual was a mule veterinarian who cared for animals along the trunk routes of the *cursus publicus* in Britain.¹⁶² There is no indication on the inscription that this individual was an imperial slave, which suggests that this individual was probably a free man.¹⁶³ It is possible that he was a resident from one of the small towns near the *cursus publicus* and that he was hired at times to tend the *animalia publica*. The *mansio* constantly required local craftsmen and supplies in order to run efficiently, so it is possible that the local *mulomedicus* was hired to tend to the ill or injured animals if such an individual was lacking within the post-station.¹⁶⁴ This individual could also have been hired by private travellers to tend to their animals. If this individual was hired by the state, he resided in a *statio*.

Archaeological remains also provide some evidence for *mulomedici* along the *cursus publicus*. First, in the remains of various *mansiones* there is evidence for the living quarters of the *mulomedici*. At a *mansio* complex at Inchtuthil in Britain, in the southeast corner flanking the entrance to the stables, there are two blocks, which are as large as a centurion’s quarters.¹⁶⁵ It is believed that these areas housed the staff of the *mansio*, including the *mulomedicus*, who was near the animals in case of an emergency or situation that required careful observation, such as colic.¹⁶⁶ This area was in the immediate vicinity of the stables, which allowed for easy access to the animals at all

¹⁶⁰ Wright 1977, 280.

¹⁶¹ Wright 1977, 280.

¹⁶² Wright 1977, 280.

¹⁶³ Bennett, 2001, 57. It is clear that he is from the later Roman Empire because his inscription is in Greek, which appears to indicate that he is from the eastern half of the Roman Empire.

¹⁶⁴ Black 1995, 100.

¹⁶⁵ Black 1995, 17.

¹⁶⁶ Black 1995, 17.

times. The *hippocomi* (grooms) also lived in this area, as they likewise were required to be near the animals.

The numerous hipposandals found along the *cursus publicus* also suggests the existence of *mulomedici*.¹⁶⁷ Hipposandals are associated with the *mulomedici* primarily through the *Edict of Diocletian*, which limits the fees a *mulomedicus* can charge for different services regarding equids' hooves. Additionally, relief of a *mulomedicus* found at Scarpone in Roman Gaul shows the veterinarian holding a hipposandal.¹⁶⁸ There has been much debate concerning the use of hipposandals, whether they were utilized for medical purposes or in the same manner as modern horseshoes. If a horse wore hipposandals for a long period of time, his legs would become sore, particularly when the shape of the hipposandal is considered and how it only loosely conformed to the shape of the horse's foot. The hipposandal, however, may have been used for traction in rough or icy terrain for short periods of time.¹⁶⁹ Additionally, tools were found along the *cursus publicus* for the shoeing of horses.¹⁷⁰

Types of Injuries Associated with the Postal Service and their Prevention

The life of a *cursus publicus* animal was difficult; not only did it have to endure a variety of climates, but also rough roads and multiple riders/muleteers. There were numerous injuries and ailments that the animals would face, including exhaustion from overwork, lameness, and dangers such as snakebites. The constant stressful work must

¹⁶⁷ Hyland 1990, 259.

¹⁶⁸ Vigneron 1968, Plate 10b.

¹⁶⁹ Hyland 1990, 259.

¹⁷⁰ Pflaum 1940, 377.

have taken a large toll on the animal.¹⁷¹ There is also evidence that travellers could hire muleteer slaves from other individuals to control their pack animals, leading to possible neglect, as a slave muleteer may not care for the animal as much as an owner.¹⁷² The public beasts were pushed hard enough that they had to be replaced at a rate of 25% every year.¹⁷³ At the replacement rate of 25%, the animals had a working life of only four years before they were likely retired into other services. In Egypt, numerous records of payments transacted to replace “worn-out public beasts” provide evidence of resupply.¹⁷⁴ The beasts in Africa were replaced on an as required basis, whereas the military replaced its cavalry horses at a rate of approximately 10% each year.¹⁷⁵ In 16th and 17th century England, in contrast, the coach horses generally did not work longer than three years in the harness before they were forced to retire and sold off for other work.¹⁷⁶ In order for the English horses to achieve the three year required service, the animals required medical care, and in order to reduce costs some of the larger carriage companies had their own hospitals for horses.¹⁷⁷ The illnesses and injuries that are common among post-animals will to be examined so that the obligations of an animal doctor will be established.

The normal workload required of the animals was augmented by unofficial use of *the cursus publicus*; despite numerous attempts by emperors, corruption remained

¹⁷¹ Hyland 1990, 255.

¹⁷² *Dig.19.2.60.7; Dig.9.2.27.4*; Martin 1990, 304.

¹⁷³ Jones 1969, 832; *Codex Theodosianus* 8.5.34.

¹⁷⁴ Jones 1969, 832.

¹⁷⁵ Hyland 1990, 256. This is due to the extreme durability of the animals, particularly the African horse, which was the ancestor of the modern Arabian. Although the military number is an estimate, it does show the difference between the hard labour of the *cursus publicus* animals and the work of the cavalry horses.

¹⁷⁶ Turvey 2005, 38; Hyland 1990, 256; the classic story *Black Beauty* provides an excellent image of the harsh conditions animals were exposed.

¹⁷⁷ Turvey 2005, 41.

ingrained within the postal system.¹⁷⁸ Permit holders attempted to reduce their own private costs by combining private journeys with official business.¹⁷⁹ The additional stresses placed upon the equids from unauthorized travel eventually contributed to ailments such as exhaustion and lameness, which rendered the animal unfit for service.¹⁸⁰ Various pieces of legislation were enacted in order to reduce the corruption along the *cursus publicus* and to stop the animal from being overworked.¹⁸¹ One such law reflects the overuse of animals in stating that:

If any person while making a journey, of whatever high rank he may be, such as a member of the imperial service, should turn aside five hundred paces from the direct highway, competent punishment shall be inflicted upon him, and his case shall be referred to Our knowledge.¹⁸²

This legislation discouraged many from deviating from their authorized route, but not everyone. The system required someone who could check the *cursus publicus* animals for signs of exhaustion and treat the symptoms of such conditions. In addition, an exhausted equine that is provided with ample cold water will colic. It is likely that this ailment was observed commonly along the *cursus publicus*, particularly if the animals were exhausted from extraneous travel. The *mulomedici* were well aware of the symptoms and cures of colic as is shown by the *Hippiatrica*, which provides cures for this ailment.¹⁸³ Additionally, an overworked equid can easily become lame and require treatment by someone who was knowledgeable in healing the legs and feet of horses.

¹⁷⁸ For detailed information on corruption see Llewelyn 1995, 16 – 17; Black 1995, 7.

¹⁷⁹ Hyland 1990, 253. The use of public resources for private business is observed even today, such as when businessmen charge personal items to a business account or utilizing company vehicles for personal travel.

¹⁸⁰ Hyland 1990, 254.

¹⁸¹ Jones 1969, 833.

¹⁸² *Cod. Theod.* 8.5.25; see also Hyland 1990, 254.

¹⁸³ *Hipp. Berol.* 194.1.

There were severe punishments if weight limits, as previously discussed, were not obeyed.¹⁸⁴ If the loads were too heavy then it could result in injuries of the knees and the fetlocks.¹⁸⁵ It is notable that the weight limits provided in the *Codex Theodosianus* were not the maximum the animal could endure, but were likely set to increase the speed of the animals and to limit the wear on the road.¹⁸⁶ In modern endurance competitions, numerous horses in the heavyweight division are able to carry at least 110 kg (240 lb) over 160 km (100 miles) per day.¹⁸⁷ In contrast, the maximum baggage for a riding horse was 30 Roman pounds (10 kg or 22 pounds).¹⁸⁸ The Pony Express riders were similarly limited with only 20 lbs of mail, 25 lbs for equipment and 120 lbs for the rider.¹⁸⁹ Keeping the baggage within the weight limits was so important that Valentinian I and Valens erected checkpoints along the *cursus publicus* in AD 364.¹⁹⁰

There were also stipulations on the number of animals that one could hitch to a wagon or carriage.¹⁹¹ The Romans had a large variety of wagons and carriages, including the *rhaeda*, common for the *cursus publicus*, and the *angaria*, which was also a four-wheeled vehicle utilized for the post.¹⁹² These stipulations ensured that individuals did not utilize an excessive number of equids in order to carry heavier loads. Additionally, restrictions were made on the size of the vehicles.¹⁹³ The punishments for these offences

¹⁸⁴ van Tilburg 2007, 59.

¹⁸⁵ McCabe 2002, 95.

¹⁸⁶ *Cod. Theod.* 15.3; Raepsaet 2008; Black 1995, 77.

¹⁸⁷ Hyland 1990, 256.

¹⁸⁸ *Cod. Theod.* 8.5.8.

¹⁸⁹ Reinfeld 1973, 49.

¹⁹⁰ *Cod. Theod.* 8.5.17.1.

¹⁹¹ Hyland 1990, 256.

¹⁹² Chevallier 1976, 178 – 179. Chevallier provides a very thorough list of the various wagons, carriages, and chariots that were known in the Roman world.

¹⁹³ *Cod. Theod.* 8.5.17.

were severe: a free man was sent into exile and a slave was sent into the mines.¹⁹⁴ These stipulations only applied to the *cursus publicus*; private travellers and merchants were able to utilize their animals, hired or purchased, in whatever method suited them best.¹⁹⁵ The Roman harnesses utilized for pulling wagons were very efficient and effective, though numerous scholars indicate that the harnesses caused neck ailments in the harness animals.¹⁹⁶ Modern physiological studies, however, have shown that the Roman harnesses did not injure the animal.¹⁹⁷ Despite all these measures to protect the animals, horses, oxen and mules may have suffered stresses and strains on their spines, particularly if the system was abused and they were overburdened.¹⁹⁸

Roman roads were superior to those of many other cultures.¹⁹⁹ The roads that were continually used by the *cursus publicus* were likely those that sustained a high level of traffic. Since gravel erodes quickly under the duress of high traffic, these roads were constructed of materials such as limestone blocks and basalt.²⁰⁰ Eventually by the second century AD, many of the major roadways were paved with basalt blocks.²⁰¹ The stones were hard and capable of enduring both heavy traffic and heavy loads. The hard stones, however, constantly wore at the animals' hooves, particularly since these equids did not wear horseshoes on a daily basis. Constant pounding on hard surfaces can cause abrasions in the hoof, as well as cracks and bruising, which results in lameness.²⁰² In

¹⁹⁴ *Cod. Theod.* 8.5.17.

¹⁹⁵ Hyland 1990, 255.

¹⁹⁶ Raepsaet 2008, 590; Hyland, 257.

¹⁹⁷ Raepsaet 2008, 590, 595 – 597, 602.

¹⁹⁸ Hyland 1990, 257.

¹⁹⁹ Hyland 1990, 256; See also Quilici 2008, 21.

²⁰⁰ Laurence 1999, 64.

²⁰¹ Laurence 1999, 67. For further information on the process of road construction, see Laurence 1999, 58 – 77. For information regarding the composition and construction of the roads, see Quilici 2008, 551 – 579 and Berechman 2003, 453 – 473.

²⁰² Hyland 1990, 204.

order to avoid such injury, army dispatch riders rode along the softer edges of the road.²⁰³

Unskilled or naïve riders, however, preferred to travel on the smoother pavement.

Additionally, mules and oxen had little choice but to travel on the roads since they were pulling wagons and carriages, which are easier to transport along paved roadways. The *mulomedici* were well-versed in treating lame equids, as is shown in the *Hippiatrica*, particularly Apsyrtus, who expounds at length on issues of lameness in horses.²⁰⁴ The use of hipposandals reduced this wear. Preparations of herbs were also made for animals with soft feet, whose hooves were worn away by the road.²⁰⁵

There were a number of ailments constantly observed by the post stations constantly. A rider without stirrups, as the Romans rode, was a dead weight to the horse, and bouncing around at a trot led to a sore back and stressed limbs for the horse.²⁰⁶ The animals could also suffer from exhaustion after too many hours of continual service. This ailment must have been rather common along the *cursus publicus* as the Emperor Julian, in the late fourth century AD, decreased the distances between stopping places in order to reduce wear and exhaustion on the animals.²⁰⁷ The animals then could travel faster, as they could be driven harder over shorter distances.²⁰⁸

The animals could also have received lacerations due to flagellation.²⁰⁹ The *Codex Theodosianus* addresses this issue as well, forbidding the traveller to utilize any more force than a switch.²¹⁰ Open wounds could easily become infected if not treated

²⁰³ Hyland 1990, 250.

²⁰⁴ *Hipp. Berol.* 104.5.

²⁰⁵ McCabe 2002, 94 – 95.

²⁰⁶ Hyland 1990, 256. Horses do have an artificial trot, which is more comfortable to the rider, but the horse then has to utilize more energy, which the Romans preferred to use for distance instead.

²⁰⁷ *CIL* V 8987; van Tilburg 2007, 61.

²⁰⁸ Black 1995, 8.

²⁰⁹ Black 1995, 76.

²¹⁰ *Cod. Theod.* 8.5.2.

appropriately and could result in the death of the animal. Limiting the type of whips used was one means of protecting the animals, but, as previously stated, the law laid out an ideal, one which may often have been evaded in practice.

There was also the matter of feed. The horses of the Pony Express were provided with high quality feed so that they were capable of enduring harsh conditions and hard travel.²¹¹ The Romans similarly required high quality grain and hay to feed their animals so that they worked efficiently.²¹² Highly nutritious fodder was known by the Romans and fed to the animals, including fenugreek and alfalfa.²¹³ Creative means were utilized when funds were extremely limited to feed the animal, including in Britain, where the animals were fed beans.²¹⁴ In order to supply enough feed to the animals, military style granaries are found at the *mansiones*, particularly at the ones established by the army.²¹⁵ It is important for animals to receive adequate and nutritious fodder, without which they could succumb to exhaustion and malnutrition. Poor or mouldy hay can easily result in death among equines.

In order to address the various ailments that could occur on the road, the *Hippiatrica* contains remedies simplified for travel.²¹⁶ It describes ailments that are ἐξ ὁδοιπορίας ‘from travel’ including exhaustion, extreme hunger, sprained shoulders, and snakebites. The cure to exhaustion, for example, is barley cake and sweet wine, both of which were available on the road, according to Apsyrtus.²¹⁷ Knowledge of such ailments was extremely useful to individuals who were constantly treating animals who were on

²¹¹ Bensen 1995, 11 – 13.

²¹² Hyland 1990, 262.

²¹³ Kron 2004, 278. For further information on animal fodder, see Kron 2004, 275 – 331. See also Rathbone 1991, 212 – 265 for details on the production of fodder.

²¹⁴ Black 1995, 19.

²¹⁵ Black 1995, 19. A horse requires 1.5 kg of barley and 4.5 kg of hay per day.

²¹⁶ McCabe 2002, 91.

²¹⁷ *Hipp. Berol.* 10.3.

the road continuously. Although Apsyrtus and Theomnestus learned treatments for travel ailments through the military, the *mulomedici* at the post stations likely observed similar illnesses and injuries.

Conclusion

The *cursus publicus* was the most expensive and extensive operation of the Roman government after the military, consisting of a well-organized retinue of staff and animals. This system was important not only as a postal system for official communications, but also for the transportation of imperial goods, including valuables, and the travel of government and military officials. In order to keep this system operating smoothly, it was necessary to maintain the health of the *animalia publica*. The road was dangerous to the horses, mules, oxen, and asses associated with the *cursus publicus*. Not only did these animals have to contend with normal ailments, but also with those associated with travel. These ailments included exhaustion, colic, and lameness, among others. In order to treat these illnesses and injuries, the government utilized professional animal doctors, known as *mulomedici*. Evidence for these ‘mule doctors’ is noted within the law codes with regard to a discussion of remuneration. Additional evidence for this profession within the *cursus publicus* exists in an urn shard found along the banks of the Thames River and hipposandals found along the major roadways. The evidence indicates that there were *mulomedici* stationed at most of the *mansiones* and *mutationes*. If there was a *mulomedici* at every station along the roads, then there were 4830 professional animal doctors working for the *cursus publicus*. There were far more *mulomedici* along the *cursus publicus* than were observed in mid-nineteenth century Britain when horses and carriages were one of the most important means of transport.

Although this profession appears to have received little attention beyond brief notation in most works, they were clearly numerous throughout the Roman Empire, as they were located at almost every post station. The *mulomedici* of the *cursus publicus* provide evidence, therefore, that animal doctors were numerous throughout the Roman Empire.

Chapter 3: Animal Doctors in the Circus

Introduction

The Romans were, as a whole, more fanatical about chariot racing than Canadians are concerning hockey. Romans crowded together in order to cheer on a favoured team watching with fervour as the chariots manoeuvred rapidly around the racetrack. The circus was the most popular spectator sport in Rome and most of the provinces, and numerous circus arenas are still visible throughout lands that had once belonged to the Roman Empire.¹ Poets, politicians and satirists all remark on the circus, both positively and negatively. Charioteers and the victorious horses were honoured with elaborate monuments inscribed with their victories. It was essential to ensure that the equipment, chariots, and horses remained in the best condition possible. Supporting these charioteers was an extensive system of workers, including carpenters, grooms, and veterinarians. It is in this industry that the greatest investments were supplied for use by the factions. The horses themselves were expensive animals procured from private and public stud farms. These horses were well trained to bear a lightweight chariot around a hippodrome, such as the Circus Maximus, working in tandem with another or possibly even three other equines. Roman horse races, such as those at the Circus Maximus, were far more gruelling than modern horse races, and equines were required to be in top condition in order to compete in such conditions. The races were dangerous, and accidents occurred frequently, much to the pleasure of the audience. Racing itself was difficult on the animals and injuries such as swollen eyes and strained legs were constantly observed.

¹ Humphrey 1986, 4. Humphrey (1986) provides a detailed examination of the different archaeological sites. In this paper, the term 'circus' will be defined as the institution of chariot racing within the Roman Empire.

These injuries were not fatal, but if they were not treated properly, it drastically reduced the length of the horse's racing career. It was necessary, then, to have an individual trained to treat such injuries. There is evidence for the presence of veterinary practitioners at the racetracks to care for the animals. Considering the sheer financial wealth of the factions, it is likely that they hired the best veterinary service possible in order to ensure that their prime equine teams remained healthy and in the best condition possible.

Organization of the Circus

Evolution of the Circus

Horseracing was well known to the ancient world; the first written record in western literature exists in the *Iliad*. Tomb paintings indicate that the Etruscans also conducted chariot races.² The earliest known record, according to Livy, of a Roman horse race was during the regal period.³ In the Republic, racing became a highlight of the Roman festivals of the *ludi romani* and *ludi magni*, and the circus continued to retain these religious associations throughout its history.⁴ The circus was not a static organization and it changed over time, taking its best known configuration under the Emperor Trajan.⁵ Even after Christianity became more integrated into Roman society, the chariot race remained as popular as it ever was.⁶ Chariot racing was prevalent in the Roman world until well into the sixth century AD.⁷ Under the kings and in the early Republic, an unlimited number of chariots could race, but under the Empire, it was

² Rawson 1981, 2. It is unknown whether the Romans inherited the tradition from the Greeks or the Etruscans, but the Etruscans likely learned the tradition from the Greeks (Harris 1972, 185).

³ Livy 1.9 – 13; Hyland 1990, 202; Futrell 2006, 190. Livy alludes to racing in the rape of the Sabines. See also Plutarch *Lives* I p. 62 where there was a chariot race in Veii.

⁴ Futrell 2006, 190; Hyland 1990, 205.

⁵ Humphrey 1986, 5.

⁶ Camp 1998, 23.

⁷ Camp 1998, 24.

limited to twelve teams, which is the number of starting gates (*carceres*) in the Circus Maximus.⁸ These twelve teams were drawn from the four racing stables, which were established in the late Republic and dominated western chariot racing throughout the rest of Roman history.⁹

Chariot racing expanded dramatically after the Principate was established. By the time Augustus came into power, races were conducted 17 days a year.¹⁰ This number increased drastically, by the fourth century AD, there were races on as many as 66 days a year, and these races were conducted throughout the entire day.¹¹ Dio Cassius indicates that as well organized as the Romans were, they could hold no more than ten races a day, although in one instance, the Circensian Games offered 24 races in a single day.¹² Due to the sport's popularity, racetracks were constructed throughout the Empire, and races were held continually throughout the year.¹³

The Emperors, no less enthusiastic than the people, constantly increased the number of races. Gaius Caligula was infamous for impromptu horse racing, as well as for his love of the racehorse Incitatus.¹⁴ Stories of Nero's involvement in chariot races are well known, including a race in Greece in the course of which he fell out of the

⁸ Humphrey 1986, 11.

⁹ Originally, circuses were entered by individuals wishing for victory, and thus any number of chariots could compete. A wealthy landowner could either enter his chariot team while hiring a professional charioteer to drive it, or, as was less common, he could drive his own team (Junkelman 2000, 86). The reason it moved towards established professional factions was because the officials putting on the races found it difficult at times to gather enough entrants to ensure that the games were interesting to the local population (Harris 1972, 193).

¹⁰ Hyland 1990, 218.

¹¹ Hyland 1990, 218.

¹² Dio Cass. 40.23.50; Dio Cass. 40.27.2 The consul Asiaticus was forced to resign due to the expenses accumulated from such an extensive display.

¹³ Humphrey (1986) gives a detailed account of racetracks throughout the Roman Empire. There were over two dozen circuses in Roman Africa, 21 circuses in Spain and Portugal, and five in Rome alone (Hyland 1990, 203, 207).

¹⁴ Suet. *Gaius* 18. This horse was the same Incitatus whom Caligula attempted to promote to senator.

chariot and yet still claimed victory in the race.¹⁵ Nero in his enthusiasm for the sport increased the number of races so that they continued throughout the entire day.¹⁶ After enduring the increase in the number of races under Nero, the factions determined that it was economically better to compete for the entire day, and thus after Nero all circuses held races that lasted the entire day.¹⁷ Suetonius indicates that Domitian in his zeal increased the number of races per day to 100, which meant that he was forced to reduce the laps from seven to only five.¹⁸ Trajan added an extra five thousand seats to the Circus Maximus and repositioned the imperial box so that the Emperor could be seen by his people.¹⁹

The factions were an important feature of racing in the Roman world and became more important as the political power of the people was reduced. These factions are better understood as ‘racing clubs’.²⁰ The four factions in chariot racing were the *russata* (red), *albata* (white), *veneta* (blue), and *prasina* (green).²¹ By Late Antiquity, the Blues and Greens had become the most popular factions, insofar as the Reds had become subsidiaries of the Blues, and the Whites of the Greens.²² These factions in Late

¹⁵ Suet. *Nero* 24.

¹⁶ Hyland 1990, 219; Harris 1972, 215.

¹⁷ Suet. *Nero* 22; Hyland 1990, 219; Futrell 2006, 208; Harris 1972, 216.

¹⁸ Suet. *Dom.* 4. According to Hyland (1991, 219) this increase was for the Saecular Games of AD 88. See also Harris 1972, 217.

¹⁹ Harris 1972, 217.

²⁰ Junkelmann 2000, 86.

²¹ Tertullian *On the Spectacles* 9.5; Futrell 2006, 207. These factions are first attested in 70 BC (Humphrey 1986, 11). These factions lasted into Late Antiquity and became the center of public interest. The Nika Revolt was a result of strong loyalty to the factions. For further information on these factions and the politics behind them, see Hyland 1990, 205; Harris 1972, 243; Pliny *HN* 7.186. Domitian attempted to create two new factions, the purple and the gold, but these teams did not last much longer than his reign (Hyland 1990, 219).

²² Futrell 2006, 209 – 210; Junkelmann 2000, 86.

Antiquity became very important to the population, and even caused riots, most notably the Nika Revolt.²³

These different factions each had their own headquarters, *stabula factionum*, in Rome, with the majority residing in the Campus Martius.²⁴ A slave charioteer could be sent from one faction to another, whereas a free driver could sell his services to a certain team.²⁵ Pliny the Younger describes how, if the drivers were to exchange colors in the middle of the race, the people continued to cheer for their favourite color as opposed to the driver himself.²⁶ The factions themselves were profitable economic enterprises, providing the head of the factions, the *domini factionis*, with large fortunes.²⁷ As the state gained more control over public life, the government replaced the private *domini factionis* with state appointed *factionarii*.²⁸ These *factionarii* were generally retired charioteers, who no longer ran races but understood the intricacies of chariot racing.²⁹

Chariot races were not the only races carried out in the circus, although they were by far the most popular. In one common version of the horse race, the riders, or charioteers, raced around the track, then dismounted and ran on foot to the finish line.³⁰ In another type of race, the *Diversium* race, two rival drivers swapped chariots and teams

²³ For more information on the Nika Revolt see Greatrex 1997; Bury 1897.

²⁴ Junkelmann 2000, 87.

²⁵ Harris 1972, 208; Hyland 1990, 206. One example of this is Diocles, a driver who had 925 wins for the Reds and numerous wins for the Whites (Hyland 1990, 206). A driver was known as an *auriga*. This pattern can be observed in the career of Marcus Aurelius Polyneices, who was the son of the charioteer Polyneices: "Marcus Aurelius Polyneices, born a slave, lived 29 years, 9 months and 5 days. He won the palm 739 times: 655 times for the Reds, 55 times for the Greens, 12 times for the Blues and 17 times for the Whites" (as quoted in Junkelmann 2000, 87).

²⁶ *Ep.* 9.6.

²⁷ Junkelmann 2000, 87.

²⁸ Junkelmann 2000, 87.

²⁹ Junkelmann 2000, 87.

³⁰ Humphrey 1986, 1.

in a test of their driving skill.³¹ Other equestrian events held in the arena included trick riding, dancing horses, mock cavalry battles, chariot fights between gladiators, and bulldogger riders who jumped from a moving horse onto a bull.³²

Economics

The cost of chariot racing was understood long before it became a staple for the Roman mob. Aristophanes in *The Clouds* provides an indication of the great wealth required for horse racing when a man worries that he will not be capable of meeting the bills that he incurred to provide horses for his son.³³ Chariot racing was one of the most expensive spectator sports in Rome.³⁴ During the Republic, the state provided funds in order to provide horses for the races.³⁵ There was a limit to the funds provided by the state; for example, the Romans spent a maximum of 5000 silver *minae* each year on the *Ludi Romani*.³⁶ By the first century BC, the factions provided funds for their own stables but did not contribute to the organization or contribute to the funds required to organize the races themselves. The government funded public spectacles and continued to do so up until the sixth century AD.³⁷ Eventually, due to the limited funds of the local municipalities, there was a consolidation of the games so that the small communities were not as heavily burdened.³⁸ The circus was maintained on a compulsory basis, and

³¹ Hyland 1990, 221; One charioteer, Constantine, in Constantinople in the late fifth century AD won 48 out of 50 *Diversium* races (Hyland 1990, 221). This type of race could be difficult if the horses were accustomed to a certain manner of handling or were rather ill tempered. Some horses respect only one individual.

³² Hyland 1990, 248 – 230.

³³ *Ar. Clouds* 1.

³⁴ Humphrey 1986, 4.

³⁵ Rawson 1981, 6. For further discussion on the matter, see Rawson 1981, 5 – 6.

³⁶ Rawson 1981, 7.

³⁷ Futrell 2006, 210. This meant that the aristocracy who were in positions of power were personally footing the bills with some aid from the federal treasury.

³⁸ Futrell 2006, 210.

government officials were required to produce and subsidize these games for the people, although the treasury did bear a portion of the cost.³⁹

Funds invested in the circus provided housing, food, training, and salaries for the performers, as well as a staff of specialists required for the smooth operation of the circus.⁴⁰ In addition, the official providing the races had to provide prize money to the champion.⁴¹ Prize money was scaled depending on the importance of the race. A race that was held after a *pompa*, or ceremonial entry, was considered one of the most prestigious.⁴² A race held in the Circus Maximus also warranted a great prize. At the top end of the races, the victors received 60,000 sesterces.⁴³ At the lower end of the scale, the winner claimed only 15,000 sesterces.⁴⁴ One individual, Gaius Apuleius Diocles, who won 1,462 races out of the 4,257 races he had run, amassed a fortune of 35,863,120 sesterces when he retired at the age of 42.⁴⁵

The daily expenditures for the stables themselves are similar to those typical for modern racehorses, requiring not only staffing, but also facilities for training the animals, stud farms, acquiring new stock, and veterinary care.⁴⁶ To put the costs of such a facility in perspective, a modern racing facility spends \$500 (USD) a month on basic veterinary care to ensure the horse is healthy, and any injuries add additional costs.⁴⁷

³⁹ Hyland 1990, 202.

⁴⁰ Futrell 2006, 210.

⁴¹ Hyland 1990, 208.

⁴² Hyland 1990, 227.

⁴³ Hyland 1990, 227; Junkelmann 2000, 87.

⁴⁴ Hyland 1990, 227; Junkelmann 2000, 87.

⁴⁵ Junkelmann 2000, 87. Juvenal indicates, "You'll find that a hundred lawyers scarcely make more than one successful jockey" (Juvenal *Sat.* 7). To put this into perspective, the early imperial legionary was paid 900 sesterces annually (Junkelmann 2000, 87).

⁴⁶ Hyland 1990, 202.

⁴⁷ Jockey Club of Canada.

The Track

The racetracks in the western half of the Empire were generally permanent structures, and the permanent circuses eventually spread to the eastern half of the Empire by Late Antiquity.⁴⁸ Around the track, there were stands for the spectators to sit. The Circus Maximus had enough seats to accommodate at least 150,000 spectators.⁴⁹ An average circus, such as that located at Lepcis could seat approximately 20,000 people.⁵⁰ Below the spectators was the dusty track, where the charioteers raced around in a counter-clockwise direction.⁵¹ Between each side of the tracks was a divider, called the *spina*, which did not become a continuous solid structure until the first century AD.⁵² At Lepcis, this divider was 231 m long and 6.2 m wide, which is slightly narrower than other *spinae*.⁵³ The Circus Maximus had a *spina* that was 355 m long and 8 m wide.⁵⁴ The curves on either end of the track had *metae* (turning posts), where the charioteers made a 180 degree turn.⁵⁵ Before the horses entered the track, they were organized in the *carceres* (starting gates), which released the horses simultaneously.⁵⁶ The *carceres* limited the number of horses who could compete; in the Circus Maximus, there was space for twelve chariots. The *carceres* were stalls that were placed on a small curve along the far wall of the circus track and were opened simultaneously with a lever.⁵⁷ In order to avoid collisions at the very start of the race, the competitors remained in separate

⁴⁸ Harris 1972, 191.

⁴⁹ Junkelmann 2000, 94. In contrast, the Colosseum could hold only 50,000 spectators.

⁵⁰ Humphrey 1986, 31.

⁵¹ Hyland 1990, 221.

⁵² Humphrey 1986, 11. In the Circus Maximus, the *spina* was elaborately decorated with fountains and statues.

⁵³ Humphrey 1986, 38.

⁵⁴ Junkelmann 2000, 94.

⁵⁵ Harris 1972, 186. The best example of a turning post today is the remains visible at Dougga in Tunisia.

⁵⁶ Humphrey 1986, 23 – 24. For extensive details on the *carceres*, see Humphrey 1896, 19 – 47.

⁵⁷ Humphrey 1986, 47.

pathways demarcated by lines until they were beside the *spina*.⁵⁸ The *spina* was at an angle so that the entrance of the track was wider to allow the charioteers to be abreast, which resulted in the far end of the track becoming slightly narrower.⁵⁹ Humphrey suggests that there was a mark that allowed the charioteers to know when they could first manoeuvre in front of their opponents.⁶⁰ After passing this line, the charioteers sorted themselves out with the fastest teams seizing the front. Another line marked the end of the race, which was located before the end of the *spina* where there was also one of the referee boxes.⁶¹

The various circus arenas were not of uniform size throughout the Empire, but differed in the length.⁶² Most of the major circuses were approximately 440 m (1450 ft.) long.⁶³ During the late second century AD, the Circus Maximus was 550 - 580 m long and approximately 80 m wide.⁶⁴ The charioteers raced around an oval, and so the actual distance covered by the chariot depended on the route that was travelled. If one followed on the inside track, then a lesser distance was travelled than if one was a poor driver and pushed to the outside track. The Circus Maximus, one of the longest tracks, was a little over 3 km (2 miles) along the inside track.⁶⁵ Under the circumstances of an actual race, remaining close to the inside track was unlikely, thus a competent driver travelled approximately 4.5 km (a little under 3 miles).⁶⁶ The outside circumference of the track

⁵⁸ Humphrey 1986, 19, 85.

⁵⁹ Humphrey 1986, 23. In the case of Lepcis, the *spina* was 36.9 m away from the wall on the side that the charioteers entered, but was only 27 – 28 m long on the opposite side. In contrast, at the far end the *spina* was equidistance from either end with a distance of approximately 32m.

⁶⁰ Humphrey 1986, 23, 85.

⁶¹ Junkelmann 2000, 96.

⁶² Hyland 1990, 204; Humphrey 1986, 1.

⁶³ Hyland 1990, 204.

⁶⁴ Junkelmann 2000, 94.

⁶⁵ Hyland 1990, 204.

⁶⁶ Hyland 1990, 204.

was approximately 6.5 km (4 miles).⁶⁷ In contrast, a modern racetrack such as the Kentucky Derby is only 2 km (1.25 miles) and the Grand Prix de Paris is 3 km (1.5 miles).⁶⁸

The composition of the sand in the arenas affected the charioteers. If the surface was not hard enough the chariot skidded over the track, but if it was too soft, the horses slogged through the sand the entire race. In order to construct an appropriate surface, the Romans created a system where sand was compacted in layers with drainage.⁶⁹ As for the type of sand, it is likely that the Romans utilized local resources, with the exception of the largest of the circuses such as the Circus Maximus, where the best quality of surface sand was procured.⁷⁰ In contrast to the Roman arena, modern racetracks consist of much firmer surfaces without any cushioning sand.⁷¹ The sand flew into the eyes of the charioteers and horses, meaning that the track had to be smoothed and watered down constantly in order to reduce the dust.⁷² As the laps progressed, the chariot wheels dug deeper into the sand creating ruts on the track, which caused issues with the charioteers as the race progressed onto the final laps.⁷³ These ruts may not have affected the first few races of the day, but after numerous races one could imagine how torn up the track could

⁶⁷ Hyland 1990, 204.

⁶⁸ Hyland 1990, 204.

⁶⁹ Hyland 1990, 204. Arena comes from the word *harena* (sand) (Humphrey 1986, 83). Archaeological evidence indicates that the tracks at Caesarea and Carthage were carefully constructed and were likely deliberately mortared (Humphrey 1986, 84). It is interesting to note that the track of *Ben-Hur* utilized one and a half inches of crushed lava covered with a layer of sand approximately 1.5 inches, which allowed the chariots to skid around the curves and the horses to maintain fast paces (Humphrey 1986, 83; Marton 1960, 94).

⁷⁰ Humphrey 1986, 83. In their extravagance, several emperors coloured the sand. Caligula had the circus track dyed with red pigment and coloured with chrysocolla (green carbonate of copper) (Humphrey 1986, 84). Considering this fact, it is surprising that there are few accounts of horses spooking at the bright colors as high-strung animals are accustomed to do. Even if the horse is well trained, it can spook easily at bright objects, particularly if its driver and attendants are nervous or excited.

⁷¹ Hyland 1990, 204. In fact, the Roman racing surface is more similar to the modern trotting tracks than a modern racetrack.

⁷² Humphrey 1986, 83.

⁷³ Humphrey 1986, 83.

become unless there was a crew to smooth it down. The horses could easily be injured by tripping over these ruts, and so, in order to combat this danger, attendants stood prepared to rake the ruts.⁷⁴

The Chariots

As in horseraces today, there were different types of race which the chariot teams could enter. The beginning level was the *annagnum* race, which was meant to provide experience for novice horses.⁷⁵ The highest levels of races were held immediately after the *pompa* or ceremonial entry.⁷⁶ Chariot teams which were hired for races held in the most famous arenas, such as the Circus Maximus or the Hippodrome at Constantinople, were some of the best in the Roman world.

Other than the horse, the most vital equipment for the chariot race was the chariot itself. The *quadrigae* (four-horse chariot) was the most popular form of chariot racing. There was also the *bigae* (two-horse chariot), which Domitian favoured.⁷⁷ The *triga* (three-horse chariot) was also used, although was less popular. In the *triga* the third horse was not yoked up to the chariot, but utilized as a lead horse in order to navigate the inside of the turns.⁷⁸

Although archaeological excavations have not produced the remains of racing chariot, representations and images help us estimate their dimensions. Unlike the chariots displayed in movies such as *Ben-Hur*, those of the Romans were lightweight, weighing between 25-30 kg.⁷⁹ By way of contrast, Egyptian war chariots, which were

⁷⁴ Humphrey 1986, 84

⁷⁵ Hyland 1990, 227.

⁷⁶ Hyland 1990, 227.

⁷⁷ Suet. *Dom.* 4.

⁷⁸ Humphrey 1986, 16.

⁷⁹ Killeen 1953/1954, 70; Junkelmann 2000, 90, 92. In contrast, the 1959 movie *Ben-Hur* utilized a design that was similar to Roman triumphal chariots. These chariots weighed 406.4 kg, which quickly exhausted

designed for utility in war rather than sport, weighed 35 kg.⁸⁰ The best charioteers were likely lightweight, just as most race jockeys are today.⁸¹ It has been estimated that the maximum weight the horses pulled, including the charioteer and chariot, was 100 kg.⁸² The chariots were mostly constructed of wood and fabric or leather, but the Romans also used metal where necessary.⁸³ The chariots the Romans raced with were thus small and lightweight, even with the added burden of a driver.

Unlike modern charioteers, the Romans drove with the reins tied around their bodies and controlled the chariot by leaning in the direction they wished the horses to go.⁸⁴ This method allowed the charioteers to have their hands free to whip and urge the horses onward faster. The left hand urged precise corrections in the horses' course, while the right hand wielded the whip.⁸⁵ This arrangement of reins, however, was incredibly dangerous, and as a precautionary measure, the charioteer had a knife at his side so that he could cut the reins away from his body if he fell out.⁸⁶

The Race

During the race, there was a clear code of conduct among the charioteers. The charioteer was not to drive recklessly, endangering his own life and the lives of others, and he was not to interfere with another driver in order to gain advantage.⁸⁷ In order to

the horses after four races of a single lap. The typical chariot had dimensions as follows: total axle length 180 cm, gauge 155 cm, diameter of the wheels 65 cm, height of chariot from floor to top 70 cm, width of the body of the chariot 60 cm, depth of chariot 55 cm, and total length of the pole 230 cm (Junkelman 2000, 91).

⁸⁰Junkelmann 2000, 92.

⁸¹Junkelmann 2000, 92.

⁸²Junkelmann 2000, 92.

⁸³Junkelmann 2000, 91.

⁸⁴Killeen 1953/1954, 70.

⁸⁵Junkelmann 2000, 92.

⁸⁶Killeen 1953/1954, 70.

⁸⁷Humphrey 1986, 6.

enforce these rules, an official stood near the turns and watched for any fouls.⁸⁸ There were calls of *facinus* (foul), *fraudatus* (cheated), and *occidus* (crash).⁸⁹ The chariots careened around the course competing for the best positions, manoeuvring around their opponents. Once the race was completed, the winner received his prize from the praetor and then proceeded to do a victory lap during which he was showered by flowers and small change with an adoring crowd.⁹⁰

The Horses

It was not just the charioteer who won, but also the horses. The greatest winners were honoured by the crowds, just as the best charioteers were. Some people favoured the horse for his pedigree, others for its trainer.⁹¹ In one instance, a charioteer was knocked from his chariot at the beginning of the race, and the well-trained equines continued on the course, manoeuvring around opponents and incorporating tactics they had learned. Despite the lack of driver, these horses reached the finish line and then stopped.⁹² Although this was rare, it demonstrates that a well-trained team was one of the most advantageous assets a faction could have.

The energy and noise that ran throughout the circus would excite any horse, but especially the high-spirited animals that were preferred for the circus. These animals required a competitive spirit, and yet had to be trained in the harness and able to work as a team with other equines.⁹³ Pliny the Elder indicates that the horses were expected to be intelligent and understand the commands shouted during the race, as well as the applause

⁸⁸ Humphrey 1986, 24.

⁸⁹ Harris 1972, 209.

⁹⁰ Killeen 1953/1954, 74; Humphrey 1986, 88.

⁹¹ Killeen 1953/1954. At the races, there were pamphlets, *libellus*, which provided the names and pedigrees of the participating chariot horses.

⁹² Pliny *HN* 8.160.

⁹³ Hyland 1990, 208.

encouraging them.⁹⁴ The producers of the 1959 version of *Ben-Hur*, while preparing the scene with the chariot race, discovered that it took months for the equines to be trained as racehorses and to work as a team.⁹⁵ It is very likely that, if the *quadrigae* swerved to avoid an obstacle during a race, and the horses were ill trained as a team, they could attempt to travel in different directions. Unlike modern thoroughbreds, which are trained as early as two years old, the Romans waited until the equines were five years before training began.⁹⁶ An experienced and lucky horse could live to race until he was around 20 years of age.⁹⁷

The conformation sought for racing equines consisted of high heads, crested necks, high tail carriage, lean body, and especially powerful hindquarters.⁹⁸ From the representations that can be observed, the horses were not small, but were around 14 hands (142 cm) tall.⁹⁹ Both African and Spanish horses were the most popular breeds for racing.¹⁰⁰ The other breeds that were popular for racing included the Cappadocian, Pentapolitanian, Sicilian, Tuscan, Cretan, and Sardinian stock.¹⁰¹ Inscriptions describing racehorses and their pedigrees exist and provide information on the winning animals in numerous races. In one such instance, a list provides the names of 74 horses, 46 of which were African, and the remaining animals were from Gaul, Mauretania, Spain, Sparta,

⁹⁴ Pliny *HN* 8.160.

⁹⁵ Marton 1960, 112.

⁹⁶ Pliny *HN* 8.162.

⁹⁷ Pliny *HN* 8.163.

⁹⁸ Hyland 1990, 203.

⁹⁹ Hyland 1990, 203. Horses are measured from the ground to the top of their shoulders. Fourteen hands are about the size of an average quarter horse, which is rather small in contrast with modern thoroughbred racehorses which stand around 16 to 17 hands tall. The famous horse Secretariat was 16.2 hands whereas the New Zealand Phar Lap was 17.1 hands tall. The Roman military charger in contrast was a little larger than the racehorse, as he was approximately 15 hands (152 cm) tall, see Chapter 1 for further details.

¹⁰⁰ Hyland 1990, 209.

¹⁰¹ Hyland 1990, 210.

Cyrenaica, and Thessaly.¹⁰² In another inscription, a charioteer is recorded as achieving 584 victories with African horses, and 1,378 with Spanish ones.¹⁰³ In another instance, recorded on the walls of St. Angelo, 38 out of the 42 horses recorded were of African descent.¹⁰⁴ Although the Spanish horses were the fastest, they did not have the endurance of the African stock.¹⁰⁵ It was likely that the horses that competed all had a little African/Numidian blood, as these equines had speed and endurance.¹⁰⁶ By the Late Empire, the best stocks were the Cappadocian, Spanish-Numidian, and Greek horses.¹⁰⁷ Among racing circles, the Cappadocian horses became as famous as the popular Spanish-Numidian equines; the Emperor Constantius wintering in Cappadocia in AD 360 was not impressed with the gift of Spanish horses from the Caesar Julian as he was surrounded by the equally impressive Cappadocian stock.¹⁰⁸

Unlike the Greeks, the Romans did not believe in the superiority of racing mares, and consequently most of the racehorses were stallions.¹⁰⁹ In one inscription, there is record of only 7 mares out of the 122 horses listed, and in another inscription, there is record of only 3 mares out of the 74 names which are legible.¹¹⁰ Mares were more likely to be kept for breeding purposes than for racing and those that were barren were sold at

¹⁰² *CIL* VI.10053.

¹⁰³ *CIL* VI.10056.

¹⁰⁴ Ridgeway 1972, 312. There were 37 Afer horses (Libya), one Maurus, one Mauritanian, one Hispanus, on Gallus, and two Lacedaemonian horses.

¹⁰⁵ Hyland 1990, 212; Ridgeway 1905, 313.

¹⁰⁶ Ridgeway 1905, 313.

¹⁰⁷ Hyland 1990, 212.

¹⁰⁸ *Amm. Marc. Res Gest.* 20.8.

¹⁰⁹ Futrell 2006, 206; Harris 1972, 201. In one inscription (*CIL* VI.10053) out of the 74 legible names, only three are mares.

¹¹⁰ *CIL* VI.10056; *CIL* VI.10053.

the market for other purposes.¹¹¹ Stallions are not necessarily faster, but mares go into heat, which could adversely affect their performance on the racetrack.¹¹²

Initially, racehorses were bred and trained by private owners.¹¹³ As horseracing became dominated by the four factions, horses were bred both privately and publicly.¹¹⁴ Senators, who were restricted from participating in trade, invested heavily in breeding horses. Equines bred for racing were a safe investment as chariot racing was so popular, and horses were thus constantly in demand.¹¹⁵ Horses not sold at the major cities such as Antioch, Alexandria, Caesarea, Rome and Constantinople, could be sold for racing on the minor tracks that graced most of the cities throughout the Empire.¹¹⁶ Even in Juvenal's time, small horse breeders successfully produced racehorses for the market.¹¹⁷ Imperial stud farms also provided horses for the races.¹¹⁸ By the late Empire, the imperial stud farms sold the greatest number of equines to the factions.¹¹⁹

Horses did not retire after a few years of racing like modern racehorses, which are sent to stud farms. Instead, the stallions were bred during their racing career and were run as long as possible.¹²⁰ In one case, a stallion ran on a team with his own offspring.¹²¹ The horses that managed to survive the dangers of the circus were treated in a different way. A horse which had won a fair number of races might live a peaceful retirement

¹¹¹ Hyland 1990, 214.

¹¹² Hyland 1990, 214. Mares were also more likely to bolt than to charge ahead. Today many of the top racers are stallions, although mares can still race (National Thoroughbred Racing Association).

¹¹³ Rawson 1981.

¹¹⁴ Hyland 1990, 208.

¹¹⁵ Hyland 1990, 207.

¹¹⁶ Hyland 1990, 207.

¹¹⁷ *Juv. Sat.* 8.56 – 71.

¹¹⁸ Hyland 1990, 208.

¹¹⁹ Hyland 1990, 214.

¹²⁰ Harris 1972, 210.

¹²¹ Harris 1972, 210.

grazing on grassy fields, especially after Nero.¹²² The most famous horses were even commemorated, such as the African mare Speudusa (Hasty) who was honoured with her own tombstone.¹²³ Unsuccessful horses, on the other hand, could live a poor retirement, sent into heavy labour such as at mills where they rotated the millstone.¹²⁴ It is clear that numerous horses survived the dangers of the circus, yet the chances that a horse completed his racing career without injury are slim. It is likely they had medical attention at some point in their racing career in order to heal minor injuries.

The exact number of horses racing at any point of time in the Roman Empire is difficult to determine, particularly when the aristocracy had their own private chariot horses and racecourses. It has been determined, however, that there were approximately 1,100 competing in the Circus Maximus in a single day.¹²⁵ Moreover, there were races held all over the Roman Empire, some almost as large as the Circus Maximus, which means that there were many horses dedicated to racing throughout the Empire. Considering that not every horse intended for the circus raced, a large number of equines throughout the Roman Empire were then dedicated to the circus.

Injuries

During the course of a race, charioteers pushed their teams hard in order to win. The charioteers were very skilled and knew several tactics to accomplish a victory, though these manoeuvres were not without danger or risk to the drivers and horse teams.

¹²² Ov. *Tr.* 6.8.19; Cic. *De Sen.* 5.14; Dio Cass. 41.6.1

¹²³ *CIL* 6.10082.

¹²⁴ *Anth. Pal.* 9.20.

¹²⁵ Junkelman 2000, 109. Junkelmann estimates that there were approximately 700 – 800 horses required for chariot racing and then another 200 – 300 involved either in other types of equine entertainment (such as acrobatics and other types of racing) or for use by the staff.

In order to understand the importance of an animal doctor within the circus setting, we will discuss the injuries that typically occur in such a sport.

The best tactic, which is still employed today, was to remain as close to the inside of the turns as possible.¹²⁶ A driver attempted to push in front of an opponent just before the *spina*, taking advantage of the fact that their opponent did not want to add the extra distance to the track by driving side by side around the turn.¹²⁷ Yet keeping close to the *spina* and turning at almost 180 degrees meant that one could easily cause the horses to crash into the turning post. The *funalis*, the trace horse, was not yoked to the chariot, but attached by a rein to the center horses.¹²⁸ A chariot driver had to trust the inside *funalis* to shorten and lengthen its stride as it directed the other horses around the turn. These horses were injured more often than their teammates, as the strains of rapidly lengthening and shortening their stride meant that the horse endured more strain on its muscles, joints, and tendons.¹²⁹ The outside *funalis* was required to change his stride constantly and give extra bursts of speeds around the *spina*.¹³⁰ The inside *funalis* was at a high risk of colliding with the *spina*, and being pinned by his teammates, the two yoke horses and the outside *funalis*.¹³¹ This situation could cause any number of injuries. The lucky horse received only minor injuries of sprains, bruises, and lacerations. The unlucky horse could end with broken limbs or even be killed. In the case of broken limbs, there is little that

¹²⁶ Auguet 1972, 129.

¹²⁷ Auguet 1972, 129.

¹²⁸ Hyland 1990, 206.

¹²⁹ Hyland 1990, 206.

¹³⁰ Hyland 1990, 206. This only occurred in the *quadrigae* races as in the other races where there were a different number of animals such as in the *bigae* races.

¹³¹ Hyland 1990, 206.

could be done to save the equine and the Romans likely put these animals down.¹³² Horses with sprains and bruises, however, could be cared for with poultices, bandages, and rest before they were able to race again. Mosaics showing racehorses with bandages around their legs provide evidence to the fact that ruptured and fevered tendons were common among the circus equines.¹³³ Someone experienced in horse medicine would know the length of convalescence the horse required in order to heal from such injuries. Sprained tendons require poultices and rest for six months before the animal is capable of racing again.¹³⁴ Bruised limbs, while not as serious, still require at least a week to heal, particularly if the knees become bruised. Major bruising, however, could result in haemorrhaging and possibly even death if the haemorrhage was not found.¹³⁵ Racing a horse before a bruised knee had time to heal could result in a lame animal that would likely never race again. Someone well versed in horse physiology would need to examine the animal's legs before it raced again to ensure that it was sound. The groomsmen were capable of applying poultices and wrapping limbs, as many modern owners do today, but an animal doctor had recipes for the poultices to reduce swelling and inflammation.

Spectators became excited at the occurrence of a *naufragium*, or crash.¹³⁶ As is portrayed in the 1925 movie *Ben-Hur: A Tale of Christ*, the *naufragia* were dangerous and often occurred when racing around the *spina*. One way to force an adversary to crash

¹³² If a modern racehorse breaks its legs, unless its owners have an unlimited amount of funds, the animal is put down. Even in the instance when the horse's owners have ample funds to cover the high veterinary bills, the equine may not survive as it is at high risk for laminitis.

¹³³ Hyland 1990, 226. The mosaic at Sousse is one such mosaic and shows the horses' legs wrapped as modern racehorses' limbs are in order to provide support especially since their limbs were far more susceptible to injury.

¹³⁴ Black 1988, 589.

¹³⁵ Black 1988, 97.

¹³⁶ For accounts of *naufragia*, see Sid. Apoll. *Epist.* 23; Sil. *Pun.* 202 – 456; Cassiod. *Var.* 3.51.7; Pliny *HN* 28.237.

was to break his axle by driving the chariot right alongside his.¹³⁷ The horses crashed into the sand and the chariot shattered sending splinters flying in all directions.¹³⁸ Horses not fatally harmed were seized with panic, and could start rearing and even attempt to flee the wreckage. In the case the horse reared, his legs could become tangled in the straps and even parts of the chariot itself. Equines could receive broken bones, lacerations, bruises, and sprains from these accidents, much as was described previously regarding hurtling into the *spina*. If two chariot teams were to collide, the potential for injury increased. In order to stop the chariots from piling up, slaves rescued the charioteer, caught the horses, and removed the damaged chariot.¹³⁹

In modern training facilities, it is common for two-thirds of the animals to have leg issues.¹⁴⁰ As stated before, the legs and feet of the horse are two of the most important parts of the horse's anatomy; without its legs, the horse cannot survive. In modern race horses one of the most common injuries are fractures of the proximal sesamoid bones.¹⁴¹ During one race, veterinarians noted that there were 82 fractures and dislocations of limbs in 58 horses.¹⁴² Considering that chariot racing was rather more dangerous than modern horseracing, the rate of injury was likely to have been higher. Pelagonius spends many chapters discussing injuries to the legs and shoulders, many of which could only be a result of chariot racing.¹⁴³ The legs of the horse suffered also from

¹³⁷ Auguet 1972, 131.

¹³⁸ Auguet 1972, 131.

¹³⁹ Auguet 1972, 132.

¹⁴⁰ Hyland 1990, 204.

¹⁴¹ Siakalis and Desiris 2004, 103. The sesamoid bones are the bones embedded with a tendon. These bones are usually found in horses around joints such as the knee. The proximal sesamoid bones lie on the forefoot of the horse across from the fetlock (metacarpophalangeal).

¹⁴² Siakalis and Desiris 2004, 103. Ueda *et al.* 1993, 707.

¹⁴³ Hyland 1990, 204.

the constant pounding on the hard surface of the racetrack.¹⁴⁴ In order to stop the concussive force on the joints, the surface sand needed to be rather thick, which was not feasible for a racetrack, as was previously discussed. For this reason, someone knowledgeable concerning horse health would have to examine the limbs after the race to ensure there was no bruising and to prescribe treatment, if necessary.

The constant pounding on the hard earth could cause the horses' hooves to become abraded.¹⁴⁵ Soft hooved horses were immediately rejected from racing, as they could quickly become a liability no matter how fast they could run.¹⁴⁶ Horses from dry climates with ample sand and gravel generally have harder hooves than those from humid moist climates.¹⁴⁷ This is the reason why racehorses from Numidia and Spain were favoured over the Gaulish horses. The veterinarian author Pelagonius provides numerous treatments for this condition, as well as methods of improving the hoof itself.¹⁴⁸ In this situation, Cato provides the best advice, which is prevention. Cato's recipe for hardening hooves is sage advice, followed by the veterinary authors long after he had written it.¹⁴⁹

The last lap was the most intense, as charioteers pushed their teams hard to gain the lead. Indisputably, many races were won within the last lap.¹⁵⁰ At a certain point, the charioteer stopped thwarting his opponents and focused on urging his equines on past all their competitors.¹⁵¹ At this point, the impassioned charioteer whipped his horses vigorously, in order to encourage them. Whipping a horse need not cause immediate

¹⁴⁴ Hyland 1990, 204.

¹⁴⁵ Hyland 1990, 225.

¹⁴⁶ Hyland 1990, 226.

¹⁴⁷ Hyland 1990, 226.

¹⁴⁸ Hyland 1990, 226.

¹⁴⁹ Cato (*Agr.* 5.7) advises the agriculturalist to cover the hooves in pitch; although his advice was mostly for livestock, horses also benefitted from such a treatment.

¹⁵⁰ Auguet 1972, 131.

¹⁵¹ Auguet 1972, 131.

injury. Although it is possible that numerous equines received lacerations as a result of the charioteer's fervour, modern jockeys use whips with few injuries to the animals. Horses are trained to respond to the whip and at times just seeing or hearing such an instrument is encouragement enough. Since a driver could be neck to neck with his opposition, his whip could accidentally hit sensitive areas of his opponent's horse, such as the eyes. Pelagonius, indeed, has a section on treating eyes that were injured by a whip.¹⁵² There was also the case, which was common, when the driver flogged the horses of his neighbour.¹⁵³ In this circumstance, the charioteer did not hold back, as these equines were not his own and not in his care. These lacerations required care, particularly if the horse was whipped hard enough to break skin, so that the animal would not suffer from infections.

The equines also suffered eye injuries from the dust and sand. During the filming of the race scene in the 1959 version of *Ben-Hur*, dust was continuously thrown up into the faces of the actors and crew.¹⁵⁴ In order to aid the crew, special contact lenses were created.¹⁵⁵ The Romans did not have such an advantage. Ancient authors even commented on the dust; Ovid notes the dust in the Circus Maximus, and even advises men on ways of taking advantage of such situations in order to meet girls.¹⁵⁶ Juvenal comments on how the first horse creates a cloud of dust behind him.¹⁵⁷ Dust in the eyes can cause irritation, and sometimes even an infection. The veterinary author Pelagonius provides several different cures for inflammation cause by sand in the eyes.¹⁵⁸

¹⁵² Pelagonius 30.413; also see Pelagonius 30.410, 411, 412.

¹⁵³ Hyland 1990, 224.

¹⁵⁴ Humphrey 1986, 83.

¹⁵⁵ Humphrey 1986, 83.

¹⁵⁶ *Ov. Am.* 3.2.41.

¹⁵⁷ *Juv. Sat.* 8.61.

¹⁵⁸ Pelagonius 30.430, 438.

Pelagonius also spends an entire chapter discussing cures for the eye. In addition to cures for eye injuries caused by dust, there are treatments for eyes that were struck, a situation that was caused by a whip, also well as scars on the eyes, ruptured eyes, and wounded eyes, all of which were possible injuries that resulted from participating in the circus.¹⁵⁹

At times, enthusiastic horses may not listen to the commands of the driver, and he has to pull hard on the reins. The snaffle bits utilized by the charioteers were vicious and meant to command the immediate attention of the equines.¹⁶⁰ Curb bits, called *lupatus* by the Romans, had sharp teeth and cut sharply into the mouth.¹⁶¹ The snaffle was the more common bit for chariot racing, as curb bits were very harsh. A bruised mouth was likely to be very common among racehorses. In the pressure of the race, there could be tremendous pressure on the reins, particularly if the charioteer tries to hold the horses back for a round; and as a result, the horse could cut his tongue on the bit, a cure for which Pelagonius discusses.¹⁶²

Injuries to the driver and horses could be caused by a loose horse tail swishing around. To prevent such injuries horse tails were bound, as is common in modern racing, so that loose tail hairs were not caught in the chariot. The tail then effectively became a club and could injure another horse.¹⁶³ In order to prevent disaster, circus horses had surgery to remove part of the tail from the vertebrae so that the horse did not have the muscle necessary to switch its tail.¹⁶⁴ It is likely that a veterinarian associated with the faction performed this procedure on all the racehorses. The horses whose tails had been

¹⁵⁹ Eyes that were struck: Pelagonius 30.410, 411, 418, 422, 439; scars on the eyes 30.413; ruptured eyelids: Pelagonius 30.415; and wounded eyes: Pelagonius 30.433, 441.

¹⁶⁰ Hyland 1990, 224

¹⁶¹ Hyland 1990, 225.

¹⁶² Hyland 1990, 224. See Pelagonius 5.66.

¹⁶³ Hyland 1990, 225.

¹⁶⁴ Pelagonius 22.292.

stabilized in such a fashion were rejected from the military and any veterinarian who dealt with such a procedure was clearly associated with the circus, as is the case with Pelagonius who describes the procedure in detail.¹⁶⁵

In times of stress, horses are known to seize up, that is, the muscles of their hindquarters become rigid, and their urine appears bloody. This reaction is known as azoturia, or more commonly, tying up syndrome.¹⁶⁶ It is caused by the build-up of lactic acid from over-exertion, as when humans become cramped after running for too long. The red colour of the urine is due to the chemical action of myoglobin, a component of blood.¹⁶⁷ Pelagonius, although he provides a rather garbled account of the symptoms, does accurately recognize this as a condition.¹⁶⁸ This condition is commonly observed among horses that are raced too frequently, such as chariot horses made to race several times a day.¹⁶⁹

The Veterinarian in the Circus

The interest in chariot races fostered an interest in animal medicine.¹⁷⁰ As observed above, many different injuries could occur during such races. An individual who could ensure a favoured horse raced again was well rewarded. A faction likely paid large sums of money to individuals who could prevent or treat the injuries and illnesses of their racing teams. The Emperor Lucius Verus, himself, maintained correspondence with the provinces concerning the health of his horses in order to ensure that they maintained their health.¹⁷¹ The day before the race, a *Probatio Equorum* (trial of the

¹⁶⁵ Pelagonius 22.292.

¹⁶⁶ Hyland 1990, 226.

¹⁶⁷ Hyland 1990, 226.

¹⁶⁸ Pelagonius 8.141.

¹⁶⁹ Hyland 1990, 227.

¹⁷⁰ Swabe 1999, 72

¹⁷¹ Auguet 1972, 136.

horses) was held in order to determine which teams raced the next day.¹⁷² It is possible at this time that a veterinarian came and examined the soundness of the equines, as in modern races, checking to ensure that they were all in top condition.¹⁷³ The evidence for veterinarians on the tracks, however, is limited at least compared to the military. Pelagonius, one of the veterinary authors, discussed in-depth the injuries that were only relevant to chariot horses, as was previously discussed. In addition, papyrological evidence and ostraka also reveals the existence of such individuals.

Medical attention was provided to all the beasts of the entertainment industry. On an inscription in Ostia, one man claimed to be a *medicus ludi* (doctor of the games), and he took care of not only the gladiators, but also all the animals involved in the games.¹⁷⁴ I will focus, however, on the chariot horses.

Pelagonius Saloninus was a veterinary author who is believed to have written in the second half of the fourth century AD.¹⁷⁵ He dedicated his work to one Arzygius, who was tentatively identified with Betitius Perpetuus Arzygius in *consularis Tusciae et Umbriae* from AD 366.¹⁷⁶ He is the first author who wrote a veterinary treatise in Latin.¹⁷⁷ It is believed that he had an association with the town Salona in Dalmatia based on his last name, although beyond the name ‘Salonius’ there is no other connection with the province.¹⁷⁸ In consideration of his bilingualism, Pelagonius likely lived along a border of Latin and Greek speaking areas.¹⁷⁹ It is likely that Pelagonius lived in an urban

¹⁷² Rawson 1981.

¹⁷³ Hyland 1990, 219.

¹⁷⁴ *CIL* 6.10173.

¹⁷⁵ McCabe 2007, 158.

¹⁷⁶ *CIL* 6.1702; Adams 1995, 4.

¹⁷⁷ McCabe 2007, 158; Fischer 1981, 215.

¹⁷⁸ McCabe 2007, 158; Fischer 1981, 219.

¹⁷⁹ McCabe 2007, 159. He originally wrote in Latin, but referred to Greek authors such as Apsyrtus.

setting as he provides numerous references to urban landscapes.¹⁸⁰ Pelagonius relied heavily on the works of Columella, Celsus, Apsyrtus, and Eumelus, along with anonymous individuals who may have been horse-owners or even veterinarians.¹⁸¹ There is much controversy over Pelagonius, whether he was a practicing veterinarian or an aristocrat interested in such knowledge.¹⁸² According to one modern veterinarian, Pelagonius was a layman.¹⁸³ Classical scholars, however, generally believe that he was a veterinarian.¹⁸⁴ Their opinion is supported by one passage within the works concerning lumbago:

*facilius enim ab eo vel intelligitur vel curatur animal, qui frequenter dolorem substinet similem, sicut te ita intelligimus et nudum frequenter inspeximus renibus dissolutum.*¹⁸⁵

If somebody often suffers from a similar complaint, he will more easily recognize and treat this condition in an animal; likewise, I did recognize this condition in you and have often looked at you while naked and affected with stiffness in the lumbar region.

On other occasions, Pelagonius discusses *mulomedici* as if he were not one of them. As was the case when he was discussing dry skin on the horse:

*sane cui pellis aruerit et cibum non sentit (quod genus passionis mulomeidci coriaginosum appellant.*¹⁸⁶

Indeed, the one whose skin is dry and who does not pay attention to its feed (which type of affliction the horse-doctors call *coriaginosus*).

Yet there are other cases of medical professionals using similar expressions, as is the case with Theodorus Priscianus.¹⁸⁷ Vegetius argues that Pelagonius was not a professional

¹⁸⁰ Pelagonius 271, 211; *Hipp. Berol.* 38.10.

¹⁸¹ Fischer 1981, 220 – 221.

¹⁸² Adams 1995, 4.

¹⁸³ Fischer 1981, 219.

¹⁸⁴ Fischer 1981, 220.

¹⁸⁵ Pelagonius 216; translation by Fischer 1981, 220.

¹⁸⁶ Pelagonius 26; translated by McCabe 2007, 160.

¹⁸⁷ Langslow 2000, 126.

veterinarian in that he omitted symptoms and causes of diseases.¹⁸⁸ McCabe suggests that these phrases are propaganda for Vegetius' own work designed to discredit Pelagonius, a common trope among Roman authors.¹⁸⁹ Pelagonius himself indicates that he had practiced treating animals, although it is unknown whether this was in capacity as an animal doctor or as an owner. He writes:

*Mihi sufficit sanare quod amo contentusque sum me ex tua claritate florere.*¹⁹⁰

It is enough for me to cure that which I love and I am content to be filled with your renown.

In either case, Pelagonius had a large impact on the Greek veterinary authors; not only was his work translated into Greek, but a large portion of the *Hippiatrica* is Pelagonius' work.¹⁹¹ After Apsyrtus and Hierocles, Pelagonius has the largest portion of material in the *Hippiatrica*.¹⁹²

Pelagonius borrowed his style from Apsyrtus, writing in an epistolary form.¹⁹³

Most of his addressees are from the upper classes of society, although none of their identities has been ascertained.¹⁹⁴ The reason Pelagonius appears in this chapter as opposed to the other chapters is that it appears that this author had a strong association with the circus, as was observed when discussing injuries and their cures.¹⁹⁵ The treatise begins with a discussion of the age at which a horse should race in the circus, and how

¹⁸⁸ Vegetius *Ars Vet. prol.* 2 – 3.

¹⁸⁹ McCabe 2007, 158.

¹⁹⁰ Pelagonius *prol.* 2.

¹⁹¹ Fischer 1981, 219; McCabe 2007, 157. In one manuscript, he contributed 385 excerpts out of 1223, whereas Apsyrtus contributed 372 excerpts, although these are significantly longer.

¹⁹² Fischer 1981, 219.

¹⁹³ Fischer 1981, 220; McCabe 2007, 160.

¹⁹⁴ Fischer 1981, 220.

¹⁹⁵ Pelagonius 17, 190, 369, 464, 465. He also covered general horse ailments including fevers, coughs, and fistulous withers. The most glaringly obvious lack of information within Pelagonius' work was noted by Fischer in that he does not discuss issues regarding breeding, such as sterility, abortion, or birth (Fischer 1981, 200).

age can be determined by a horse's teeth.¹⁹⁶ He also addresses individuals who were *auriga privatus* (amateur charioteers), such as Astyrius.¹⁹⁷ Pelagonius, however, implies that his cures are more important for public charioteers than for *auriga privatus*.¹⁹⁸ This indicates that he was well acquainted with track injuries and could possibly have been a track vet.

Several chits found at Oxyrhynchus in the fourth century AD provide further evidence for veterinary medicine at the racetrack. These *ostraka* are all receipts for wine given to a veterinarian in exchange for his services on the track. It is important to note that all of these were written by the προνοητής in regards to payments for services rendered for chariot races.¹⁹⁹ The first ostrakon dated the 23 – 28 or 24 – 29 of December during the fourth century indicates:

Κυριακός Θεέωνι[ω] χ[αίρειν]
 δός Θωνίω ἵπποιάτρῳ
 Οἴνου ἀπὸ Χοίαχ κζ
 ἡμερουσίως ἕως Τῦβι β
 Κνίδια ἕξ, γ[ιν.] ς. Κυριακός.²⁰⁰

Cyriacus to Theon, greeting.
 Give Thonius, horse-doctor,
 six measures of wine, = 6 (cnidia),
 daily from Choiak 27 to Tybi 2.
 Cyriacus.

This inscription likely indicates that Thonius was to receive six measures of wine over the six days he was hired for the Tybi races. The Tybi races fell during the winter

¹⁹⁶ Pelagonius 1.

¹⁹⁷ Pelagonius 163.

¹⁹⁸ Pelagonius 163.

¹⁹⁹ Shelton 1988, 73.

²⁰⁰ Ashm. G.O. 258/Shelton 1988, 81.

solstice, as can be observed by the dates mentioned above.²⁰¹ Thonius was mentioned in another receipt, which also provides him with wine for his services:

[Κυριακός] Θέωνι χ[αίρειν].
[δός Θω]νίω ἵπποιάτρῳ οἴ-
[νου κνίδ]ια δύο, κνίδ[ια] β.
Κ]υριακός.²⁰²

Cyriacus to Theon, greeting.
Give Thonius, horse-doctor,
two measures of wine, 2 cnidia. (date).
Cyriacus.

This ostrakon was dated c. December 27 to January 2, which was around the same time of year as the previous ostrakon examined. It is possible then that Thonius was hired in two different years as a veterinarian for the Tybi racetrack. It is interesting to note that in one case the trainer only received two cnidia of wine during the same time period, which is the same amount of wine that the charioteer also received.²⁰³ The chariot technician, however, only received half as much as the horse doctor did.²⁰⁴

There is a third chit, which states:

Κυριακός Θέωνι προνο[ητῆ] χ[αίρειν].
δός Θωνίω ἵπποιάτρῳ
Οἴνου κεράμια πέντε,
Κερ[άμια] ε, ἀπὸ Μεχεῖρ κς
ἕως λ. Κυρακός.²⁰⁵

Cyriacus to Theon, caretaker, greeting.
Give Thonius, horse-doctor,
five jars of wine, 5 jars,
from Mecheir 26 to 30.
Cyracus.

This receipt, unlike the others was not dated to December, but for February 20 – 24 or 21 to 25. Thonius' services were then required by the official in February as well, when it is likely that another race was held. Consider these three receipts, it is clear that at the

²⁰¹ Shelton 1988, 74.

²⁰² Ashm. G.O. 330; Shelton 1988, 105.

²⁰³ Ashm. G.O. 280/Shelton 1988, 74, 102.

²⁰⁴ Shelton 1988, 75.

²⁰⁵ Ashm.G.O. 248/Shelton 1988, 112.

circus games there was a veterinarian hired by the presiding official to provide immediate health care to the horses when an incident occurred.²⁰⁶

Further evidence of veterinary involvement in the circus is from one of the *Oxyrhynchus papyri*. It records the purchase of a *μαλάγμα* (ointment) on behalf of the greens. The first part of the papyrus reads:

Ἐδόθη[η] δι[ὰ] τοῦ λαμπρ[ουτάτου] Ἀναστασίου τραπεζ[ίτου] ὑπὲρ τιμ[ῆς]
μαλάγα[τος] ἀγορασθ[εντος] εἰς χρεῖ[αν] τῶν ἵππ[ων]
τοῦ δημοσί[ου] κίρκου μέρ[ους] Πρασίνων ἐπὶ τῆς πεντεκαίδεκάτης ἰνδ[ικτίου]ος
στρατηγί[ου] α νομισμάτιον ἓν παρά κεράτια
τέσσερα...²⁰⁷

It was purchased on behalf of *clarissimus* Anastasius the banker on account of the payment of ointment having been purchased for the need of the public circus horses of the Green faction in the fifteenth year of the Indian praetor [AD 522] for one solidus less four carats.

A veterinarian likely recommended such an ointment. *Μαλάγματα* were not uncommon for race horses, which is not surprising considering the number of bruises, sprains, and strains these equines underwent. As Hyland indicated, two-thirds of the racehorses in modern stables typically have leg issues, which are generally treated with poultices, wraps, and ointments. The *Hippiatrica* provides numerous recipes for ointments for racehorses. These recipes include, *ποῦλβερ κουδριγάριον* (chariot-racing powder); *ἄλειμμα κουδριγάριον* (chariot-racing ointment); *κατασκευὴ τεθίππου τοῦ λεγομένου κουδριγαρίου* (preparation of the four-horse chariot called *quadriga*); *σύγχρισμα ἄρματος, ὅπερ κουδριγάριον καλεῖται* (salve of the chariot or *quadriga*).²⁰⁸

A papyrus provides evidence that the factions hired a veterinarian to attend to all their animals. The papyrus, dated to the third or fourth century AD, lists the personnel

²⁰⁶ A fourth receipt that was found is believed to concern the provision of wine as payment for veterinarian; however, the first part of the chit is illegible. See Shelton 1988, 131 – 132.

²⁰⁷ *P.Oxy* 1.0145.

²⁰⁸ *Hipp. Berol.* 130.99, 173; *Hipp. Paris.* 103 – 104.

who belonged to a stable faction.²⁰⁹ It lists in order charioteers, starters, masseurs, horse-doctors, and people who pour. The stable factions, clearly, then each hired a veterinarian to tend the horses.

From the evidence provided above, it is clear that there were veterinarians specifically involved with the races. Pelagonius may not have been a veterinarian, but he provides a great deal of information regarding the injuries that occurred on the track along with other common injuries. The horse doctor, Thonius, appeared several times in receipts, and he earned a respectable amount to work for the races. There were veterinarians who provided services for the factions even on days when there were no races, as shown by the receipt for the ointment quoted above. The evidence suggests that the circus veterinarian was generally an individual who could be hired for the days of the race, in the same manner that paramedics are hired in modern society to oversee sports events. These individuals were either working for the faction when there were not any races, or they were private professionals who hired out their services when they were required by the factions.

Conclusion

Chariot racing was an important sport in the Roman world, to both the people and the aristocracy. It helped people feel involved in their society, particularly after most political rights were removed after the fall of the Republic. Charioteers raced under four different factions, which were given the colors Blue, Green, White, and Red. The prize money for racing in the top races was significant and encouraged the factions to produce racing teams who could outrun all the competitors. The horses who raced in such events, particularly in famous arenas such as in the Circus Maximus in Rome, were some of the

²⁰⁹ SB 14 12059; Humphrey 1986, 516 n. 122.

top well-bred equines. The best racing horses were not easy to produce and so a prizewinner was not casually culled if it became injured, but an effort was made to ensure that the animal could race again. Although veterinarians were not as famous as the charioteers or the horses, they were vital for providing health care for the numerous equine ailments that resulted from racing. A veterinarian was likely hired at the stables of each of the individual factions. Veterinarians were also hired at race-meets to deal with the injuries immediately after they occurred. The race industry had ample funds to spare for the best possible care for their horses, including medical care. The factions turned to professional veterinarians for their knowledge of medical treatments of horses.

Chapter 4: The Private Veterinarian

Introduction

Each of the previous chapters focused entirely on one facet of the Roman world: the military, the *cursus publicus*, and the circus. In examining each of these areas of society, it becomes evident that texts on animal medicine focus on equids. The areas previously examined, however, did not cover every area of society in which animals were associated. The aristocracy owned horses for pleasure riding, private racing, hunting, and pulling carriages. The Romans sent the horses that were inadequate for the circus, hunting, or military, to the mills, or used them, like mules and donkeys, for private and public transportation.¹ Equids were not the only important animals in Rome, however; oxen, sheep, and dogs were integral to ancient society, particularly with regards to agriculture.²

Roman farms included both *latifundia* (large estates) as well as small plots owned by independent agriculturalists. The farmers and overseers were concerned with livestock and had some knowledge concerning health care of animals. These individuals, while well informed about animal care, particularly the prevention of diseases, were not veterinarians.³ When an animal was ill or injured, these agriculturalists attempted to cure the beast through remedies either passed down to them or learned through experience, but some cases required professional aid. As observed previously, the records of veterinarians reveal that the government employed many members of this profession, but

¹ *Juv. Sat.* 8.66 – 67; *Apul.* 9.11 – 13; *Columella Rust.* 6.37.1; Toynbee 1973, 184.

² MacKinnon 2004a, 11; Fischer 1981, 215.

³ Peters (1998, 36 – 38; 85 – 89; 142 – 146; 176 – 177) provides in-depth detail concerning the medical treatments known by farmers and shepherds.

the farmers and private animal owners did not have full access to these public resources. The wealthy individuals who owned *latifundia* might have the means to afford the full-time services of an animal doctor, although they frequently hired veterinarians as occasional specialists. The small landowner, on the other hand, sought aid when the benefits of treatment outweighed the costs. Owners attempted to gain as much profit from the beast as possible, and under some circumstances, it was more profitable to obtain proper health care for an animal. In other instances, it was more lucrative to sell the farm animal as soon as it could be placed on the market either alive or slaughtered for its meat.⁴ In a situation where it was feasible to save the animal, a veterinary surgeon was often necessary.⁵

The veterinarian was important not only within the military, *cursus publicus*, and circus, but in the agricultural and private sectors of the Roman world. This chapter will examine the role of professional veterinarians in treating privately owned livestock and domestic animals. I will provide evidence for the role of the veterinarian in the private sector of society. This chapter will examine the types of livestock kept and the basics of animal husbandry; the veterinarian in Roman literary sources, especially from

⁴ It is important to recognize that the Roman government legally prevented individuals from selling ill animals, and so the owner had to wait for the animal to appear well before it was placed on the market (Georgoudi 1990, 298 – 299; Varro *Rust.* 5.2.10 – 11).

⁵ In addition to economic reasons to save the animal, there were also emotional motives. The Romans felt affection for their animals, and the wealthy, upper classes had the luxury to show this fondness (Bodson 1986). In order to treat their beloved animals, the upper class Romans called in the best aid they could. The lower classes attempted to save the animal, but without a great amount of disposable income, they were limited in the treatments and medicines they could afford. There are numerous examples of emotional attachment for animals, including Vegetius, a rather wealthy horse owner who cherished his horses. The famous story of Caligula attempting to confer the title of senator upon his horse Incitatus, although rather fantastical, reveals the Emperor's love of the racehorse. Horses were not the only animals admired or cherished, however; a brief scan of Varro reveals a love even for the oxen. Archaeozoology provides evidence for small lapdogs, which would not have survived without the support and care of an owner (MacKinnon 2010, 302).

agronomists and *Hippiatric* authors; the legal evidence; and finally the physical evidence from both epigraphy and archaeology.

The Animals and Animal Husbandry

Horses are the central focus of the veterinary treatises, as they were important to public sectors and to the upper class as mounts for hunting and transportation outside of the city boundaries. Although the *Hippiatrica* and other veterinary works targeted the treatment of the horse, other animals were important to the Romans. The beasts most commonly owned by Roman farmers were the ox, sheep, mule, and donkey.⁶ By the late Roman Empire, the term *mulomedicina* (veterinary medicine) referred to the treatment of all large animals, and possibly even some of the smaller animals.⁷ I will briefly discuss the importance of livestock in the Roman Empire in general terms, particularly in regards to health care and animal husbandry.⁸

As previously mentioned, the *Hippiatrica* focused primarily on the horse. A part of this emphasis was due to the importance of the equine in Roman society as was observed in the previous chapters. The other factor was, as Varro wrote, “de medicina vel plurima sunt in equis et signa morborum et genera curationum” (“concerning medicine there are many signs of sickness and kinds of cures for horses”).⁹ The horse is a rather finicky and delicate animal, prone to a numerous diseases, ailments, and injuries.

⁶ Archaeozoological evidence indicates that oxen, cattle, caprines, and pigs were the predominant animals in Roman Italy (MacKinnon 2004b, 60). Caprines are from the subfamily *caprinae*, used here to refer to domestic goats and sheep.

⁷ Adams 1992, 94. Vegetius begins his work with general terms regarding veterinary medicine of animals, but then focuses his work on horses, and then addends a chapter on oxen.

⁸ For more information regarding animal husbandry, see Kron 2008a, 176 – 185; Ryder 1983; Georgoudi 1990. The health of the livestock was a concern not only to the farmer, but also to the city authorities who had to ensure a regular supply of foodstuffs (Georgoudi 1990, 298 – 299).

⁹ Varro *Rust.* 2.7.16.

Oxen, caprines, and ruminants are much hardier.¹⁰ Additionally, livestock are not generally kept for as long a period of time as the horse and can be sold for meat in cases where injuries cannot be treated. The Romans preferred not to consume horse meat, but beef and mutton were acceptable meat products.¹¹ Therefore, an ailing ox or caprine was still profitable as a meat, whereas the by-products of the horse produced less revenue.¹² Consequently, the emphasis on veterinary medicine was skewed towards equines, which were more expensive, had longer life expectancies and were worth less after their deaths. Domestic animals, however, appear in the veterinary treatises, albeit briefly.¹³ Livestock were important to the agrarian society of Rome and they required constant care to thrive.

Oxen were an important part of the farming economy. The Romans utilized these quadrupeds for ploughing and carrying heavy loads, as a food source, and for sacrifices.¹⁴ Vegetius praises the oxen for their usefulness in cultivating and pulling wagons (for farm labour among other duties) as these were hardy animals, capable of demanding work.¹⁵ Oxen were vital throughout most of the Roman Empire for maintaining the food supply both for humans and for many other animals.¹⁶ Some oxen were slaughtered very young in order to provide veal to the populace, especially the soldiers.¹⁷ According to

¹⁰ Kron 2008a, 179; Columella *Rust.* 7.2.2.

¹¹ Kron 2008a. The hides and bones of horses could be utilized for various means. The Romans ate most livestock, with the exception of the horse, and if the animal could not be treated, the best situation was to sell it as food. In regards to horsemeat, the Romans ate it in a case of an emergency such as when Germanicus' fleet was destroyed in the North Sea (Tacitus *Ann.* 2.24). The Romans viewed eating horsemeat as unclean (Tacitus *Hist.* 4.60). Although it appears that in the Northern provinces, horseflesh was still eaten by Germanic tribes, although Christians attempted to stop such practices (Deschler-Erb 2008, 3). For further discussion on the topic of horseflesh, see Adams 1992, 89.

¹² Other parts of the horse could be utilized, such as the skin for leather.

¹³ *Hipp. Paris.* 629 (concerning the teeth of the livestock); *Exc. Lugd.* 160.19 (concerning watching sheep, goats, and dogs for disease); *Hipp. Cant.* 33.1 (concerning the kidneys of oxen); *Hipp. Cant.* 99 (on a number of ailments that oxen suffer); *Exc. Lugd.* 120 – 130 (on oxen); *Hipp. Paris.* 250 (on oxen).

¹⁴ Toynbee 1973, 152; Kron 2002, 60 – 61; Peters 1998, 25 – 70.

¹⁵ Vegetius *Ars Vet.* 3 prol. 3.

¹⁶ Vegetius *Ars Vet.* 3 prol. 3-5.

¹⁷ MacKinnon 2004a, 80.

archaeozoological information, the majority of cattle were killed around three or four years of age, and likely were on a rotating system where they worked for a few years before being slaughtered.¹⁸ In some areas of rural Italy, however, oxen lived longer as they were employed for pulling heavy loads and ploughs as opposed to a food source.¹⁹ Like horses, oxen had professional trainers who broke and trained them.²⁰ Working oxen were exposed to difficult labour through their lives, and consequently cattle bones reveal a high incidence of stress injuries on their leg bones.²¹ Romans treated oxen humanely; the upper class had stables for the oxen with covered quarters for the winter and open quarters for the summer.²² The stalls provided for the oxen were large so the herdsman could easily move around the beast.²³ The animals were given appropriate diets in order to ensure proper nutrition, and the agricultural authors recommend that the beasts had fresh water available.²⁴ This extensive care for the oxen included attention to their medical care. Columella provides detailed information concerning the prevention and treatment of various ailments for oxen.²⁵ The remedies utilized by the farmers and shepherds had been transmitted through generations of Italian and Punic agriculturalists

¹⁸ Kron 2002, 61; MacKinnon 2004a, 80; Georgoudi 1990. The reason for the bias towards the young age is likely that excavations were done mostly on villas and estates where cattle were being raised for the purpose of meat (Kron 2002, 60 – 61). In a study of the countryside, MacKinnon showed that the rural cattle lived for a longer duration of time due to their capacity as work animals (2004, 301).

¹⁹ MacKinnon 2004a, 80; Kron 2002, 60.

²⁰ Toynbee 1973, 152.

²¹ MacKinnon 2004a, 242.

²² Columella *Rust.* 1.6.4 – 6. Furthermore, as a prophylactic measure the ancients ensured that no bones entered into the oxen's manger (Paxamos *Geoponica* 17.13).

²³ Walker 1973, 325.

²⁴ Varro *Rust.* 2.1.16; Columella *Rust.* 6.3.2 – 8. Varro recommends that the oxen should eat more than hay but also barley, beans, and lupines (*Rust.* 2.1.16). Before the bulls were bred, they were given more feed to increase their vigour (*Rust.* 2.1.16). Columella agrees that oxen should not only be fed hay, but that green fodder is the best nutrition, and that the oxen thrive on bundles of vetches and chickpeas (*Rust.* 6.3.2 – 8). Columella provides extensive details on the feed throughout the year to ensure maximum nutrition with the foods available (*Rust.* 6.3.4 – 8). The Romans, ironically, had better feeding regimes for their oxen than modern feedlots (Fox 1984, 85). In order to prevent stomach conditions, the cowherds provided fresh water to the oxen (Columella *Rust.* 6.23.1). Note that stale or standing water can become contaminated.

²⁵ Columella *Rust.* 6.5 – 20.

and indicate a high awareness of the needs and requirements of the oxen.²⁶ One of the foremost issues with livestock is foot rot caused when the foot is immersed constantly in fluids.²⁷ The ancient agriculturalists recognized this fact and encouraged herdsmen to keep the floor of the oxen stalls clean and dry.²⁸ A potion, in which olive oil was one of the main ingredients, was given to the oxen four times a year as a means of ensuring their health, in the same manner as vaccinations are given to modern cattle.²⁹ In order to prevent the bite of gadflies, during the summer, the Romans grazed the cattle just after sunrise and at night.³⁰ Beyond preventing disorders, however, the herdsmen performed minor surgeries; they were knowledgeable on how to castrate cattle and how to treat minor wounds.³¹ The Romans constructed temporary and permanent enclosures for oxen, and other beasts of burden, in order to apply remedies and conduct a number of minor surgeries including castration and excision of abscesses.³² Agriculturalists understood the concept of contagion, Varro even asserted that it was the result of invisible *animalculae* (an idea very similar to germ theory), and in order to stop infection, the Romans divided the herds into smaller groups.³³ The herdsmen were competent in recognizing the symptoms of diseases whose cause was external.³⁴ The success rate for

²⁶ Peters 1998, 37; Walker 1973, 325. For a more in-depth discussion of the knowledge of herdsmen concerning oxen see Georgoudi 1990; Peters 1998, 36 – 38. It is difficult to identify some of the ailments with modern diagnoses due to vague descriptions (Peters 1998, 37). The agriculturalists offered cures for ailments such as diarrhoea (*Geoponica* 117.16), indigestion (*Geoponica* 17.17), mange (*Geoponica* 17.24), and flies and ticks (*Geoponica* 17.11, 17.29, 18.16).

²⁷ See Appendix B for information regarding foot rot.

²⁸ Columella *Rust.* 6.12, 6.23.1. Hooved animals left standing in wet areas will eventually have thrush.

²⁹ Columella *Rust.* 6.4.1. Olive oil is effective as a de-wormer. Livestock are dewormed at least biyearly today. The ancients also knew of the anti-parasitic effects of sulphur (Peters 1998, 37).

³⁰ Georgoudi 1990, 227; Verg. *G.* 3.154 – 156.

³¹ Columella *Rust.* 6.26, 6.11; Peters 1998, 38.

³² Columella *Rust.* 6.19. Peters 1998, 37 – 38.

³³ Smithcors 1957, 67; Varro *Rust.* 1.12. Superstitious and magical measures were also taken to cure the animals (Peters 1998, 37). These superstitious measures became more significant in the middle ages until the 19th century (Peters 1998, 38).

³⁴ Peters 1998, 38.

treating internal diseases, whose cause is indeterminate without knowledge of microorganisms and viruses, was lower, causing agriculturalists to propose numerous treatments.³⁵ The Romans, however, also observed diseases that are incurable even with modern medicine. Despite the failure of some cures, the agriculturalists had numerous prophylactic and therapeutic measures, such as garlic and olive oil, which were effective.

The veterinary authors, with the exception of Vegetius, fail to provide extensive discussions on the ailments of oxen and cattle.³⁶ In one of his prefaces, Vegetius indicates that his friends were highly dissatisfied with the current treatises regarding oxen, and, consequently, he gathered information from a variety of sources and wrote his own account.³⁷ If the herdsman was capable of performing the basic medical care, the services of a veterinarian were not required on a regular basis, but only when need arose for the skill of a professional for complex surgeries or medicaments.³⁸ Vegetius' brief discussion on oxen includes instructions for prophylactic measures, drenches, cures for stomach problems, epizootic diseases, and fevers.³⁹ Throughout the section on oxen, Vegetius refers to the horse, highlighting the similarities in treatment between the two animals.⁴⁰ It is likely that veterinarians treated bovines and equines with similar methods. The limited treatment given to oxen is likely also because beef cattle were slaughtered at three or four years old did not require as intensive veterinary care as older animals.

³⁵ Peters 1998, 38.

³⁶ See footnote 8 for the *Hippiatrica*'s discussion of cattle.

³⁷ Vegetius *Ars Vet.* 3 prol. 1. It is possible, as will be discussed later in this chapter, that Vegetius' friends were dissatisfied with the fact that the treatises were written in Vulgar Latin without any eloquence, something they considered 'sordid', and that they wished a manual on oxen written eloquently in the proper rhetoric befitting aristocracy.

³⁸ MacKinnon 2004a, 96.

³⁹ Vegetius *Ars Vet.* 3.1 – 4.

⁴⁰ Vegetius *Ars Vet.* 3.2.1.

Sheep were important animals to the Roman world as well, and like oxen, these ruminants were well tended.⁴¹ As wool was generally the most important part of the sheep, it was vital to ensure their coats remained in good condition.⁴² Columella is one of the most important sources for the health care of sheep, whereas the veterinary authors say little about these ruminants.⁴³ For the most part the shepherd could treat these animals by themselves, although they likely purchased ointments and medicines from veterinarians. Veterinary intervention is important to the health of modern sheep, through either consultation or physical intervention, particularly during lambing season.⁴⁴ The agriculturalists divide medical treatment of ovines into three different categories: prophylaxis, infection and internal diseases, and outer diseases.⁴⁵ The preventative measures were similar to those of oxen, such as keeping the floor dry and clean, and ensuring the ruminants were well nourished.⁴⁶ As in cattle, foot rot was a common ailment among sheep.⁴⁷ The shepherds endeavoured to ensure that the ruminants were protected from extreme weather, including direct sunlight and high humidity.⁴⁸ One of the principal ailments that afflict sheep is parasites and scabies.⁴⁹ As a means to protect the sheep from scabies and ticks, the ruminants were dipped in olive oil, lupins, and wine

⁴¹ In their sheep housing programs, the Romans had some of the closest contact with the ruminants similar to modern intensive management (Ryder 1983, 646). The advice given by the Roman agricultural authors regarding the animal husbandry of sheep is, for the most part, still sound even today (Ryder 1983, 158).

⁴² Walker 1973, 329. In fact, in some situations in order to protect the sheep's wool, the Romans covered them with leather jerkins (Columella *Rust.* 7.2.5; Ryder 1983, 158).

⁴³ This is possibly due to the fact that sheep, goats, and oxen were all hardy animals and did not require as much medical care as was given to the horse.

⁴⁴ Fox 1984, 138. In Western Australia, an area known for its heavy reliance upon sheep, the majority of the veterinarian's time (52%) is consumed by treating sheep, as opposed to cattle (beef 24% and dairy 10%) indicating that although hardy animals, the ruminants still require medical attention (Maxwell 2008, 145).

⁴⁵ Peters 1998, 85. Note that goats were treated in a manner similar to sheep (Walker 1973, 329).

⁴⁶ Ryder 1983, 166.

⁴⁷ Ryder 1983, 167; Varro *Rust.* 7.51.22.

⁴⁸ Peters 1998, 85.

⁴⁹ Peters 1998, 85 – 88.

after they were sheared.⁵⁰ To avoid a stomach issue called broxy caused by the clostridial organism, which resides on frozen grass, the Romans did not allow their sheep to graze before the sun had melted the frost.⁵¹ Orf, a parapoxvirus, is another common ailment in sheep, which the Romans treated with crushed hyssop and salt.⁵² Furthermore, the Romans believed that sheep were sensitive to the sun and consequently, the shepherds drove their flocks so they grazed with their backs to the sun.⁵³ The sensitivity to the sun, which if untreated resulted in skin lesions, was caused by eating plants of the genus *Hypericum* found in southern Italy.⁵⁴ The shepherds, like the cowherds, were also capable of performing minor surgeries, such as removing rotting mange.⁵⁵ One of the more sophisticated treatments herdsmen had to perform was to remove a dead foetus from the mother, a procedure in which the foetus is chopped up with a knife while still in the womb.⁵⁶ Further, the Romans splinted broken limbs of sheep, wrapping them with wool soaked in oil and wine.⁵⁷ As with cattle, the Romans were aware that contagions could spread among sheep, and any ruminant that appeared to be ill was quickly culled so

⁵⁰ Columella *Rust.* 7.5.5; Verg. *G.* 3.410 – 477; Ryder 1983, 166. This treatment is similar to measures taken today in order to prevent ticks and scabs, although antibiotics and harsh chemicals are now utilized, olive oil was a rather effective agent. The Romans thought that scab was the result of exposure to hunger and rain, both of which are correct in a manner of speaking. Scabies are caused by a parasite, which comes out in humid weather and particularly in the winter when it needs sustenance and well-fed sheep are more capable of withstanding this affliction (Ryder 1983, 166).

⁵¹ Columella *Rust.* 7.3.25; Florentius *Geoponica* 18.2.7; Ryder 1983, 167; Peters 1988, 85. This measure is an excellent example of the prophylactic measures the shepherds performed.

⁵² Columella *Rust.* 7.51.22; Ryder 1983, 167. Now treated with antibiotics, isolation and salt used by the Romans were effective as a means to stop the disease in its early stages. Also clean stalls and continuously washing the hooves of the animals reduces any incidences of the disease (West 1988, 451).

⁵³ Varro *Rust.* 2.2.20; Ryder 1983, 166

⁵⁴ Ryder 1983, 166.

⁵⁵ Verg. *G.* 3.416; Ryder 1983, 166. This method according to Vergil was the only sure method of removing the infected area, and considering that the Romans did not have concentrated antibiotics, it was likely one of the best methods to ensure that the affliction did not return.

⁵⁶ Columella *Rust.* 7.3.15 – 18; Ryder 1983, 166; Smithcors 1957, 82. This process is done by shepherds today (Ochsenschlager 1993). This process was called *embryulkein* by the Greeks (Columella *Rust.* 7.3.15).

⁵⁷ Ryder 1983, 167.

as not to affect the rest of the flock.⁵⁸ It is clear that Roman shepherds were sophisticated in their treatment of sheep; they were well versed in the basic veterinary medicine necessary to prevent or treat common ailments or to provide emergency care for their flocks.

Goats were another important animal to Roman agriculture. These caprines were raised on farms alongside sheep, although in smaller numbers.⁵⁹ These animals were an important source of both milk and meat.⁶⁰ Varro describes them as an animal whose health is always in jeopardy, and thus the goatherds, especially the *magister pecoris*, had to be capable in treating the numerous diseases and wounds these animals encountered.⁶¹ Columella recommends that the goat be kept in moderate temperatures, as it does not survive well in extreme conditions.⁶² The remedies, treatments, and prophylactic measures advised for the goat are similar to those listed for the sheep.⁶³

Dogs were also used in the Roman Empire for hunting and herding, and as pets.⁶⁴ Unlike livestock, there is very little evidence regarding the veterinary care of canines.⁶⁵ The agriculturalists discuss the basic care of these animals, but provide only small details concerning medical care. Dogs are prone to any number of ailments, from small nuisances such as mites, to serious ones like rabies. For mites, prophylactic measures were offered, such as crushed bitter almonds rubbed on the ears, along with cures if the canine was afflicted in which case liquid pitch mixed with lard was recommended.⁶⁶

⁵⁸ Verg. *G.* 3.460ff.

⁵⁹ MacKinnon 2002, 55; Varro *Rust.* 2.3.7.

⁶⁰ MacKinnon 2002, 57.

⁶¹ Varro *Rust.* 2.3.8.

⁶² Columella *Rust.* 7.6.5.

⁶³ Columella *Rust.* 7.7.4.

⁶⁴ For information on dogs in the ancient world, see Merlen 1971, 46 – 89.

⁶⁵ Peters 1998, 176.

⁶⁶ Columella *Rust.* 7.13.1.

Rabies was a rather common problem and numerous authors, both veterinary and agronomic attempted to provide cures for this disease.⁶⁷ Unfortunately, cures for this disease were ineffective at best; even today with all our medical advances there is no real cure for rabies, only treatments for prevention.⁶⁸ Ancient authors offer a variety of cures for rabies, including Theomnestus, one of the veterinary authors, who offers a cure through fasting and the administration of hellebore.⁶⁹ Archaeozoology provides further evidence for the treatment of dogs. Generally the bones discovered belonging to canines are from older animals, which indicates some investment in care; the case of a Yasmina dog provides evidence of the health care and maintenance given to the dog as the animal had no teeth and extensive osteoporosis.⁷⁰ This Yasmina dog, however, was presumably owned by someone in the upper class. There are also a number of cases discovered where the canine had fractured a bone and it was left untreated.⁷¹ Despite this, dogs were included in the list of animals that required a warranty of health in order to be sold.⁷²

The majority of the agriculturalists' medical advice focuses on the prevention of illness and injury since prophylaxis was a very effective means of ensuring the health of animals.⁷³ Cato has a limited discussion of treatments for illness and injury; his discussion of animal health concentrates primarily on the prevention of diseases and injuries.⁷⁴ Cowherds and shepherds were well aware of the measures necessary to

⁶⁷ Smithcors 1957, 96 – 97.

⁶⁸ At least one case of rabies in humans has been successfully treated, but the treatment has not proved to be effective after repeated trials. See Willoughby 2007, 89 – 95.

⁶⁹ *Geoponica* 19.3

⁷⁰ McKinnon 2010, 301, 304.

⁷¹ McKinnon 2010, 304.

⁷² Smithcors 1957, 71.

⁷³ Peters 1998, 88, 284; Cato *Agr.* 70, 72, 73, 96, and 103; Mezzabot 2001, 141. For a further discussion of the ailments the agriculturalists provide treatments for, see the Animals section of Chapter 4.

⁷⁴ Mezzabot 2001, 141. See Cato *Agr.* 70, 72, 73, 96, and 103. As Cato's opinion was to sell the animal, this perspective is not surprising.

prevent disease and injury.⁷⁵ Proper nutrition and clean habitats were a part of daily routines, as was the maintenance of healthy feet and coats.⁷⁶ The Romans knew, for example, that by keeping the ox's stall dry, the animal did not become afflicted with foot rot. Recognizing the causes of various ailments is important since prophylaxis requires some veterinary knowledge.⁷⁷ *Pastores* were knowledgeable in preventing contagion.⁷⁸ Beyond prophylaxis, the agronomists also recommended means of treating both internal and external ailments.⁷⁹ The herdsmen had the ability to treat many common ailments utilizing the veterinary knowledge of Italian and Punic farmers.⁸⁰ Many of the medical treatments offered in the agricultural treatises, particularly regarding sheep, seem appropriate for the migrant shepherd, who had to carry all his supplies to remote pastureland. Many of the recipes and treatments for the shepherd in Columella, Palladius, and *Geoponica* are simple, containing only a few components that were easily obtained or on hand, such as garlic.⁸¹ Beyond mixing simple compounds made from common ingredients, the *magister pecoris* was expected to perform surgeries such as

⁷⁵ Preventative medicine remains an effective means of avoiding injury and illness today, such as through vaccinations.

⁷⁶ Peters 1998, 85; Columella *Rust.* 6.5.1. Roman animal husbandry had numerous treatments, which were more humane than many modern feedlots (Fox 1994, 85).

⁷⁷ Columella in fact recommends that the *magister pecoris* learn basic veterinary medicine (*Rust.* 11.1.12).

⁷⁸ Peters 1998, 37, 86. At any sign of illness, the animal was separated from the others and the rest of the flock or herd was divided into smaller groups. If the illness was not contagious, the measure of dividing the flocks was likely effective since they were moved away from the agent causing the illness (Peters 1998, 86). Similarly, removing the infected animal from that environment could be effective. In the case of a disease called *ignis sacer* (holy fire), which is believed to be anthrax, if it was not caught early then the entire flock was infected and to stop it the entire herd had to be slaughtered (Columella *Rust.* 6.5.1, 7.5.16; Peters 1998, 86).

⁷⁹ Peters 1998, 85. Peters indicates that the internal diseases were more difficult to diagnose and thus treat, resulting in a lower success rate (1995, 38). Due to the difficulty in treating the internal disease, a number of treatments and superstitious measures were offered (Peters 1995, 38). Superstitious procedures became popular from the medieval period until the 19th century AD, as there was decay in veterinary knowledge (Peters 1998, 38).

⁸⁰ Peters 1998, 37.

⁸¹ Peters 1998, 88. At times, it is likely that the shepherd was required to utilize his resources creatively in order to treat the sheep while in remote locations.

castration and removal of the dead foetus from the womb.⁸² The Romans had several methods concerning castration depending on the age and preference of the agriculturalist.⁸³ Considering how common and necessary castration was on farms, the herdsmen would have been experienced in the procedures. Tools necessary for castration were recommended by Palladius, writing in the fifth century AD, long after Varro and Columella.⁸⁴ The herdsmen knew how to construct structures to restrain the animal for any medical treatment.

From this brief account of the agricultural animals, it is clear that the herdsmen were responsible for providing routine health care for them. These prophylactic measures and treatments show a high awareness of veterinary issues among those involved in animal husbandry. Herdsmen throughout history were more qualified to treat their flocks and herds than those who claimed to know veterinary medicine.⁸⁵ The fact that veterinarians were called in or consulted for ailments the shepherds had difficulty diagnosing or treating indicates that animal doctors had a high degree of knowledge concerning animal health. I will now examine the existing literary and archaeological evidence to investigate further the extent of veterinary involvement with privately owned animals.

Literary Evidence

The majority of the evidence concerning animal doctors in the Roman world is literary, and will be examined first. The veterinary treatises provide small details concerning the profession. These manuals, however, are not the only sources that

⁸² Peters 1998, 38, 145.

⁸³ Peters 1998, 38; Columella *Rust.* 6.26; Varro *Rust.* 2.5.17. Modern ranchers commonly castrate their livestock without the aid of a veterinary surgeon.

⁸⁴ Palladius 1.52.1, 6.7.

⁸⁵ Smithcors 1957, 67.

provide information on animal health as the agricultural treatises supplement them.

Notwithstanding the fact that the main purpose of the agricultural treatises is to impart knowledge on agrarian pursuits, these manuals contain several references to the veterinary profession. I will first examine the allusions to the veterinarian in the agrarian works in order to place veterinary medicine within context of animal husbandry. I will then discuss private animal doctors as alluded to in the veterinary treatises.

Agricultural Authors: Cato, Varro, and Columella

The literary sources that I will first examine are the agricultural treatises of Cato, Varro, and Columella. These individuals were not veterinarians, but rather polymaths.⁸⁶ Although these were the first Roman manuals that contained information on animal medicine, the authors were not veterinarians and may not even have had practical experience in agriculture. These individuals provide an outside perspective, which has been filtered through the author's own biases. All of these individuals, however, were well educated and highly literate.

Marcus Porcius Cato, known as Cato the Elder, lived 234 to 149 BC, contemporary to the second and third Punic Wars.⁸⁷ Considering the historical context in which he lived, Cato was strongly influenced by one of the most respected agricultural authors, Mago the Carthaginian, whose work unfortunately has been lost.⁸⁸ Cato lived

⁸⁶ Nutton 1976, 95.

⁸⁷ Hooper 1960, ix.

⁸⁸ Cato's proverbial dislike of Carthage was supplemented by his dislike of Hellenistic culture and ideas, including Greek medicine. He clearly preferred his own methods of healing as opposed to the doctors (Pliny *HN* 29.14 – 15; Fischer 1981, 216). There are parts of Cato's work, however, that clearly reflect Greek medicine, such as his discussion of the drug *melanthe acetabulum* (Cato *Agr.* 102; Mezzabot 2001, 44). Despite the influence Greek medicine had on his writing, Cato still attempted to discredit physicians, and furthermore, attempted to impose his own medical philosophy upon the Roman people (Smithcors 1957, 61).

when Greek culture was only beginning to enter Rome on a large scale, and he joined traditional Romans in opposing Hellenistic influences. Marcus Terentius Varro, the second agricultural writer, lived from 116 – 27 BC, during a period of civil strife as the Republic moved towards the Principate.⁸⁹ Like Cato the Elder, Varro lived before the profession of the veterinarian became commonplace within the government.⁹⁰ Lastly, Lucius Junius Moderatus Columella wrote his treatise on agriculture around the middle of the first century AD. These authors lived long before any of the surviving veterinary treatises were written, all of which were composed circa the fourth century AD, a fact which several scholars tend to overlook when examining the veterinary profession.⁹¹ It is with this chronology in mind that I will focus first on the agricultural authors and then on the veterinary authors.

Some Romans, such as Horace, were interested in the countryside due to an idealized love for it. Other individuals considered agriculture and animal husbandry purely in economic terms, such as Cato the Elder, who clearly stated:

*Boves vetulos, armenta delicula, oves deliculas, lanam, pelles, plostrum vetus, ferramenta vetera, servum senem, servum morbosum, et siquid aliut supersit, vendat.*⁹²

Sell worn-out oxen, blemished cattle, blemished sheep, wool, hides, an old wagon, old tools, an old slave, a sickly slave, and whatever else is superfluous.

Scholars such as Adams take this quote to indicate that most of the peasantry sold ill or worn out animals as soon as possible.⁹³ Cato likely considered the animals that decreased the value of his herds and flocks due to undesirable characteristics as *deliculus*. The

⁸⁹ Hooper 1960, xiv.

⁹⁰ Most of the institutions discussed in the previous chapters were the product of the Roman Empire.

⁹¹ See Appendix A for the chronology of the various veterinary authors discussed in this work.

⁹² Cato *Agr.* 2.7; translated by Hooper 1960, 9.

⁹³ Adams 1995, 100.

agricultural author, however, does not completely disregard the health of his flocks but advises his reader to ensure that the animals are well maintained in order to prevent illness and injury.⁹⁴ Columella, similarly, instructs his audience to sell or slaughter the ruminants that his treatments fail to cure.⁹⁵ Furthermore, evidence survives proving that the peasantry did attempt to remove sickly animals from their possession. Consider the papyrus from Egypt where an individual urges the recipient, his ‘brother’:

τοῦ ὄνου μοῦ μελέτω σοί. καὶ ἐὰν
μὲν εὐτραφ[έ]στερος γένηται καὶ
δυσνηθῆ̄ πρα[θ]ῆ̄ναι, πώλησον.⁹⁶

“Take care of my donkey, and if
his condition improves and
he can be disposed of, then sell him.”

This papyrus is from the third/fourth century AD, and so it was not only in Cato’s era that the owners removed ailing or blemished livestock from their ownership. Unlike Cato, the sender above was discussing a donkey, which was considered by the Romans as one of the most common and inexpensive animals.⁹⁷ In the case of donkeys, it was more economically feasible to sell these quadrupeds than to contend with his infirmity.⁹⁸ Other animals, however, such as the horse, mule, and oxen of good stock were more worthwhile to spend time and money on, should they become ill or injured.

Cato considered one of the most important advantages of farming was profit, and the removal of any animal which reduced the quality of his stock or required further

⁹⁴ Cato *Agr.* 54.5.

⁹⁵ Columella *Rust.* 7.7.1.

⁹⁶ *P. Rendel Harris* 109 translated by Adams 1995, 100.

⁹⁷ Adams 1995, 51, 107; Columella *Rust.* 7.1.1. Whereas Cato was encouraging people to sell any animal that was no longer useful. Adams argues that many of the peasantry may not even have owned livestock such as oxen and mules and so may not have required the services of animal doctors (Adams 1995, 67). There have recently been debates as to the importance of peasantry in farming and the extent of small farms in the Roman Empire see Kron 2008b.

⁹⁸ The attitude of donkeys does not lend one to be keen on keeping the beast either. Donkeys tend to be rather stubborn and ill tempered, whereas the mule generally has a more moderate temperament.

investment of time and money seemed the most economical method.⁹⁹ There were many, however, who relied upon livestock and work animals for their livelihood, using them in transport businesses, for livestock breeding, or arable farms, and for these individuals it was important to maintain and secure the health of all the animals. A well-bred mule could cost a considerable fortune; in one instance, the mule was worth as much as the purchaser's house.¹⁰⁰ The initial cost of these animals influenced their owners to invest further income into the beast to ensure that it survived. Livestock farms, as well as the estates of the wealthy, were not keen to reduce their stock if the animal became ill or injured. The owners of these farms, instead, attempted to save their livestock by all medical means available to them, and if necessary sought professional aid. Varro provides a prudent account concerning the provision of medical care to animals:

*Quarta pars est de sanitate, res multiplex ac necessaria, quod morbosum pecus est vitiosum, et quoniam non valet, saepe magna adficiuntur calamitate.*¹⁰¹

The fourth division is that of health, a complicated and important matter, because a sick herd is a losing investment, and men frequently come to grief because it is not well.

Varro indicates that it is economically shrewder to keep the animal healthy and if it becomes ill, it is better to treat the ailment in the best possible manner as opposed to selling the animal for a reduced cost or as meat.

Adams also relies heavily upon Cato's opinions on both veterinary medicine and animal husbandry. Before the influence of Hellenistic medicine, Roman medical practice, both human and animal, fell within the sphere of the *pater familias*, the head of the family and household.¹⁰² It was thus Cato's duty as *pater familias* to ensure that his

⁹⁹ Cato only mentions horses three times at *Agr.* 138, 149, and 14.

¹⁰⁰ Mart. Epig. 3.42; Hyland 1990, 240.

¹⁰¹ Varro *Rust.* 2.1.21.

¹⁰² Prioreschi 1998, 73.

familia – his family and his slaves – and his beasts had health care. To that extent, Cato retained a notebook that listed the remedies for both man and animal, and it was likely that other heads of the household kept similar documents.¹⁰³ Varro urges that the *magister pecoris* (master of the herd) should also write down all the diseases, their symptoms and cures, and he advises individuals to copy out treatments from Mago the Carthaginian and effective remedies from previous generations.¹⁰⁴ The medical knowledge of the *pater familias* was likely the result of information passed down through generations, collected through sources such as Mago, and personal observations.¹⁰⁵

Both the *magister pecoris* and the *pater familias* were familiar with treatments for common afflictions, but as a whole, these individuals were more concerned with the fundamentals of animal husbandry – breeding, keeping, maintaining, and training animals – as opposed to concentrating on medical care. The herdsmen, however, were not ignorant in health care, as was briefly discussed earlier. Significant portions of texts on animal husbandry are dedicated to the prevention and treatment of ailments of livestock. Unlike the veterinary manuals, farmers and herdsmen were the agronomists' target audience, not professional animal doctors. The *magistri pecoris* required a basic understanding of animal medicine so that they could diagnose and treat simple ailments of their flocks and herds. Without a basic understanding of veterinary medicine, superstitious practices and folk remedies became prominent as was observed in the Middle Ages, when they lacked the sophisticated practices of Roman animal

¹⁰³ Adams 1995, 72.

¹⁰⁴ Varro *Rust.* 2.1.23.

¹⁰⁵ Swabe 1999, 73. Many years of trial and error proved to the farmer which cures were effective and he was urged to record the results. Some of Cato's treatments are still used today, albeit in chemical form (Mezzabot 2001, 141, 143-44).

husbandry.¹⁰⁶ Columella indicates during a discussion of the birthing of sheep, “quare veterinariae medicinae prudens esse debet pectoris magister” (“therefore the master of the flock ought to be familiar with veterinary medicine”).¹⁰⁷ This phrase does not mean that the head shepherd should be a veterinary surgeon, only that he should understand some basic principles of animal health care.¹⁰⁸ If the *veterinarius* was hired only when required, then the shepherd certainly needed to understand the care of lambing ewes, particularly since complications can quickly arise and immediate action needs to be taken. The shepherds were competent concerning the delivery of lambs; in the case of complications in delivery, the owners were able to correct the positioning of the lamb or cut up the dead lamb within the womb of the ewe in order to save her.¹⁰⁹ Beyond their prophylactic and therapeutic measures, the association of agriculturalists with veterinary medicine can be observed in the references of the agricultural authors to veterinary terminology.¹¹⁰ Nevertheless, the fact that the *magister pecoris* had knowledge of animal health does not mean that veterinary practitioners were non-existent or lacking, but that the herdsmen, barring any complications, were competent in dealing with mostly daily ailments of the livestock.

At this point, I would like to examine some comparative evidence from twentieth century Iraq, which provides an agricultural situation similar to that of the Romans. The

¹⁰⁶ Peters 1998, 146.

¹⁰⁷ Columella *Rust.* 7.3.16.

¹⁰⁸ As previously discussed, several issues that could arise during the birthing process and the head shepherd had to be prepared to perform the necessary treatment.

¹⁰⁹ Columella *Rust.* 7.3.16. Similarly, shepherds in Iraq were capable of performing these actions, see Ochsenschlager 1993, 35. These Iraqi shepherds, however, still contact the neighbouring veterinarian whenever an ailment arose, in which they did not have sufficient knowledge to cure.

¹¹⁰ Cato *Agr.* 102; Columella *Rust.* 6.8.1, 7.5.14; Verg. *G.* 452 – 456 (*praesens*, which also appears in Pelagonius 280); also contrast Verg. *G.* 457 – 60 and Pelagonius 347 for procedures on bloodletting.

ethnoarchaeology of sheep was examined in Beni Hassan villages close to Al-Hiba.¹¹¹

The shepherds heal common injuries and ailments occurring among the sheep, utilizing their own remedies, aiding in the birthing process, and treating surface wounds.¹¹²

Therefore, like the *pastores*, these individuals deal with common ailments using tested methods that have proven successful. Nonetheless, when a sheep becomes ill with something they cannot treat or they need a professional's opinion, they send a report to the veterinarian living in a town nearby, who advises them with the appropriate actions or suggests suitable remedies.¹¹³ This method is very similar to that discussed in the first chapter concerning Apsyrtus and his letters to various ἰππιατροί throughout the empire, where individuals wrote to the veterinary author and he provided advice after considering the situation. The Iraqi shepherds are certainly not upper class and are in similar circumstances to, if not poorer than, the independent Roman farmer. Since the modern shepherds turn to the veterinarian for aid in curing their sheep, the Roman shepherds also likely sought help from the animal doctor. Modern evidence taken from Afghanistan indicates that areas with veterinary medicine had a significant increase in the survival of sheep in contrast to areas without professional animal doctors.¹¹⁴

The words of Varro and Columella indicate that the Romans, even at the end of the first century BC, had a system similar to the Iraqi shepherds. References to animal doctors are observed in the agricultural treatises. Cato refers to specialists called *medici*, although he does not differentiate between human and animal doctors.¹¹⁵ Varro was one

¹¹¹ Ochsenschlager 1993, 33.

¹¹² Ochsenschlager 1993, 35.

¹¹³ Ochsenschlager 1993, 39.

¹¹⁴ Schreuder, *et al.* 1996, 133 – 135.

¹¹⁵ Cato *Agr.* 102; Adams 1995, 72.

of the first to mention animal doctors by name in his agricultural account. One of the first references he makes to such a profession is in his discussion of horses:

*De medicina vel plurima sunt in equis et signa morborum et genera curationum, quae pastorem scripta habere oportet. Itaque ab hoc in graecia potissimum medici pecorum ἰππιατροί appellati.*¹¹⁶

Concerning medicine there are many signs of illnesses and types of cures among horses, which it is necessary for the *pastor* to have written down. And so from this in Greece the doctors of the herds are especially called ἰππιατροί.

Although Varro speaks particularly of equines in this section, it is notable that he acknowledges that there are ailments for which the knowledge of specialists, the ἰππιατροί, is necessary. It is important to remember that Varro, like Cato, lived during the end of the Republic, when Greek medicine was becoming more important to the Romans. It has been suggested that this phrase indicates that the Greeks at this time had independent professional animal doctors, of whom the Romans were cognizant.¹¹⁷ The term *veterinarius* was not utilized during Varro's time, but instead the term *medicus* was still used.¹¹⁸ While discussing the health of oxen Varro states:

*Cuius scientiae genera duo, ut in homine, unum ad quae adhibendi medici, alterum quae ipse etiam pastor diligens mederi possit.*¹¹⁹

There are two types of such [medical] knowledge, as in men: one in which a doctor should be called in, the other in which even an attentive herdsman is competent to give the treatment.

¹¹⁶ Varro *Rust.* 2.7.16. Since Varro indicates that the ἰππιατροί had been known in Greece, it is possible that some were captured as slaves by the Romans and then employed by their masters in the same profession that they had as freemen.

¹¹⁷ Fischer 1981, 216. The phrasing is too vague to argue whether this indicates that the ἰππιατροί had become a part of Roman society.

¹¹⁸ Note that in the following quote, the usage of *medicus* clearly refers to doctors specializing in animals as opposed to humans.

¹¹⁹ Varro *Rust.* 2.1.21. See also Varro *Rust.* 2.10.10 when he instructs *magistri pecoris* to write down the treatments for the livestock and humans he indicates that there is a division between the health care expected of the *magistri* as opposed to the *medici*.

Varro specifically advises that there are situations in which the owner needs to seek professional help beyond that of the *pastor*, just as a human requires a surgeon in some situations, but not all. This phrase was the first time in the surviving literature when a distinction was made between the specialist in animal medicine and the herdsmen.¹²⁰ The term *adhibendi* indicates that the specialist was ‘called in’ from outside of the farm.¹²¹ This phrase is important firstly, in that it shows animal doctors were required to provide medical knowledge, which the *pastores* did not have. Secondly, the word suggests that the veterinary surgeon lived in a nearby village or town, and when his services were required, he was summoned by his clients, just as the Iraqi shepherds did. Varro further corroborates this perspective when he advises the owner to obtain the services of individuals from the surrounding area:

*Itaque in hoc genus coloni potius anniversaries habent vicinos, quibus imperent, medicos, fullones, fabros, quam in villa suos habeant, quorum non numquam unius artificis mors tollit fundi fructum.*¹²²

And so farmers in such circumstances prefer to have in their neighbourhood men whose services they can call upon under a yearly contract: physicians, fullers, artisans, rather than to have such men of their own on the farm; for sometimes the death of one artisan bears away the profit of a farm.

Clearly, even as early as the end of the first century BC veterinarians hired out their services to animal owners. Varro, later in his work, indicates that a professionals whose services were required intermittently, such as that of the *medici* and the *veterinarii*, should be called from outside the farm.¹²³ The animal doctors could have been from neighbouring farms, but were more likely from nearby villages or towns. It has been suggested that Varro’s words indicate that certain *vicini* (neighbours) were under contract

¹²⁰ Adams 1995, 73.

¹²¹ Adams 1995, 73.

¹²² Varro *Rust.* 1.16.4

¹²³ Varro *Rust.* 2.1.21, 2.10.10

with nearby *latifundia* to provide their services when required.¹²⁴ Cato indicates that some labourers could be hired for a day at a time when necessary.¹²⁵ To summarize, the *magister pecoris* looked after the animal, and if he could not handle an injury or illness, he referred to the specialist in animal medicine.¹²⁶ The veterinarian lived in a nearby village, and when he was required by the *pastor*, he was summoned.¹²⁷

Before continuing on, I would like to clarify a point about farms in the Roman world. A common misconception among scholars is that the majority of farms consisted of *latifundia*.¹²⁸ If that were the case, then Adams' suggestion that veterinarians were typically indentured to the large estate farms would be more likely correct. It has been shown, however, that there were numerous small and medium sized farms.¹²⁹ In fact, the smaller mixed farms, which utilized ley farming, were more productive than the *latifundia*.¹³⁰ Small farms can support a large number of animals per hectare.¹³¹ There was, therefore a significant demand for veterinarians beyond the *latifundia*; the small and medium farmers could hire professional aid.¹³² Consequently, the situation of veterinarian slaves working on *latifundia*, as Adams indicates, was likely rare, and the majority of veterinarians working for animal owners were likely freemen or freedmen.

¹²⁴ Adams 1995, 78. There are cases where local craftsmen from the village worked for the *latifundia*.

¹²⁵ Cato *Agr.* 5.

¹²⁶ Adams 1995, 78.

¹²⁷ As will be observed later in the chapter, when there is a discussion of papyri it is likely that even the *latifundia* called aid from private veterinarians as opposed to having veterinary slaves or paying full-time employment to such individuals.

¹²⁸ Kron 2008b, especially 87.

¹²⁹ Kron 2008b. During the Second Triumvirate, Augustus and his colleagues are estimated to have made 300,000 small farms, a rather large number when the small farms supposedly were being consumed by the larger estate farms.

¹³⁰ Kron 2008b, 88.

¹³¹ For a detailed discussion on how the number of livestock these farms could possibly sustain see Kron 2008b, 97 – 102. In the case of small Dutch farms, 16 to 18 hectares of land could support cattle herds of 15 to 24 (Kron 2008b, 98).

¹³² Kron (2008b) argues that the Roman peasantry were far better off than the miserable serfs in Medieval England.

Veterinary slaves would have been associated principally with the state through either the *cursus publicus* or the military.¹³³ The animal doctors servicing the local farmers may have been slaves at one point, but had earned their freedom and were working as skilled tradesmen as Varro indicates.

Columella writing in the first century AD refers numerous times to the veterinary professional.¹³⁴ He uses the term *veterinarius* to refer not only to horse doctors, but also to practitioners who were concerned with oxen and sheep. Concerning oxen, Columella writes:

*Solent etiam fastidian ciborum afferre vitiosa incrementa linguae, quas ranas veterinarii vocant.*¹³⁵

Aversion to food is often caused by morbid swellings of the tongue which veterinary surgeons call 'frogs'.

Columella was a well-educated individual and could have read about this medical condition in a veterinary work that is unavailable to the modern scholar, or he heard the term either through secondary sources or directly from a *veterinarius*. Similarly, when discussing ailments in sheep, in particular the diseases of the lungs, Columella once again refers to the technical terminology of the *veterinarii*.¹³⁶ Approximately fifty years after Varro, veterinary surgeons had clearly created their own terminology, which was recognized by those involved in animal husbandry; Columella did not have to define *veterinarius* for his audience, but expected them to know the profession he was discussing.

¹³³ Walker 1991, 47.

¹³⁴ Smithcors 1957, 82.

¹³⁵ Columella *Rust.* 6.8.1.

¹³⁶ Columella *Rust.* 7.5.14.

Columella mentions the *veterinarii* again while discussing the duties and training of the *villicus* (steward). He mentions how to attain knowledge of all the facets of agriculture:

*Verutamen ut universae disciplinae vix aliquem consultum, sic plurimos partium eius invenies magistros, per quos efficere queas perfectum villicum. Nam et arator reperitur aliquis bonus, et optimus fossor, aut faeni sector, nec minus arborator et vinitor, tum etiam veterinarius et probus pastor, qui singuli rationem scientiae suae desideranti non subtrahant.*¹³⁷

Nevertheless, as you will find scarcely anyone skilled in the whole discipline, so you will find many masters of parts of it, through whose help you can form the perfect steward. For a good ploughman can be found and an excellent digger or mower, and not less a forester and vinedresser, and even a veterinary surgeon and a good shepherd, whom would not refuse one desirous of learning the knowledge of his art.

This section of Columella provides a few pertinent details concerning the *veterinarii*.

The *veterinarii* were grouped with individuals who were masters of a certain aspect of agriculture. The animal doctors were then expected to be knowledgeable, to a certain extent, concerning animal health. Furthermore, the services of *veterinarii* were now desirable for any well-managed large estate, upon which lived more than just horses, but also oxen, mules, sheep, and dogs, to name a few.¹³⁸

The veterinarian was just as important to the farm, according Columella, as the ploughman and the shepherd. If the *veterinarii* were rarely called upon to work on the farm then they would not have been mentioned in the same sentence as the *pastor*, who was important for continuously keeping vigil over the sheep. If the *veterinarii* were ill-educated individuals with only a basic concept of animal medicine, then the *villicus* did not have any reason to seek out the knowledge these individuals held, and Columella would have instead directed these overseers to the *pastores* instead who, as previously established, had the knowledge to practice basic animal medicine. Although Adams

¹³⁷ Columella *Rust.* 11.1.12.

¹³⁸ Adams 1995, 93.

indicates that the professions which Columella listed were of the servile class of agricultural workers, it first does not negate the fact that they did have specialist knowledge of their profession and treated livestock on farms.¹³⁹ Adams argues that it is possible that there was overlap between the *pastores* and the *veterinarii*, where the *veterinarius* was just a *pastor* who had talent for healing.¹⁴⁰ While this scenario is possible at the inception of animal medicine, by the first century AD, the animal doctor was held to distinct, and much higher, professional standards. Columella indicates that the veterinarians were “partium eius...magistros” (masters of part of agriculture), and includes them as a separate group in his list of agricultural professions.¹⁴¹ The veterinarian, therefore, was more knowledgeable in animal medicine than the *magister pecoris*, who had a sophisticated knowledge of animal husbandry, and was consulted by farms in order to diagnose and treat ailments that were beyond the skills of the master herdsman.

Lastly, Columella indicates that individuals of this profession are *reperiatur* (found), which means that during his time, the *veterinarii* were not elusive and rare, but were common enough that they could be located close to estates. They were thus a recognizable part of society, one that could be found and hired. The agriculturalists clearly state that there are ailments and circumstances for which a professional animal doctor is required. The authors provide little information on how to deal with the diseases and health issues which are relegated to the veterinarians, but provide a wealth

¹³⁹ Adams 1995, 93. Slaves were given independence to practice their trade outside of the *familia*; in which scenario, the veterinarian could be hired by a neighbouring farm. Unlike Adams assumes, not every individual with a Greek name is a slave, particularly later in the Roman Empire, when Greece had already been claimed as a province. One example of this situation was Galen, the doctor, who was clearly Greek but was freeborn.

¹⁴⁰ Adams 1995, 93.

¹⁴¹ Columella *Rust.* 11.1.12.

of details concerning remedies and therapeutic measures that the herdsmen were capable of performing. The veterinarian, however, was consulted, particularly in situations where the *magister pecoris* lacked the appropriate knowledge and skills. By the middle of the first century AD, the veterinarian had become a specialized profession, which was no longer simply a skill of certain *pastores*, but a profession of its own, focused on all types of livestock.

Veterinary Authors

I will now turn to examine the veterinary authors themselves for information concerning the profession. Although I call these authors ‘veterinary’, it does not necessarily mean that they were practicing animal doctors. Apsyrtus was most likely a veterinary practitioner, as was discussed in Chapter 1, whereas the author Hierocles was likely not a part of the profession, but was an educated lawyer with an interest in animal medicine.¹⁴² Several of the veterinary authors, whether they were a part of the actual profession or just interested laymen, provide details concerning the profession in general. The principal focus of these works was horses, but information concerning the veterinary care of livestock does exist. The veterinary authors, particularly Vegetius, will be discussed in conjunction with private practices to further understanding of the profession of the veterinary practitioner.

Vegetius is our most extensive source concerning the veterinarian and his trade, and for this reason, he will be the focus of this section. Vegetius was a horse-owner who cared for well-bred equines and understood the importance of treating the various

¹⁴² Smithcors 1957, 96. Although he was a lawyer, he had a keen insight into the dilemmas of the veterinary art, and due to this Smithcors suggests that he actually did practice veterinary medicine (1957, 96).

ailments among horses.¹⁴³ Scholars have identified Vegetius as the individual who wrote the *Epitoma rei militaris* (Epitome of Military Science), a man who was a *vir inlustris* (distinguished man, a member of the aristocracy).¹⁴⁴ Vegetius lacked the practical experience of Apsyrus, but he referred to other accounts of veterinary medicine and generally acknowledged his sources in his own work.¹⁴⁵ In order to establish himself as an authority, in the beginning of every book Vegetius provided the reader with a brief prologue which discusses the position and status of veterinary medicine. Most scholars rely on Vegetius' preambles to provide information concerning animal doctors in Rome.

At the outset of his work, Vegetius states:

*Sed quoniam minus dignitatis videbatur habere professio, quae pecudum promittebat medelam; ideo minus splendidis exercitata, minusque eloquentibus collate docetur in libros.*¹⁴⁶

But since the profession, which promised the remedies of cattle seemed to have less dignity; therefore it has been practiced by those less noble character and having been collected in books is taught by those less eloquent.

Numerous scholars, particularly Adams, focus on this passage as proof that the veterinary profession was base and only practiced by the lowest classes of men. Less emphasis, however, should be placed upon this passage, as it is little more than a conventional trope or cliché frequently repeated in Roman didactic literature. Like many men of his status, Vegetius was a well-read man, who imitated not only the works of Columella and other

¹⁴³ Vegetius *Ars Vet.* 1 prol. 6, 3.6.1; Smithcors 1957, 102; McCabe 2007, 160; Mezzabot 55.

¹⁴⁴ McCabe 2007, 9; Milner 1993, xxi. It has been debated as to whether Vegetius had written both works, but stylistic analyses indicate that there were parallels between the two works, indicating that Vegetius wrote both (Milner 1993, xxi). It is believed his full name was Publicus Vegetius Renatus, and he originated in Spain, although Gallia Narbonensis is also possible, and he moved to Constantinople (Milner 1993, xxi - xxii). He was a horse breeder who knew a considerable amount on horses from across the Empire, even the horses of the barbarians (Milner 1993, xxii). Vegetius was a landowner like his friends who persuaded him to write an account on the diseases of cattle (Vegetius *Ars Vet.* 4. prol. 1 – 2). The *subscriptions* in the *Epitome* indicate that Vegetius was a *vir inlustris* and Count, which is one of the highest positions of imperial bureaucracy or the army; most likely, he was a bureaucrat (Milner 1993, xxiii). He a very well read individual and enjoyed the works of Vergil and Sallust (Milner 1993, xxiv).

¹⁴⁵ Smithcors 1957, 94. Vegetius was particularly influenced by the theories and philosophies of Apsyrus (Smithcors 1957, 93).

¹⁴⁶ Vegetius *Ars Vet.* 1 prol. 2.

highly-regarded agricultural writers, but also works of Roman satire, rhetoric, and history.¹⁴⁷ An example of this convention is found in Columella:

*Quae cum animadvertam, saepe mecum retractans ac recogitans, quam turpi consensus deserta exoleverit disciplina ruris, vereor ne flagitiosa et quodam modo pudenda ingenuis aut inhonesta sit.*¹⁴⁸

When I observe these things, reviewing in my mind and reflecting upon the shameful unanimity with which rural discipline has been abandoned and passed out of use, I am fearful lest it may be disgraceful and, in a sense, degrading or dishonourable to men of free birth.

At this point, Columella is disdainful of how the practice of agriculture has been treated by his predecessors. Livy in his account of Roman history despairs at how the morals of the Roman people had been corrupted.¹⁴⁹ Likewise, Cicero despairs in his first Cataline oration, “O tempora! O mores!” (Oh the times! Oh the morals!).¹⁵⁰ Sallust, Juvenal, and Persius are a few other Roman authors who praise the Rome of the past, which they consider superior to their era.¹⁵¹ It was high praise for an author to copy the style of another; thus, in creating a prologue mourning the state of veterinary medicine, Vegetius is simply repeating a cliché of Latin literature. This trope helps the author to establish himself as an authority on the subject, so that his readers will consider him as a reliable source.¹⁵² In this way, Vegetius tried to ensure that his work would be well received by his aristocratic readers and to establish his authority in the subject. The opinion, then, that veterinary medicine is now practiced by those of less *dignitas* was based on

¹⁴⁷ Milner 1993, xxiv.

¹⁴⁸ Columella *Rust.* 1 prol. 13; translated by .B. Ash, E. S. Forster, and E. H. Heffner 1941 – 1955, 11.

¹⁴⁹ Livy 1.5.

¹⁵⁰ Cic. *Cat.* 1.1.2.

¹⁵¹ Sall. *Cat.* 2; many of Juvenal’s works comment on the state of the Roman people, see *Sat.* 2.6 for an example; Persius also has many comments on the Roman world, see *Sat.* 1.

¹⁵² Apsyrtus takes a different approach in asserting his authority by asserting his experience and credentials, providing reasons to save the equine from disease, and concluding his introduction with discussion on the reputation of the veterinarian (McCabe 2007, 209).

Vegetius' desire to establish his authority than on any real concern about the baseness of the veterinary profession.

Vegetius follows his introductory remarks on the sorry state of the contemporary veterinary texts with a criticism of Apsyrtus:

*Chiron vero et Absyrtus diligentius cuncta rimati, eloquentiae inopia ac sermonius ipsius vilitate sordescunt.*¹⁵³

Chiron and Apsyrtus indeed examined and searched more diligently into all things, but they are contemptible for their want of eloquence and meanness of their language.

There is little doubt that Apsyrtus had extensive knowledge concerning the veterinary art, although Vegetius believes that he was lacking in literary style. Vegetius argues that his own work ought to be read for its eloquence, which the knowledgeable authors Apsyrtus and Chiron lack. Where Apsyrtus' target audience were those wishing to practice animal medicine, Vegetius had a different audience: the upper class. It was a popular tradition in ancient literature to turn a technical manual into a more eloquently written, practical handbook for amateurs.¹⁵⁴ Although Vegetius could improve the rhetoric of the treatises,

¹⁵³ Vegetius *Ars Vet.* 1 prol. 3.

¹⁵⁴ McCabe 2007, 208. Other works of this tradition were the *Phaenomena* of Aratus, *Theriaca* and *Alexipharmaca* of Nicander, Varro, and Columella (McCabe 2007, 208). These handbooks written by non-specialists were favourable among the Romans as was observed in one of the *Vitae* of Aratus (McCabe 2007, 209). See also Cic. *De or.* 1.69. Rhetoric was important to the Roman world; men could rise to power based solely on their ability to produce persuasive literature and speeches. Pliny the Elder emphasises the significance of eloquence in his praise of the Emperor Vespasian (*HN* 1.Dedication). Rhetoric was the third level of Roman education, which was offered only to those willing to pay high fees (Jones 1964, 997). A student of rhetoric generally studied at the highest level for three years before being considered proficient in the field (Jones 1964, 999). The education these individuals received had a strong emphasis on eloquence and persuasion, and pupils learned how to compose elegant compositions (Jones 1964, 1004). Vegetius, being a member of the upper class, likely received education on eloquent speech and elegant compositions. In fact after their education, the status of a Roman could be determined by his diction and style as the upper classes were learned in the classics of Latin, such as Cicero, Vergil, and Sallust, whereas the lower classes utilized vulgar Latin (Jones 1964, 1008). An individual who wrote and spoke elegantly was capable of joining the upper echelon of society. Rhetoric became a powerful tool for ambitious individuals, who wished to become a part of the upper class. Saint Augustine provides an excellent example of the power of rhetoric, based on his ability of prose he was able to rise from poverty into a position of power (Brown 2000, 24, 58, 472 – 473). Augustine's childhood family was poor, but a generous donation enabled him to continue his studies and he learned rhetoric in Carthage. Eventually Augustine, despite his lowly beginnings, became a very influential figure in the Roman world. Ausonius

he could not avoid the terminology, which was seen by the upper class as rather vulgar.¹⁵⁵

As his audience was the upper class, Vegetius was only writing to a small percentage of the Roman people.¹⁵⁶ Vegetius' main purpose, therefore, was not to produce a manual for the working class, but a treatise for the upper class.

As I have stated above, scholars, particularly Adams, take Vegetius' words to indicate that the veterinarians were a "sordid" class of individuals.¹⁵⁷ Vegetius, unlike Apsyrus, was not a veterinarian, but an erudite layman who had read a great deal of the technical material available concerning the health of both horses and oxen.¹⁵⁸ Being in the upper class, Vegetius likely considered himself as superior in status to veterinarians; a perception held only by the aristocracy who were a small fraction of the population.¹⁵⁹ The tone, therefore, that is affected within the book regarding veterinarians reflected Vegetius' own personal opinions of the lower classes. This opinion concerning the sordid class of the veterinary profession continues when Vegetius declares:

*Quis autem nosse curas iumentorum erubescendum putet, cum optima iumenta habere gloriosum sit? Quis vituperationi det id posse curare, quod laudi ducitur possidere? Forsan ipsa opera mulomedicorum videtur abiectior, notitia autem curationis non solum honestissimis, sed etiam difertissimis convenit, ut provisione et ordinatione sollerti curatis animalibus, et damnis careant, et voluptatibus perfruantur.*¹⁶⁰

was another individual who obtained favoured position on account of his rhetoric (Brown 2000, 55). For information on Roman rhetoric see Dihle (1994, 64 – 70, 448 – 466); Hopkins (1961, 239 – 249) on the life of Ausonius; Brown (1992, 8).

¹⁵⁵ Langslow 2000, 1. Note that the education system emphasized on imitation and not the expansion of knowledge, so Vegetius was more interested in copying the style of ancient authors than in advancing knowledge of veterinary medicine (Jones 1964, 1007).

¹⁵⁶ Brown 1998, 3 – 16; Goldsworthy 2009, 41. Although it is difficult to estimate the exact population of the Roman Empire, it was somewhere between 50,000,000 to 70,000,000 (Goldsworthy 2009, 41).

¹⁵⁷ Adams 1995, 53. J.N. Adams is one of the most active scholars of this field, along with K.D. Fischer, K.D. White, A. McCabe, M. Doyen-Higuet, and (indirectly) A. Hyland. This is not a comprehensive list of the scholars who discuss the history of veterinary medicine, but those who are most active in the field. In this section, Adams becomes an important source. Adams is a well-respected philologist, his comprehensive work on Latin veterinary terminology focuses on the philological aspect of Pelagonius and Vegetius. In this paper, I examine the sources in terms of history and not literature and linguistics in order to add a new perspective to Adams' findings.

¹⁵⁸ Adams 1995, 89.

¹⁵⁹ Smithcors 1957, 102; Goldsworthy 2009, 41.

¹⁶⁰ Vegetius *Ars Vet.* 1 prol. 12 – 13.

But who can think that he ought to be ashamed of knowing how to cure livestock, when it is a glorious thing to be masters of the kind? Who will reproach, or find fault with you for being able to cure that which is reckoned commendable and praiseworthy to have in your possession? Perhaps the manual operation itself of the veterinarian seems something low and mean, but the knowledge of the way and method of cure is becoming, and not beneath, not only the most honourable, but also the most eloquent, that, by foresight and prudent management these animals being cured, they may both be exempt from losses and have a free enjoyment of their pleasures.

From these words, it is clear that there is a common perception that Vegetius' intended audience of wealthy landowners, equestrians, and senators would consider performing the actions of the *mulomedicus* beneath them, at least professionally. Here, however, Vegetius attempts to persuade his readers that the knowledge of curing their prized animals is important, not so that they could practice it as a trade, but rather emphasizing the importance of information. Vegetius implies that the *mulomedicus* performed the treatment or prophylactic measure under the direction of the knowledgeable owner or overseer. Owners could perform such activities themselves, but it is more likely that if they could afford the services they hired a specialist to treat the animal.¹⁶¹ So from this statement it is clear to the aristocracy that although treating animals is a rather 'low and mean', the knowledge is useful.

For those who could not afford to follow Cato's advice of selling blemished animals, it was likely more cost effective to try and heal the injured or sick animal, advice that is seen in the veterinary work of Vegetius.¹⁶² Vegetius argues:

*Diligens itaque paterfamilias, [si] cum mortibus animalium suorum et cum medicinae expensis atque mercedibus faciat rationem, intelliget, unius vilissimi iumentum pretium ad multorum, quae sine dubio peritura sunt, si curata non fuerint, salutem posse sufficere.*¹⁶³

Therefore let a careful master of a family take an account of the deaths of his own animals, and compare them with the expenses of medicines, and doctor fees, and he will understand that the

¹⁶¹ See Pelagonius 189, 284, 529bis; Adams 1995, 86 – 87.

¹⁶² Vegetius *Ars Vet.* 2 prol. 3. This advice is especially relevant to the expensive oxen, which performed the majority of labour on a farm and had to be broken and trained before being fit for farm work.

¹⁶³ Vegetius *Ars Vet.* 2 prol. 3.

price of one of the cheapest of his horses may suffice for the cure and restoring the health of many, which doubtless will perish, if they are not cured.

For Vegetius, it was more economical to purchase the aid necessary to cure the animal as opposed to allowing the beast to die. Although Vegetius was addressing his upper class friends, rather than the peasant farmer, his advice was still sound for the latter, as oxen were necessary for much farm labour, and mules were a rather expensive commodity. Notice that the main fear expressed is that the doctor's fees will be more than the cost of the animal, not that the veterinary surgeon is rare and difficult to find. The veterinary practitioner was then not a rare commodity, but a service any farmer could hire if they were willing to pay the fees.

Vegetius' discussion on the baseness of the animal doctor continues:

*Mulomedicinae ars iam dudum vitio cupiditatis et exiguitate mercedis, nullo studiosius discente, collapsa est.*¹⁶⁴

Veterinary medicine has long since collapsed from the vice of greed and smallness of pay; no one is eager to be a student of the field.

Adams utilizes Vegetius' words to argue that there was a small number of veterinarians practicing in the fourth century AD.¹⁶⁵ Of course, when Vegetius was writing, the Roman world was experiencing a profound political and economic crisis, and it would not be surprising if this had indeed led to a significant decline in the numbers and economic status of veterinary practitioners. By the end of the fourth century, the western half of the Roman Empire was separated both politically and financially from the

¹⁶⁴ Vegetius *Ars Vet.* 2 prol. 1.

¹⁶⁵ Adams 1995, 66.

wealthier eastern half of the Empire.¹⁶⁶ The western half was constantly defending its larger frontier from numerous, invasive tribes and consequently its resources were stretched.¹⁶⁷ In order to increase wealth in the Empire coin was debased, resulting in inflation, which especially affected soldiers and government employees, including many of Vegetius' colleagues and the *mulomedici* hired by the *cursus publicus*.¹⁶⁸ The increase in inflation also affected the general population through increased costs, which resulted in a reduction of skilled tradesmen as people attempted to reduce costs and either went without or performed a service themselves.¹⁶⁹ The frequent legislation enacted forcing sons to follow the occupations of their fathers attests to the insufficient number of

¹⁶⁶ Goldsworthy 2009, 276. Christie (2011) provides a good source for Late Antiquity focusing entirely on the western half of the Empire. Vegetius was likely born in the western half of the Empire. Elton (1996, 1 – 13) discusses the military history following up to the overthrow of Romulus Augustulus (AD 476). Although the military was capable of dealing with the threats to the western half of the Empire, there were a large number of invasions from barbarian tribes in the fourth and fifth centuries. Ward-Perkins (2005, 169 – 173) offers the theory that the western empire did not fall so much as integrate with the Germanic peoples, which resulted in more of the Germanic ideas being adopted by the western half of the Roman Empire. It is likely that, in the same manner as the Huns, the Germanic peoples had their own ideals of animal husbandry and resorted to these practices as opposed to hiring the *mulomedici*. It is notable that the *ἰππιατροί* mentioned by Apsyrtus are predominantly Greek (McCabe 2007, 132) meaning that the majority of veterinarians were related in some fashion (either through their ancestors or as natives) to the eastern half of the Empire. The lack of tribal names likely indicates that the Germanic peoples may not have been as interested in becoming animal doctors, which could also account for a reduced number of *mulomedici*. See also Christie (2011, 226) for a discussion of the issues caused by the barbarian settlers on the Romans. There are numerous books written on Late Antiquity, a partial bibliography includes Cameron (1993a, 1993b), Halsall (2003, 2007), Heather (2005), Innes (2007), Kulikowski (2007, 2004), Liebeschuetz (2001), Ward-Perkins (2005), Wickham (2006).

¹⁶⁷ Goldsworthy 2009, 276; Christie 2011, 35 – 50, 226.

¹⁶⁸ Hopkins 1980, 123.

¹⁶⁹ Hopkins 1980, 124. Note also that a large number of the wealthy citizens moved to the east, reducing the overall wealth of the western half of the Roman Empire (Christie 2011, 226). By the middle of the fourth century, the taxation system had become local and focused on taxation of kind, which resulted in less artisan and trader activity (Hopkins 1980, 124). The need for *mulomedici* to treat animals likely increased with increased focus on local agriculture, but the availability of these specialists was likely reduced both due to the need for education, the lack of substantial income for the job, and as will be discussed the reduction of the *cursus publicus*. Also with increased costs of goods, like today, the Roman people were more interested in reducing costs as much as possible and so likely turned to treating their own animals as best they could. In fact, today, with the current financial instability, students of the veterinary college are concerned about finding jobs after they graduate. Moreover, veterinarian surgeons and specialists are working as general practitioners because their clientele base has rapidly decreased. Also the majority of income and manpower was utilized to protect the towns from invasions, so even if an individual desired to become a veterinarian, it is likely that he was sent instead to protect the city or work in the fields as there was limited manpower (Christie 2011, 226).

artisans and specialists; therefore, the *mulomedici* were not the only specialists to suffer a reduction in numbers.¹⁷⁰ People were interested in saving their wealth, and may have turned to treating their own animals. Vegetius indicates that horse owners were treating their animals as if they were Hunnish equines, which meant that the animals were receiving little medical treatment, or even basic animal husbandry.¹⁷¹ It is possible that in invoking the Huns Vegetius was demonstrating how dreadful the state of animal medicine had become, as well as emphasizing the need for his treatise.¹⁷² Even if there were few veterinarians, the Romans had considerable knowledge in animal husbandry and should have been capable of treating most illnesses themselves. Moreover, even if there was a significant reduction in the number of private veterinarians, it does not necessarily mean that the profession had become scarce as is implied by Adams. There is no doubt that the state continued to employ many veterinary surgeons for either the military or the *cursus publicus*, as was discussed in Chapter 1 and 2, respectively. Vegetius likely hired private veterinary surgeons for his horses as opposed to those who were employed by the state.¹⁷³ Vegetius, then, is presumably lamenting the reduced number of *private* veterinary practitioners during his time.

There was, however, a significant loss of veterinary practitioners by the beginning of the sixth century AD. During the last quarter of the fifth century, after Vegetius wrote his treatise, the *cursus publicus* slowly dissolved due to the financial burden of the system and the collapse of the state.¹⁷⁴ The postal system was likely supplying the

¹⁷⁰ Goldsworthy 2009, 275; Christie 2011, 229.

¹⁷¹ Vegetius *Ars Vet.* 2 prol. 1.

¹⁷² Mezzabot 2000, 58.

¹⁷³ Pelagonius 24.

¹⁷⁴ Walker 1991, 47.

Roman Empire with numerous *mulomedici* as they retired or were freed.¹⁷⁵ When he was no longer under obligation to the *cursus publicus*, the *mulomedicus* had the skills to continue on a private practice. This means that there were veterinarians moving from public animal medicine into private practices, which offered services to private animal owners.¹⁷⁶ When the *cursus publicus* declined fewer *mulomedici* were trained by the government. The profession of *mulomedicus* may well have become increasingly obsolete with the reduction of their numbers within the government and a lesser demand by the population as a result of inflation and the pressure of the barbarian invaders on Roman agriculture in the west.

At this point, it is also worth recalling the number of veterinarians in Britain and the United States, since it makes it clear that Adams' picture of the decline in the numbers of veterinary practitioners in the Roman Empire was not nearly as drastic as he suggests. In the early 1800s, there were only a small handful of veterinarians, no more than 30, in the United States, and people had to rely upon either their own knowledge or that of the farriers and cowleeches for animal medicine.¹⁷⁷ In Australia in 1829, to care for the large number of sheep and cattle there were only two trained veterinarians, along with three others who claimed to be animal doctors and 14 farriers.¹⁷⁸ By the middle of the nineteenth century in England, where one of the earliest veterinary schools appeared, there were only 1,082 trained veterinary surgeons for the British Isles.¹⁷⁹ There were another 2,433 practitioners of animal medicine in one form or another besides the trained

¹⁷⁵ Walker 1991, 47.

¹⁷⁶ Walker 1991, 47.

¹⁷⁷ Mulder 1991, 175.

¹⁷⁸ Maxwell 2008, 15 – 16. Australia was at that time a major player for sheep rearing.

¹⁷⁹ Pattison 1984, 62. Although there are numerous veterinary colleges today, and it is a popular profession, there is still a significant difference between the number of animals and veterinarians. In the United States, in 2007 excluding cats, fish and exotic pets, there were 5222 animals per recognized veterinarian practitioner (American Veterinary Medical Association).

veterinarians.¹⁸⁰ It is also notable that cattle, sheep, and swine received very little professional veterinary care in the middle of the nineteenth century.¹⁸¹ Given the availability of the *mulomedici*, who were widespread enough that an individual could debate whether to hire their services, they were clearly not as rare as in nineteenth century Australia or the United States, or even Britain, where an animal owner was lucky to come upon a trained professional. When Vegetius is lamenting at the loss of professional veterinary surgeons, it is likely that the *mulomedici* had been far more numerous and easily accessible, he does not indicate that no one is practicing veterinary medicine, simply that those who now practice it were no longer as well-educated as leading experts as Apsyrtus.¹⁸² From Vegetius' own words, it is clear that the professional veterinarian had once been very common, but that by the beginning of the fifth century there were not as many available as Vegetius wished, which contradicts Adams' argument that there were hardly any veterinary surgeons in the Roman world at any point in time.

Vegetius' sources included a series of veterinary manuals, the majority of which were written in the fourth century AD.¹⁸³ Apsyrtus, Theomnestus, Pelagonius, and Hierocles are some of the veterinary writers practicing at the time, and in their works, the authors mention many horse doctors and veterinarians. Apsyrtus provides his readers with the names of other ἵππιατροί in his epistolary style; Pelagonius refers several times

¹⁸⁰ Pattison 1984, 62.

¹⁸¹ Smithcors 1957, 346 – 348. Delabere Blaine, a scholar and historian, noted that, “that branch of this art that takes in the diseases of horned cattle, is in a more barbarous state than even farriery” (Quoted in Smithcors 1957, 347).

¹⁸² Vegetius *Ars Vet.* 1 prol. 3. Apsyrtus was one of the top in his field at that time; he was well known among many of the veterinary authors. Few individuals were as good as Apsyrtus in advising and practicing animal medicine.

¹⁸³ Appendix A provides a timeline of the veterinary practitioners.

to an individual by the name of Emeritus, whom he called *mulomedicus*.¹⁸⁴ In fact, Pelagonius was one of the first Latin authors to compose a treatise on veterinary medicine without focusing on agriculture, but instead on the medicine.¹⁸⁵ It is clear that during this time, many experts were actively corresponding with one another concerning the veterinary art and its technical knowledge and skills.¹⁸⁶ The highly technical information regarding complex eye surgeries recorded in the *Mulomedicina Chironis* could only be understood by other veterinary practitioners (or doctors) and was not intended for the *pastores*.¹⁸⁷ More Roman veterinary works were written during the fourth century than in eighteenth century England when there were few publications. The first journal, *The Veterinarian*, only appeared in 1829 and it was not until fifty years later that other academic periodicals were established.¹⁸⁸ The number of manuals during the fourth century indicates a high amount of activity within the veterinary art. In addition, the growth of the knowledge in animal medicine from the first century AD, when the majority of authors were agronomists, to the fourth century AD was considerable. By the fifth century AD, despite Vegetius' misgivings, veterinary medicine had reached a high degree of development.¹⁸⁹ The epistolary form of Apsyrtus' treatises, as well as Vegetius' attempts to prove his authority, indicate that there was competition and a hierarchy among veterinarians.¹⁹⁰ Some individuals such as Apsyrtus were very well distinguished among the veterinarian community; Vegetius even acknowledges his abilities, despite disparaging his writing style. Other individuals, such as those who left

¹⁸⁴ Pelagonius 77, 99, 110, 153.

¹⁸⁵ Fischer 1981, 215.

¹⁸⁶ Walker 1991, 47.

¹⁸⁷ *Mul. Chiron.* 64 – 82; Adams 1995, 83.

¹⁸⁸ Pattison 1984, 17, 99.

¹⁸⁹ Walker 1991, 47.

¹⁹⁰ Adams 1995, 58. See Apsyrtus *Hipp. Berol.* 42.1, 33.1, 35.1, 8.1.

nothing but inscriptions behind, were not so well known among the veterinary community.¹⁹¹

When reading Vegetius, it must be remembered that he was a horse owner and likely owned some expensive animals, to which he gave nothing but the best care.¹⁹² In writing a manual on veterinary medicine, Vegetius sought to help other animal owners to understand what was involved in treating their animal, and what to look for in a veterinarian. The low costs for the services of the veterinary practitioner encouraged individuals to seek out the veterinarian as opposed to attempting to cure the animals themselves, thus ensuring a higher level of care for the beasts.

Throughout his work, Vegetius gives numerous reasons to support veterinary medicine in an attempt to persuade his reader that this treatise is important.¹⁹³ This veterinary author also provides further insight into the actual profession of veterinary medicine, emphasizing that a *mulomedicus* must be a skilled individual who knows how to treat the animals effectively with both herbs and in practical application of his veterinary skill.¹⁹⁴ In one of his prefaces, Vegetius indicates that:

*Sicut medicorum prima doctrina est humani corporis partes organorumque cognoscere, ita necessarium Mulomedicis, de offibus, de nervis ac venis iumentorum universa perdiscere.*¹⁹⁵

Just as the first thing that doctors are instructed in and do learn, is to know the parts of the human body and of its organs, so it is necessary for the veterinarian to learn thoroughly all things relating to the bones and veins and nerves of horses and mules.

¹⁹¹ *CIL* 1.9611, 9612, 9613.

¹⁹² For a modern comparison, see today's horse owners, many of whom, especially those with expensive sport horses, ensure that the individual treating their pets is capable and competent and also will research the animal's ailments in order to understand what the veterinarian is doing.

¹⁹³ Vegetius *Ars Vet.* 2 prol. 3; 4 prol. 4 – 5.

¹⁹⁴ Vegetius *Ars Vet.* 4 prol. 7.

¹⁹⁵ Vegetius *Ars Vet.* 4 prol. 8.

This quote indicates that in order to treat horses, the *mulomedici* were expected to learn about the body of the horse in particular.¹⁹⁶ Although the education of the *mulomedicus* is not discussed in any of the veterinary treatises, there was knowledge that the professional was required to know before treating animals, as Vegetius explains here. The animal doctor was expected to be able to diagnose and differentiate the different ailments in order to be able to treat them.¹⁹⁷ The professional *mulomedicus* likely learned his trade either through apprenticeship to another or through joining the military or *cursus publicus*. In one instance, it is clear that the parent passed down the trade to his children.¹⁹⁸

The education of the human doctor was varied.¹⁹⁹ A physician slave could be trained by his master, if the owner was a doctor; alternatively, a slave could be sent away for medical education.²⁰⁰ Physicians were not uniformly trained in accredited institutions, as modern physicians are, but received their education from a variety of different sources. Similarly, the animal doctors had training from various sources. As was the case with Apsyrus, it is possible that some animal doctors learned human medical theory and utilized that in order to treat animals. In other cases, the veterinarians could have learned from an expert while working in the military or along the *cursus publicus*. It has been suggested that the *mulomedici* working on the *cursus publicus* who were freed and the *veterinarii* who were discharged from the military became independent practitioners of the veterinary art, offering their services to private

¹⁹⁶ See also *Mul. Chiron.* 185, 205.

¹⁹⁷ Pelagonius 183.

¹⁹⁸ *CIG* 1959.

¹⁹⁹ For the purposes of this paper, physicians will refer to human doctors.

²⁰⁰ *Dig.* 38.1.26; Treggiari 1969, 130.

individuals.²⁰¹ One inscription proves inheritance of the profession through family ties; the inscription is dedicated to Lucius Aurelius, a veterinarian, by his sons who were also veterinarians.²⁰²

Although Vegetius and his presumed upper class audience considered the practice of veterinary medicine below their station, such men represented only a small fraction of the Roman population. Adams interprets Vegetius' words as proof that there were not very many veterinarians in the Roman Empire, yet he generalizes this statement to include most of Roman history ignoring the historical context and Vegetius' own biases. The animal doctor was not as common as today, but still common enough that Vegetius' readers could easily obtain his services. The animal doctor was trained either through government organizations such as the *cursus publicus* or the military, or through apprenticeship to another animal doctor. He was required to know a great deal about veterinary medicine, including anatomy, the ailments of animals, diagnosing and treating diseases, and mixing medicines and potions.

The Veterinarian in Society

Adams often states that Roman animal doctors were a heterogeneous group who consisted of individuals from a variety of different social classes with varying degrees of education. The physicians, however, were no different; they were drawn from a variety of social backgrounds with varying education.²⁰³ Some of those coming to Rome from

²⁰¹ Walker 1991, 47.

²⁰² CIG 1959; Nanetti 1942, 50.

²⁰³ We cannot discuss human medicine in any depth here. For a discussion of the various medical theories and a comparison of human and animal medicine, see Adams 1995, 36 – 43. Although veterinary medicine lagged behind that of human medicine, it borrowed several of the theories that physicians had including the theory concerning humours, which lasted well into the nineteenth century.

other provinces were generally slaves who eventually became freedmen.²⁰⁴ There were, however, physicians who were free-born citizens.²⁰⁵ Similarly, members of the upper class who were focused on agricultural pursuits could have an animal doctor as a slave, but there were citizen veterinarians. As was the case for human doctors, the varying social origins of veterinary practitioners, and the participation of slaves and freedmen, did not prevent them from being perceived as a legitimate profession.

The common perception of Roman slaves and freedmen is that they were of the lowest rank. This, however, was not always the case. Uneducated and unskilled slave labourers were certainly among the lowest ranks of society; these slaves often worked the fields of the *latifundia*. On the other hand, highly educated and skilled slaves, such as teachers and doctors, were in demand and were treated well due to their high initial cost and potential to be hired out to others for high rates. Furthermore, once a slave was free he could amass a large amount of money. Freedmen, just like freeborn citizens, were legally allowed to own land and slaves, and in one case, Caecilius Isidorus acquired a great deal of wealth, including 4,116 slaves and 3,600 oxen.²⁰⁶ Though veterinarians were unlikely to be among those individuals who earned such a degree of wealth, particularly considering their wages, it does indicate that just because some of the veterinarians were freedmen, it does not mean that they were of the lowest class in Roman society.

What cultural background did veterinarians come from? As noted in the first chapter, the majority of the recipients of Apsyrtus' letters were Greek. An examination

²⁰⁴ Romans in rich households owned a doctor as a part of his household staff. (Treggiari 1969, 130).

²⁰⁵ It is important to remember that individuals who had Greek names were not necessarily slaves, such as Galen and even Apsyrtus. After several generations of living in Rome, a Greek family could still give their freeborn children Hellenistic names.

²⁰⁶ Treggiari 1969, 108 – 109.

of a number of inscriptions and papyrological evidence indicates that a large percentage of veterinarians were Greek.²⁰⁷ There are, however, a few indigenous names, in the Egyptian papyri, indicating that the practice of veterinary medicine was no longer solely the domain of the Greeks, but that the Egyptians also attempted to learn the skills required for the profession.²⁰⁸ Although this fact does not prove the existence of veterinarian schools, it does show that profession was promising enough that people in other areas of Rome desired to become veterinarians.

Evidence for Veterinarians

The Law Codes and Papyri

As previously observed in Chapter 2, the *mulomedicus* was mentioned in the *Codex Theodosianus* as a class of civil servant. Similarly, as noted in Chapter 1, the *veterinarius* was listed in the *Digests* as an *immunis*. These law codes, however, are not the only references to the veterinary profession mentioned in legal documents. One of the most important and telling accounts of the veterinarian appears in Diocletian's *Price Edict*. While Vegetius describes how the veterinarians overcharge people for their services, many of the fees they charged, like those of most trades, would eventually be regulated by Diocletian.²⁰⁹ Right below the maximum price to hire the driver of camels and asses and the *mulio* (mule driver) is the *mulomedicus*. The *Edict* groups the articles in a systematic way and so we find the *mulomedicus* next to the wagoner, shepherd, and

²⁰⁷ Nanetti 1942, 53; *P.Oxy* 1 92; *P.Ross.Georg.* 5.60; *P.Lips.* 5.101.

²⁰⁸ Nanetti 1942, 53.

²⁰⁹ The *Edict* was an attempt to correct inflation, which means that the prices listed are the maximum prices, which, in theory, an individual paid for goods or services.

drivers, just after the skilled job of shipbuilding.²¹⁰ The *mulomedicus* is listed for two duties. The first of these is:

Mulomedici tonsurae et aptaturae pedum in capite uno.....X sex.

For the *mulomedicus* for shearing and for caring for the hoofs of each animal.....6 denarii.²¹¹

The other duties of the *mulomedicus* were

Depleturae et purgaturae capitis per singula capita.....X biginti.

For the combing and cleansing the head of each animal.....20 denarii.²¹²

Although 6 *denarii* was not a significant amount of money, this amount could certainly add up quickly when a herd of animals was involved. To put these values in perspective, the average trained worker was limited to 50 *denarii* per day. The *mulomedicus* thus needed to treat several ill animals within a day to earn as much as a skilled worker.²¹³

The *Edict*, however, only recorded common practices; political bodies had little time to contemplate rare jobs and goods.²¹⁴ The *Edict* thus suggests that *mulomedicina* was not a rare profession, but rather was regularly required by the Roman population.

The *Edict* also indicates the most common activities of the *mulomedicus*.²¹⁵ The activities listed first - the shearing and preparation of the feet - were simple and consequently only cost a small fee.²¹⁶ The bleeding of the animal, however, was more a more complex and difficult procedure, which could result in the animal's death if improperly performed. The *Edict* furthermore reinforces the importance of horses over

²¹⁰ Abbot 1921, 166.

²¹¹ Diocletian's *Edict* 7.20. For further information on the price of these services and how they relate to other fees, see Abbot 1921, 166 – 178. These were the *maximum* price that the *mulomedici* were permitted to charge for the services, not the price that they were charging. It is likely, however, that the prices were taken from the prevailing market values and so were not incredibly disparate from the actual prices the *mulomedici* charged.

²¹² Diocletian's *Edict* 7.21.

²¹³ For a further comparison on the cost of these services, see Nanetti 1942, 52.

²¹⁴ Walker 1991, 20.

²¹⁵ Walker 1991, 20.

²¹⁶ Walker 1991, 20. This also reveals how important hoof care for animals, as it was an important enough procedure to warrant attention in the *Edict*. The shearing likely refers to the cutting of the mane.

other domestic animals, as the operations it listed were more relevant for equids than for oxen or sheep. The *Edict* does not provide a complete list of duties the *mulomedicus* was expected to perform, only the most popular treatments. It is likely then that the focus of the *mulomedicus* was on equids, but that they were capable of treating other animals.

One of the most important pieces of information that can be gathered from the *Edict* is that there were *mulomedici* who were charging for their services in a manner that had not been in regulated, indicating that there were private *mulomedici* not employed by the state.²¹⁷ The *mulomedici* employed by the *cursus publicus*, according to the *Codex Theodosianus*, were not to be provided with further wages beyond the payment the state provided. Clearly then Diocletian's *Edict* does not refer to these state-employed *mulomedici*. Furthermore, the pay for the military *veterinarii* similarly came from the state, from the treasury dedicated to paying employees in the army. These individuals then did not need to charge for their services, particularly not a paltry six *denarii*. A private *mulomedicus*, however, required payment for his services. Considering the rampant inflation of the time, there is a possibility that the *mulomedici* were charging high prices for their services in order to combat or profit from the economic conditions.²¹⁸ Vegetius complains about the increasingly high costs of such services, particularly for the potions and poultices they prescribe for the horses.²¹⁹ The alternative to this situation is that the *mulomedici* were slaves who were hired out by their masters for such services.²²⁰ Considering the rather large number of inscriptions that refer to the

²¹⁷ Fischer 1981, 217.

²¹⁸ Although the constantly increasing and rather high fees still remains a factor in veterinary medicine today. One of the main sources for ancient veterinary practices is Vegetius who complains an extensive amount about the costs of the veterinarian, which is likely because he is a horse-owner and has to pay this expense.

²¹⁹ Vegetius 1. Prol. 2.

²²⁰ Abbott 1921, 170.

mulomedici as freedmen, this situation is very plausible.²²¹ Once these individuals gained their freedom, these ex-slaves presumably continued working as *mulomedici*, particularly if they had already earned a name for themselves in that occupation. It is notable, however, that the cost of the services for the *mulomedici* does not include room and board as was the case with the *mulio* and the shepherd.²²²

There is some papyrological evidence concerning veterinarians, who were not associated with the circus, but granted a decent payment for their services.²²³ The first of these is a papyrus from the end of the fourth century AD which contains a list of people who were to be paid in wheat including a goatherd, shepherd, camel driver, and veterinarian.²²⁴ The veterinarian was paid 4 *artabae* of wheat, whereas the physician was paid 10 *artabae* of wheat. The cobbler was paid a little more than the veterinarian was at 5 *artabae* of wheat.²²⁵ It is clear then that the veterinarian was not paid a great amount for his services. Yet this veterinarian Isidoros was an employee of the farm not the government, and was paid in goods.²²⁶ The second important piece of information that can be gathered from this account is that the veterinarian was paid in a situation where there were mostly goats, sheep, and camels. Yet there are goatherds, shepherds, and camel drivers on the staff, which means that the ἰππιατρός was treating these animals for

²²¹ Other what masters with slaves trained in other professions (banking, physician, teaching) did.

²²² Diocletian's *Edict* 7.17 – 20.

²²³ Among the ones not discussed there is *P.Lips* 1.101; *P.Oxy* 16.1974; *P.Oxy* 61.4132; *SB* 20.14584; *P.Hib* 1.45; *CPR* 7.38; *PSI* 8.955.

²²⁴ *P.Ross.Georg.* 5.60 5.1.

²²⁵ In addition, in contrast, the carpenters at the Appianus estate in the third century AD were paid 1 *artabae* of wheat for 6 days of labour, which was approximately 24 drachma (Rathbone 1991, 169).

²²⁶ Considering he was paid in goods, he was likely not a slave, but a citizen.

illnesses even with their accustomed caretakers present.²²⁷ It is likely that there were also cattle present for the ἰππιατρός to care for on that same farm.²²⁸

Another piece of papyrological evidence is a receipt from AD 337.²²⁹ In this receipt, Aphthonius orders an individual Ofellius to provide wine for services rendered, including 10 jars of new wine for the maintenance of the landowner's house and one jar of new wine for the veterinarian, Amethystos. It is likely that Amethystos was hired for a certain service as opposed to being under permanent employment since he was paid the same as an individual hired for maintenance as opposed to being grouped with permanent staff such as goatherds and shepherds. It is possible that he lived in the nearby town and went to the farm in order to cure some ailment that was plaguing one of the farm animals. Thus, though there is no mention of the services rendered, it can be observed that Amethystos the ἰππιατρός was not paid a large amount for his services. These papyri thus indicate that though a number of veterinarians were employed by the state, there were still private veterinarians operating within the Empire.²³⁰

In order to understand the situation of veterinarians on farms, a broader perspective will be taken and specialists in general will be considered. Rathbone gathered information regarding the Appianus estate in Egypt in the third century AD and part of his study concentrated on the employees and contracts of an estate farm.²³¹ It was not rare for farms to hire specialist labour particularly for jobs that were irregular. In fact, Rathbone concluded that most specialists were not employed long term.²³² By not

²²⁷ The Iraqi shepherds were the main caretakers of the sheep and yet they still deferred to the veterinarian for aid regarding animal health.

²²⁸ Nanetti 1942, 51.

²²⁹ *P.Oxy* 1 92; McCabe 2007, 7.

²³⁰ Nanetti 1942, 53.

²³¹ Rathbone 1991.

²³² Rathbone 1991, 174.

employing the specialist full-time, the owner reduced the cost of employing him when he was not required, as well as of training, supervision, and equipment.²³³ Additionally, considering the extent of the large estate farm, it was faster to hire local skill as opposed to sending the specialist across all the units of the estate.²³⁴ Therefore, the veterinarian, who was a specialist whose services were required at irregular intervals, was most likely hired from the local town when needed.²³⁵ Lastly Rathbone noted that specialists likely did not want to enter into long term contracts, particularly for skills that were required at irregular intervals.²³⁶

Finally, I will mention another papyrus that shows at least one independent citizen veterinarian living in the country suggests that like the specialists working for the Appianus estates, he was called in to aid the farmers and herdsmen on the farms around his own holdings.²³⁷ Presumably the animals on the nearby farms, estates, and villages offered him enough work to provide him with a reasonable income.

There were undeniably private veterinarians, who serviced the farms around them. These veterinarians, at least by the third century AD, were likely not indentured to large estate farms, but freemen or freedmen who worked on an as needed basis for all farms both small and large and were paid for the most part in kind, as far as the evidence shows.

²³³ Rathbone 1991, 174.

²³⁴ Rathbone 1991, 174.

²³⁵ It was normal for specialists to be paid in kind, see Rathbone 1991,170.

²³⁶ Rathbone 1991, 174.

²³⁷ *P.Lips* 101; Bowman 1985, 142.

Archaeological

As stated at the beginning of this chapter, there is evidence for at least one dog receiving veterinary care.²³⁸ Archaeozoologists have identified the bones of a horse suffered from purulent arthritis (which Apsyrus provides some treatments for, although most of these are ineffective).²³⁹ The bones indicate that the disease had progressed, which implies that the horse had lived a long time with the disease and it is likely that in order to relieve the animal's suffering and increase its efficiency, the owner had applied a number of treatments and had likely called in aid considering this disease was likely beyond his knowledge.²⁴⁰ Unfortunately, the attempts at treatment do not appear on the bones. In a case from a Late Roman site near Mühlberg, the metacarpal of a horse on the third distal shaft, which had been fractured, had the appearance of being splinted.²⁴¹ The Romans were well aware how to splint bones, particularly those of the smaller livestock such as sheep.²⁴² Evidence indicates that sheep did have their bones splinted in order to aid the healing process.²⁴³ Although it is difficult to determine human intervention in zooarchaeology, there is some evidence that some care was given to the animal.

Due to their natures, it is difficult in archaeology to determine the purpose of certain medical devices and if they were intended for use on animals or humans. Nevertheless, some instruments have been found that match descriptions in the ancient veterinary writings. The first of these is the *sagitta*, an instrument shaped like an

²³⁸ MacKinnon 2010, 301, 304.

²³⁹ Janeckzek *et al.* 2010, 334.

²⁴⁰ Janeckzek *et al.* 2010, 334.

²⁴¹ Udrescu and Van Neer 2005, 31.

²⁴² Ryder 1983, 167.

²⁴³ Udrescu and Van Neer 2005, 30.

arrowhead for bleeding animals. The tip of the instrument is sharp and long so that it can reach a vein, and the tail end of the device is wide enough for an individual to hold it between the thumb and index finger. These instruments have been found in archaeological digs such as the one in the Kensington Museum of London.²⁴⁴

There were also tools specially designed for hoof care. The hooves of the animals were one of the most important limbs and, as such, they had to be cared for constantly. Even when shod, a horse's hooves require attention. All the veterinary authors agree on the necessity of hoof care.²⁴⁵ In order to protect the hoof, the dressings had to be held on with a special type of shoe called the *calcea spartea*.²⁴⁶ This instrument was constructed out of rope and secured the bandages on the hoof. Due to the perishable nature, however, none of these instruments has been found. The more durable *solea ferrea*, or hipposandal, made out of metal, has been found throughout the Roman Empire.²⁴⁷ These instruments were even modified for cattle hooves so one side of the cloven hoof could be bandaged.²⁴⁸ Only one veterinary author, however, provides evidence for the use of the *solea ferrea*. Chiron recommends that in the cases of extreme pain, the *solea ferrea* be placed on the opposite foot so that the sore limb would be raised.²⁴⁹ Given the nature of the *calcea spartea* and the *solea ferrea*, these instruments were not useful as horseshoes, as was stated in previous chapters, but were used instead for medical purposes, which was the domain of the veterinarian. In fact, a funerary statue of a *mulomedicus*, now

²⁴⁴ Walker 1991, 22.

²⁴⁵ Walker 1991, 28.

²⁴⁶ Walker 1991, 28.

²⁴⁷ Walker 1991, 28.

²⁴⁸ Walker 1991, 28.

²⁴⁹ Walker 1991, 28.

located in the Lorrain Historical Museum of Nancy, displays a veterinarian holding a *solea ferrea*.

Another instrument that was clearly within the domain of the veterinarian was the *ferramentum* (ridger).²⁵⁰ Ridgers were utilized to trim the soles of the hoof and the frog.²⁵¹ These instruments were found in a variety of forms and conditions, some decorative and rather fancy, others simple.²⁵² The main characteristic of this instrument are: a blade with upturned edges so that it can cut at an angle into the sole of the horses' foot and an off-centered handle so that the wielder did not wound his knuckles.²⁵³ These instruments have been found throughout the Roman Empire and a figurine from Pompeii, now preserved in the National Archaeological Museum in Naples, clearly demonstrates its use.²⁵⁴ Other instruments that were likely used by the veterinarians were similar to those seen in human medicine. The *solea ferrea*, *ferramentum*, and *sagitta*, however, were all tools that were clearly for the veterinarian alone.

Conclusion

While the veterinarian remained relatively low, the profession played an important, if varying, role in Roman society over several centuries. The first veterinary surgeons likely entered Italy as Greek slaves and treated the multitude of livestock important to the Roman economy. Although the herdsman were competent in handling the commonplace ailments and maintenance of the livestock, mostly through prophylaxis, they still turned to professional animal doctors for difficult diagnoses and treatments.

²⁵⁰ Walker 1991, 28.

²⁵¹ Horses' hooves are constantly growing and thus require constant trimming. Large files are utilized for the outside of the hoof, but the sole requires finer detailing, particularly around the frog, which is a very sensitive part of the foot.

²⁵² Walker 1991, 28. Elaborate decorative ridgers can be observed in the museums of Grenoble and Bar-le-Duc, whereas instruments that are more rustic can be observed in the Dorset Museum.

²⁵³ Walker 1991, 28.

²⁵⁴ Walker 1991, 28.

Over time, more veterinarians became involved in the imperial service, primarily in the military and *cursus publicus*. In general, a number of *mulomedici*, when freed from their duties to the government, offered their services to private individuals. Due to inflation and economic hardships, the number of veterinarians had likely decreased by the end of the fourth century AD, although their numbers had not been reduced enough for them to be considered a rare profession. By the end of the fifth century AD, the *cursus publicus* had become too much of a financial burden, which meant that large numbers of *mulomedici* were no longer employed or trained by the state, resulting in a decrease in the number of veterinarians. In addition to the state employed veterinarians, there were also private veterinarians who learned through apprenticeships the trade of animal medicine. From the amount of literary and papyrological evidence, it is clear that there were *mulomedici* who worked for farm owners, transport companies, and animal owners. They were an integral, if overlooked, part of the Roman world, one that required not only the animals that supported its economy, entertained its crowds, and carried its mail and soldiers, but one that also required the tenders and healers of these animals.

Conclusion

The Romans relied upon animals for their way of life. Quadrupeds were vital for waging military campaigns, transporting goods and people, entertainment, and sustenance. Animals, however, just as humans, were susceptible to injuries and illnesses. The loss of beasts caused economic, administrative, social, and agricultural difficulties. A contagious disease, if not caught early, could decimate the livestock populations and cause significant economic losses in this animal-dependent culture. Animal medicine was known long before Rome had overthrown their kings; animals had been treated for ailments as soon as they were domesticated and became integral to the survival of humankind. During the early period of Republican Rome, herders treated the majority of animals. The influx of Greek culture in Rome brought Romans into contact with professional physicians and animal doctors. With the concentration of animals in government organizations – the military and the *cursus publicus* – the veterinarian became an important and respected member of the civil service, employed in large numbers to treat or instruct in the treatment of ailments in animals. The animal doctors worked in diverse conditions from battlefields, circus arenas, to the Roman countryside. These individuals were dedicated to the health of animals in the same way physicians were to the health of humans. Although veterinarians treated livestock, the majority of evidence on the ancient animal doctor relates to equids due to the greater susceptibility of this species to ailments and the bias of the medieval period where the equine was significant to the chivalrous knight.

Previous studies of ancient animal medicine have focused on philological and medical aspects of the profession, which provide a basis for understanding, but fail to examine the profession in its full social context. A fuller understanding of Roman veterinary medicine is achieved when the profession is studied within Roman culture. In this thesis, I have investigated the social, economic, and agronomic significance of Roman veterinary medicine. Through an analysis of the four facets of the Roman Empire, I have shown that ancient veterinarians were more widespread and significant to the ancient world than previously believed by scholars.

Most modern scholarship on the practice of the veterinary profession relates to the military. Equids, both cavalry mounts and pack animals, were essential for the operation of the army. Supplies were transported using oxen, mules, and donkeys, and battles were won or lost by the strength of the cavalry. By Late Antiquity, the Romans had a massive cavalry force with over 250,000 horses, twice as many equines as were used by the Union Army during the American Civil War. For logistical and economic reasons, the Romans were keen on saving as many equids as possible. Therefore, *veterinarii*, as important military personnel, were granted the legal status of *immunes*. Physical and literary evidence indicate that there were numerous military veterinarians, although the exact number is difficult to determine due to a lack of complete records. Evidence indicates that veterinarians were assigned to a specific unit, in either the cavalry or the Praetorian Guard, unless they were a part of the Emperor's retinue. It is likely, therefore, that ideally there would be one *veterinarius* for every cavalry unit. In reality, however, it is likely that there were insufficient *veterinarii* employed to oversee the treatment of every animal considering the sheer number of equids, the correspondence between *veterinarii*

and decurions, and the number of cavalrymen treating their own equines.¹ The ἰππιατροί were well established in military camps in *valetudinarii* (animal hospitals) where they treated equines. These skilled soldiers worked in the same district within the military camp as the physicians, sharing instruments and medicaments. The *veterinarii* had to be capable of treating numerous injuries including slash and puncture wounds, sprains, severe bruising, and stretched tendons. In addition, the animal doctors handled illnesses and ailments that resulted from travelling and keeping a large herd of horses in close quarters. Numerous epitaphs and inscriptions attest to the presence of *veterinarii* in the military. The veterinarian, however, was not unique to the military, but were found in other context during the Roman Empire.

The veterinarian was also associated with transportation, an industry where animals were common. Lacking any advanced communication and transport technologies, the Romans relied upon horses, mules, donkeys, and oxen to transport missives and goods. The *cursus publicus* was an undertaking of the Roman Empire in order to form lines of communication between governing officials. Due to the size of the Roman Empire and the resources required for such an operation, the *cursus publicus* was one of the most costly divisions of the Roman government. Considering the importance of animals to the *cursus publicus* and the hardships of travel, it is not surprising that the professional veterinarian worked in this industry. Although evidence for *mulomedici* in employment of the *cursus publicus* remains rather scarce, the profession is mentioned in the law codes alongside the mule drivers and cartwrights. The *Theodosian Code* indicates that the veterinarian was stationed at most of the *stationes*, which means that

¹ Theomnestus mentions a *miles* attempting to treat his own horse (*Hipp. Ber.*7.7). Another soldier requested a veterinary instrument so that he could treat his own horse (*Tab. Vind.* II, 310).

ideally there were approximately 4,830 *mulomedici* employed by the *cursus publicus*. Archaeological remains provide further evidence for the involvement of veterinarians with the Roman postal system. Numerous *mulomedici* along the *cursus publicus* likely became private veterinarians once they were freed or retired from the postal system.

Veterinarians also hired themselves out as independent tradesmen. The work of private veterinarians was first discussed in the context of the circus, where they treated racehorses, and in agriculture. Papyrological evidence indicates that the ἵππιατροί were employees of the circus factions, were commissioned for racing events, and were hired by farms to treat the livestock. In addition, aristocratic horse owners such as Vegetius called upon the professional veterinarians in private practice to treat prized equines and oxen.

There is little evidence to support Adams' claims that the ἵππιατροί were a heterogeneous group of individuals with diverse knowledge practicing assorted versions of animal medicine. In fact, the opposite appears closer to the truth. Although there was clearly ranking among the ἵππιατροί – Apsyrus in contrast to his correspondents – the profession required rather extensive knowledge of animals, their ailments, treatments, and medicaments. Animal owners did not hire incompetent veterinarians, but someone who was knowledgeable and skilled. The fact that independent veterinarians were paid per service, as described in the *Edict* of Diocletian, indicates that they required continuous employment to provide for themselves and their families. The repeated employment of a ἵπποιατρός is evidenced in a series of papyri from Oxyrhynchus.² Although the education of the Roman veterinarian was not as uniform as it is today, other skilled professions – physicians – were also taught with diverse methods. Education in

² *Ashm. G.O.* 258/Shelton 1988, 81; *Ashm. G.O.* 330; Shelton 1988, 105; *Ashm.G.O.* 248/Shelton 1988, 112.

veterinary science has only become uniform in the past two hundred years, before which the majority of individuals practicing animal health care learned through apprenticeships or practical experience as herdsmen. The majority of those practicing some form of animal medicine were cow leeches or blacksmiths practicing animal medicine as an ancillary craft. As with modern journals and publications, communication was established between the ἰππιατροί through both private correspondence and the veterinary treatises in order to share and expand both public and professional knowledge of animal health. The Roman veterinary profession was rather sophisticated; it was well-organized, offered increasing levels of expertise and specialization, and a means of educating its practitioners.

This thesis aimed to demonstrate the importance and extent of the veterinary profession in the Roman Empire. The animal doctor has remained on the outskirts of history, treating animals in diverse and even dangerous circumstances, never achieving the same status or fame as the human physician despite humanity's dependence on animals. I have sought to establish that veterinary practitioners were sophisticated and played a prominent role in the development of the Roman Empire. It is my hope that this study will promote further research into this neglected profession of Roman society. The ancient veterinarian interacted with a great number of Romans – farmers, cavalrymen, travellers, and even indirectly with all those millions who enjoyed watching circus races. The little evidence that remains of ἰππιατροί provides clear evidence of their importance and involvement in Roman society.

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Appendix A: Timeline of Agriculturalists, Veterinary Authors and Veterinarians

234 – 149 BC	<i>Cato De Agricultura</i>
116 – 27 BC	Varro <i>De Rerum Rusticarum</i>
70 – 19 BC	Vergil <i>Georgics</i>
AD 23 – 79	Pliny the Elder
AD 1 – 55	Columella <i>De Re Rustica</i>
Late Third Century/Early Fourth century A.D.	Eumelus
Early Fourth Century A.D.	Apsyrtus ¹ Ammonius the Alexandrian Demetrios from Pappos Apion the Alexandrian Hippocrates Historikos Damas the Laodikean Sekoundos Orion the Alexandrian Apellas the Laodikean Epiphanios Markos Agathokleos Euemeros Statilios Stephanos Antipatros the Alexandrian Noumenios the Alexandrian Memnonos Apolloniades Hegesagoras Ephesios Herodion the Alexandrian Papias from Antioch Gaius the Alexandrian Pasikrates the Alexandrian

¹ The following names are gathered from Apsyrtus' correspondences, which were considered as authentic, and so these were most likely real individuals. There are several other recipients of Apsyrtus' letters, but these individuals are either associated with the army, or their profession is questionable. Apsyrtus clearly indicates that the names listed were veterinarians.

Mid-Fourth Century AD

Theomnestus
 Nephon²
 Agathetychus³
 Cassius⁴
 Hippaios⁵
 Hierocles
 Hippocrates
 Pelagonius
Mulomedicina Chironis
 Thonius
 Amethystos

Late Fourth/Early Fifth Century AD

Vegetius
 Isidoros

Sixth Century AD

Unnamed Veterinarian whom
 Anastasius deals with

² Along with Agathetychus, Cassius and Hippaios is mentioned by Theomnestus as a source, so these individuals are dated no later than the middle of the fourth century AD. For Nephon see *Hipp. Berol.* 2.23 – 4.

³ *Hipp. Berol.* 1.25, 2.24, 32.4.

⁴ *Hipp. Berol.* 5.4, 29.6, 32.3.

⁵ *Hipp. Berol.* 69.16.

Appendix B: Some Common Livestock Diseases

Anthrax:

A bacterial disease caused by *Bacillus anthracis*, which causes a high fever and enlarged spleen. It infects both humans and animals, although it is most common among sheep, cattle, and horses. The bacterial is found in the soil and is extremely difficult to kill, living up to ten years if not exposed to the sun.⁶ This disease is still well known despite modern medical advancements, and remains incurable, as Apsyrtus indicated.

Braxy:

A disease of sheep caused by the *Clostridium septicum* bacterium, which, if there are no prophylactic measures, has a high rate of mortality.⁷ It occurs on among sheep grazing on hilly land when hoar frost appears, attacking lambs less than two years of age, especially healthy lambs. The bacteria affects the mucous membrane of the fourth stomach of the sheep and causes a loss of appetite, abdominal pain, diarrhoea, and the victim is killed within a matter of 5 or 6 hours.⁸ In order to prevent such a disease, vaccines are given until the animal has time to establish immunity.

Colic:

This is an umbrella term describing abdominal pain, especially concerning horses.⁹ The Romans recognized that there were many reasons for a horse to colic. There are numerous causes of abdominal pain: acute indigestion, severe organic disorders, internal

⁶ West 1988, 25.

⁷ West 1988, 91.

⁸ West 1988, 91.

⁹ West 1988, 140.

parasites, calculi in the urinary system, anthrax, grass sickness, uterine rupture, nephritis, poisoning.¹⁰

Farcy:

This is a form of glanders which infects the skin. Generally, farcy is chronic in nature, but it can appear in the acute form of glanders near the end of the disease when there are farcy buds and subcutaneous swellings.¹¹ Farcy buds often occur in mules, although the quadruped generally dies before the buds have time to burst.¹² Farcy buds, from pea-sized to egg-sized, if given enough time, will soften and burst releasing yellowish pus.¹³

Fistulous Withers:

Fistulous Withers is when a sinus forms on the withers of the horse.¹⁴ The swelling is generally the result of an external injury and bacteria.¹⁵ The swelling can reduce on its own, although it can also burst open with constant discharge moving through the sinus. The best method to treat fistulous withers is to use sulfa drugs or remove the infected area surgically.¹⁶

¹⁰ West 1988, 140.

¹¹ West 1988, 287.

¹² West 1988, 287.

¹³ West 1988, 287.

¹⁴ West 1988, 244.

¹⁵ West 1988, 244.

¹⁶ West 1988, 244.

Foot-rot:

This disease can infect pigs, sheep, horses, and cattle. The organism primarily responsible for the disease is *Bacteroides nodosus*, which lives in wet, marshy areas.¹⁷ These bacteria are capable of infecting the animal when sufficient damage has been done to the foot to allow the bacteria to enter. Once infected, parts of the hoof start to become soft, and foul-smelling discharge appears.¹⁸ If the foot is not treated, the horn separates and eventually the bacteria penetrate into the foot affecting the ligaments and bones.¹⁹ In order to treat the disease, the infected animals should be segregated, the diseased part of the foot removed, cleaned, and the animal left in a dry, straw-covered area to recover.²⁰

Glanders:

It infects mainly equids, although it can infect other mammals. The donkey is the most susceptible, particularly to the acute form, which results in death in two to three weeks. Glanders is caused by *Pseudomonas mallei*, which causes nodules in the lungs, liver, spleen, and other major organs.²¹ The acute form kills its victims in a few weeks, whereas the chronic form, if allowed to proceed, can proceed for years before it kills the infected animal.²² Glanders is highly contagious and can be passed through infected food and water, inhalation, and skin infections.²³ Due to its contagious nature, today any

¹⁷ West 1988, 265.

¹⁸ West 1988, 265.

¹⁹ West 1988, 265.

²⁰ West 1988, 266.

²¹ West 1988, 287.

²² West 1988, 287.

²³ West 1988, 287.

carriers of the disease are slaughtered, although some success has been observed with treatments of Sulphathiazole, which is only permitted in eastern Europe.²⁴

Laminitis:

Laminitis is inflammation within the hoof of the horse (although it can also be observed within other livestock), which can affect any number of feet and is not contagious. There are numerous causes of laminitis, such as the equine overeating, a sudden change in diet (for example grazing on green pastures immediately after a winter of hay), harsh ground conditions, toxæmia, and poor management or inadequate care. While campaigning, an equine might be exposed to harsh road conditions, such as the Persian cavalry observed while pursuing the Romans, or might experience a constant change in the nutrients of the grazing, as some lands are more fertile than others are. It is generally not the laminitis that kills the animal, however, but the fact that the animal becomes lame, as a horse lives and dies by its feet. In laminitis, the laminae, or the internal supporting structure between the external hoof wall and the pedal bone (the internal bone structure), breaks down causing the pedal bone to rotate and resulting in extreme pain for the animal.

Rabies:

Rabies is Latin for madness, one of the main features of this disease. This disease infects all mammals including ruminants, equids, and man. There are no universal cures for rabies and in most cases it is fatal. Rabies is a virus, *Lyssavirus*, which infects the central nervous system. The main symptoms include a change in temperament, madness, and

²⁴ West 1988, 287.

paralysis.²⁵ It is contagious when there is a transfer of body fluids such as when the victim is bitten.

Scabies:

Scabies are skin irritations that afflict sheep, which are the result of a mite, *Psoroptes communis*, which can cause damage to the fleece of the animal.²⁶ The mites pass from one sheep to another, and so it can infect an entire flock. It thrives in humid and cold conditions. It is not fatal and is generally treated by dipping the sheep in arsenical preparation, which was developed in the nineteenth century.²⁷ Other external parasites infect sheep including the blowfly, which is fatal, biting keds, lice, and ticks.²⁸

Strangles:

Strangles is a bacterial infection that infects equids caused by *Streptococcus equi*. The symptoms include inflammation of the mucous membranes of the nasal passages and pharynx.²⁹ In the majority of cases abscess will form in the submaxillary or pharyngeal lymphatic nodes.³⁰ The bacterial infection is highly contagious particularly for horses under six years old. The equids is immediately separated, their stall and feed and water troughs disinfected, and the animal is given antibiotics.³¹

²⁵ West 1988, 519.

²⁶ Ryder 1983, 166.

²⁷ Ryder 1983, 709.

²⁸ Ryder 1983, 708.

²⁹ West 1988, 597.

³⁰ West 1988, 597.

³¹ West 1988, 598.

Tetanus:

Tetanus is caused by *Clostridium tetani*, an organism which infects the body when it comes into contact with an open wound.³² Due to its anaerobic nature, it infects deep puncture wounds, such as those obtained in battle, more often than superficial slash wounds. Tetanus can also enter through internal wounds such as those caused by worms on the intestinal wall.³³ It can infect both animals and humans, although most commonly appears in horses. The organisms preferred habitat is in the soil, particularly cultivated fields, where it lives in anaerobic conditions. Most modern animals and humans are inoculated to prevent the disease. The disease is known commonly as ‘lockjaw’ since it causes the muscles to become stiff, and late in the attack causes the jaw to become fixed.³⁴ Once infected, an animal is placed in a darkened area away from noise, as the animal becomes sensitive to noise and light, and is provided with antibiotics, an antiserum, and muscle relaxants.³⁵ According to West, in situations where it is not feasible to provide the antiserum and antibiotics, the fatality rate is extremely high.³⁶

Thrush:

Thrush is a degenerative condition of the frog of the horses’ hoof where the horn becomes soft and starts to produce a discharge. Treatment includes antibiotics and a drying agent.³⁷

³² West 1988, 622.

³³ West 1988, 622.

³⁴ West 1988, 622.

³⁵ West 1988, 623.

³⁶ West 1988, 623.

³⁷ West 1988, 625.

Appendix C: Some Greek and Latin Veterinary Terms

Table 4: Greek Veterinary Terminology

Term	Definition	Primary Source	Secondary Source
βουλσός/ <i>vulsus</i>	Convulsions	<i>Hipp. Paris.</i> 503, 517, 541, 559, 560; <i>Hipp Berol.</i> 7.1, 22.18, 22.30	McCabe 2007, 142
γλάνδουλα/παρωτίδας /χοιράδας/ <i>glandula</i>	Strangles	<i>Hipp. M.</i> 107; <i>Hipp. Berol.</i> 16.4	McCabe 2007, 114
διάρροια	Diarrhoea	<i>Aps. Hipp. Berol.</i> 35.1; <i>Hipp. Berol.</i> 35.2	McCabe 2007, 231
δύσπνοια/ <i>dyspnoia</i>	Equivalent of μαλίζ; Glanders	<i>Hipp. M.</i> 29	McCabe 2007, 101
έγχυματισμοί/έγχυματ ιζειν	Drenches	<i>Hipp. Berol.</i> 1.25, 2.14, 31.5, 33.31, 35.7, 103.11, 129.4; <i>Hipp. Paris.</i> 311.11; <i>Hipp. Cant.</i> 49.4	McCabe 2007, 130
ειλέός/ <i>Ileus</i>	Volvulus or colic caused by twisting of intestine	<i>Mul. Chir.</i> 215	Adams 1995, 282
έλμεις	Infected with worms	<i>Eum. Hipp. Berol.</i> 75.9; <i>Hipp. M.</i> 724.	McCabe 2007, 99
κατάρροον/ <i>suspirium</i>	Glanders	<i>Hipp. Berol.</i> 69.16	McCabe 2007, 143, 202
κριθίασις/ <i>cretiatio</i>	Laminitis, generally caused by <i>hordeum</i> .	<i>Apsyrtus Hipp. Berol.</i> 8.1 – 3; Hierocles <i>Hipp. Berol.</i> 8.4 – 8; <i>Mul. Chir.</i> 655, 732, 734	Adams 1995, 263 – 267.
κωλικός/κολικός/ <i>coli dolor</i>	Colic	<i>Hipp. Berol.</i> 129.34 – 35; <i>Hipp. Paris.</i> 837; <i>Hipp. Cant.</i> 105	Adams 1995, 275.
Μαλάγμα	Ointment	<i>Hipp. Berol.</i> 52.9, 76.3, 130; <i>Addit. Lond.</i> 99.31; <i>Hipp. Berol. Append.</i> 8.26	McCabe 2007, 130
μᾶλιν	Glanders	<i>Hipp. Berol.</i> 69;	McCabe 2007, 202
μάρμαρος/ <i>marmor</i>	Exostosis, possibly ‘ring-bones’ or ‘sidebones’.	<i>Hipp. Berol.</i> 53.1, 238.14; <i>Mul. Chir.</i> 620, 621; Pelagonius E 501;	Adams 256 – 261.

		<i>Hipp. Paris.</i> 865 = <i>Hipp. Berol</i> 130.40;	
Μελικηρίς	Cysts	<i>Hipp. Berol.</i> 77.2, 96.2; <i>Hipp. Cant.</i> 65.3	McCabe 2007, 213
Μυρμηκία	Warts	<i>Hipp. Berol.</i> 82.6; <i>Hipp. Cant.</i> 67.1	McCabe 2007, 213
ὀρθόπνοια	Breathing difficulties	<i>Hipp. M.</i> 1094	McCabe 2007, 119.
Παρίσθμια	Inflammation of the tonsils	<i>Hipp. Berol.</i> 18	McCabe 2007, 212
Περίπτωση	Technical term with connection to magical practices. In particular to affix as an amulet.	<i>Geoponica</i> 16.1.17, 16.3.6; <i>Hipp. C.</i> 108.4.	McCabe 2007, 89
περιττώματα/ <i>farcimina</i>	Farcy buds	<i>Hipp. Berol.</i> 76.3; <i>Hipp. M.</i> 71	McCabe 2007, 143
Ποδάγρα	Lameness	<i>Hipp. Berol.</i> 54.1, 34.19, 54.t; <i>Hipp.</i> <i>Cant.</i> 43; <i>Hipp. Paris.</i> 440, 1068; <i>Add. Lond.</i> 79	McCabe 2007, 248
Πυρέττοντα	Feverish	<i>Anatolius Hipp. Berol.</i> 1.23.	McCabe 2007, 89
πῶρος	Stone in the bladder	<i>Hipp. Berol.</i> 113.153.1	Adams 1995, 260 – 261
ῥεύματα/ <i>flemina</i>	Swelling of the knee	<i>Mul. Chir.</i> 46, 107 – 108, 109, 590, 648, 692, 872, 873, 888; Pelagonius 194, 197, 202; Vegetius 2.48, 2.83; <i>Hipp. Berol.</i> 51.1, 58.2; Columella <i>Rust.</i> 6.38.3.	Adams 1995, 243 – 247; Fischer 1977, 108 – 109; Fischer 1980b, 111; McCabe 2007, 143
στρόφος/ <i>strophus</i> / <i>tortio</i>	Twisted intestine, a type of colic	Vegetius 1.39.2, 1.43.2, 2.121.1; Pel. 115, 139, 183.2, 287; Palladius 13.31, 54; <i>Mul. Chir.</i> 206, 219, 220, 453, 504; <i>Apsyrtus Hipp. Berol.</i> 33.6, 45.1, 216.14; Hierocles <i>Hipp. Berol.</i> 45.2; <i>Hipp. M.</i> 587; <i>Hipp. Berol.</i> 45.5; <i>Geoponica</i> 16.9.1 – 2	Adams 1995, 271 – 275; McCabe 2007, 253

τέτανος/ <i>tetanos/robur</i>	Tetanus	<i>Hipp. Berol.</i> 69	McCabe 2007, 167, 202
τυμπανίτης/ <i>tympranites</i>	Colonic bloat	<i>Mul. Chir.</i> 215, 222, 398; Vegetius 2.91.1, 2.91.2; Pelagonius 210.2	Adams 1995, 279 – 281.
ύδατίδες/ <i>aquatilia</i>	Hygromas in the fetlock; synovitis or bursitis. In general swelling of the fetlock.	<i>Hipp. Berol.</i> 8.1 – 3, 8.4 – 8, 77.2, 49.23 – 25, 96.2; <i>Mul. Chir.</i> 20, 48, 50, 468; Pelagonius 196.1, 198, 329	Adams 1995, 240 – 3; Fischer 1977, 109; Fischer 1980b, 111
φλεβοτομεῖν	Bloodletting	<i>Hipp. Paris.</i> 623, 154, 155; <i>Hipp. Berol.</i> 8.3, 10.6	McCabe 2007, 116
Φλεγμονή	Swelling, inflammation	<i>Hipp. Berol.</i> 38.9, 70.4, 130.181; <i>Hipp. Cant.</i> 33.6; <i>Hipp. Paris.</i> 288.	Adams 1995, 245; Fischer 1977, 108.
χολή	Bile	<i>Hipp. Berol.</i> 75.9; <i>Collumella Rust.</i> 6.30.9	McCabe 2007, 99
χολέρα	Cholera, biliousness	<i>Hipp. Berol.</i> 75; <i>Hipp. Cant.</i> 63; <i>Add. Lond.</i> 99	McCabe 2007, 118
ψώρα	Mange	<i>Hipp. Berol.</i> 69; <i>Hipp. Cant.</i> 57; <i>Exc. Lugd.</i> 95.6, 99.1; <i>An. de equ.</i> 18; <i>An. de bub.</i> 24.1	McCabe 2007, 202

Table 5: Latin Veterinary Terminology

Term	Definition	Primary Text	Source
<i>ascites/hydrops</i>	Dropsy	Pel. 210; Celsus 3.21.1 – 2;	Adams 1995, 280.
<i>famex</i>	Generally describes a pustulent sore in the foot as a result of contusion or laminitis.	Gargilius Martialis <i>curae boum</i> 23; Collumella <i>Rust.</i> 6.12.2; Pelagonius 237; <i>Mul. Chir.</i> 698; Vegetius 3.19.1;	Adams 1995, 267 – 270.
<i>hordior</i>	State of indigestion as a result of excessive consumption of <i>hordeum</i> .	<i>Mul. Chir.</i> 278	Adams 1995, 270.
<i>malleus</i>	Originally used to describe glanders, but by fourth century described epizootic diseases	Vegetius 1.2.1, 3.1.2	Wilkinson 1981, 365.
<i>morbus farciminosus</i>	Farcy	Vegetius 1.14.1	Wilkinson 1981, 365
<i>morbus humidus</i>	Glanders	Vegetius 1.10.1	Wilkinson 1981, 365
<i>Suffisio</i>	Generally a swelling from liquid; more specifically when regarding the feet indicates ‘corrupt’ blood amassing in the feet or a mild form of <i>cretiatio</i> (laminitis) caused by water or drinking	<i>Mul. Chir.</i> 529 and 533 regards to eye conditions; <i>Mul. Chir.</i> 678 swelling of testicles; <i>Mul. Chir.</i> 22, 158, 732 with regards to feet; Pelagonius 236	Adams 1995, 262 – 267.
<i>Tormenta</i>	Stomach or intestinal pain.	Pelagonius 139, 287.	
<i>Tormina</i>	Early word for colic	Cato <i>Agr.</i> 126; Columella 6.7.1.	Adams 1995, 272.