A PLAGUE IN A CRISIS:
DIFFERENTIAL DIAGNOSIS OF THE CYPRIAN PLAGUE AND ITS EFFECTS ON THE ROMAN EMPIRE IN THE THIRD CENTURY CE

by

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Abstract

The Cyprian Plague, named after Saint Cyprian of Carthage, occurred between 251-270 CE, adding stress to an already tumultuous time. The Roman Empire was in the middle of what is called the "Crisis of the Third Century," a time when emperors were quickly moving into and out of power while the value of Roman currency plummeted. It is of little doubt that this epidemic greatly impacted the empire, but what the disease, or diseases, causing it and what their effect truly was has yet to be discovered. This thesis uses a differential diagnostic approached modeled from Littman and Littman's 1973 symptomatic diagnosis of the Antonine Plague from Galen's medical texts to diagnosis the Cyprian Plague as a viral hemorrhagic fever caused disease similar to Ebola virus disease. By compiling the evidences of the plague and comparing possible effects on the Roman Empire to those experienced in the modern 2013-2016 Ebola Virus disease outbreak, this thesis contributes to the discussion of Rome's chaotic third century by predicting some of the effects of the Cyprian Plague.

Chapter One:

Introduction

The Roman Empire is no stranger to disease and pathogens; many illnesses, such as malaria, were endemic and consistently affecting the population. Plagues are mentioned in early Imperial Latin literature, including both histories[1] and epics,[2] and surely affected the Romans more often as the territory expanded and exposure to new pathogens and challenges occurred. Three plagues are recorded by ancient authors and studied by modern historians: The Antonine Plague from approximately 168/9-180 CE; the Cyprian Plague which starts around 251 CE and continues in waves until 270 CE and is named after the St. Cyprian, one of the best extant sources on the symptoms and effects of the epidemic; and the Justinian Plague, beginning in 540 CE and recurring over the following decades. Of these, the Antonine and the Justinian have garnered significant attention, especially in the last few decades, when a focus in epidemiology and impact of plagues caused them to rise to the forefront of studies.[3] Both have been claimed by various scholars to have been major events in Rome's history, shaping the population and direction of the empire. The Cyprian Plague, occurring directly in what is called the "Crisis of the Third Century," a time when the "barracks emperors" were murdered and usurped within months or years of taking power, has not retrieved as much attention, despite being mentioned by more writings contemporary to the epidemic than the Antonine Plague and occurring in an incredibly chaotic and pivotal time in Roman History.

[1] E.g., Livy *Ab urbe condita,* Book 25, chapter 26
[2] E.g.,*Georgics* III
[3] Harper 2015: 223

Recently, Kyle Harper has published extensively on the Cyprian Plague, gathering sources and encouraging scholarship to focus on this plague that he claims had "significant social, economic, political, and cultural ramifications."[4] It seems a perfect time to reopen the dialogue on this time; within the last decade, at least two mass graves, one in Egyptian Thebes and another in Rome, have been found that confirm the presence of a mass epidemic during this period. These burial sites add to the pile of evidence for this plague, which already includes numismatic evidence and literary sources that include the mentions by St. Cyprian. From Cyprian we get our only description of the symptoms. Sadly, it is not nearly as complete or telling as Galen's description of the Antonine Plague, a few decades prior. This disparity in information regarding symptoms is one striking reason why so many diagnoses of this epidemic still abound. For example, Harper suggests the disease may be one of many viral hemorrhagic fever (VHF) caused diseases[5], while Tiradritti suggests smallpox.[6] Although the symptoms do have much in common with smallpox, the most fitting diagnosis is a viral hemorrhagic fever (VHF) caused disease such as Ebola virus disease.

This thesis will further address the Cyprian Plague and its diagnosis to reach conclusions regarding the overall impact of this epidemic that is responsible for the death of two emperors. The first chapter will address our textural and archaeological evidence for the Cyprian Plague with a brief look at the history of the chaotic third century. Each of the contemporary literary sources will be discussed for bias due to the religious tensions of the period. Finally, the mass graves and other physical evidences will be catalogued and discussed. The second chapter will be methodological in nature; I will revisit Littman and Littman's 1973 article on diagnosing the

[4] Harper 2015: 224
[5] Harper 2015
[6] Tiradritti 2014

Antonine Plague and discuss it within the context of the method of differential diagnosis. In the third chapter, I will go over the symptoms closely and perform my own differential diagnosis to support my claim of a Viral Hemorrhagic Fever caused disease. I will argue that this is a disease similar to Ebola virus disease and analyze what effects the epidemic would ultimately have had on the Roman Empire.

Chapter Two:

The Cyprian Plague

2.1 Cyprian's Plague and the Crisis of the Third Century

The Cyprian Plague transpired during a chaotic time in the Roman Empire often referred to as the Crisis of the Third Century. Occurring after the assassination of Severus Alexander in 235 CE and fueled by both the devaluation of currency that began under the Severan Dynasty[7] and invading tribes on several frontiers, the Crisis was a time of political, social, and economic unrest. Alexander's death at the hand of his own generals, agitated by his attempts to bribe the Germans, signaled the end of the clear line of succession; as in the Year of the Four Emperors in 69 CE, the empire fell into disarray in the power vacuum. A succession of "Barracks Emperors" now struggled for power, each chosen by military prowess and popularity with their soldiers and discarded or assassinated when that favor was ultimately lost. Our information from this time tends to be truncated compared to the more prolific eras, such as under Hadrian or Augustus. This disparity of information, along with the chaotic power changes and even schism between parts of the empire, exacerbate the difficulty of discussing this plague and its possible diagnosis and overall impact.

The plague spanned the period of at least eight of these emperors, beginning with Decius in 249-251 CE and spanning until at least Aurelian's reign, who took over in the same year that Claudius II fell ill and died, allegedly to the plague itself.[8] The history of their reigns is

[7] Septimus Severus had raised the annual pay for soldiers from 300 to 500 denarii while also enlarging the enlisted force. In order to manage this payment, he decreased the amount of precious metal in the coinages, lowering their base value. For this topic, see Southern 2015.

[8] The reigns of those eight emperors are as follows: Decius (249-51 CE), Hostilian (251-51), Gallus (251-53), Volusianus (251-53), Aemilian (253), Valerian (253-60), Gallienus (253-60), Claudius II (268-70). There were many other short-lived emperors, ruling for a few months or less, or co-ruling, during this span as well.

convoluted and discussed mostly within the context of their military conquests and failures. Due to space limitations, I will only be discussing the setting as is relevant to the spread and knowledge of this disease.[9] The epidemic likely began in Egypt, where Dionysius of Alexandria mentions a sickness that affects every household in 249 CE; the possibility that the rioting in Alexandria under Phillip the Arabian in the same year exposed the military to the epidemic and began the spread to the rest of the empire seems likely.[10] It is under C. Vibius Trebonianus Gallus, the next emperor, that we have the first recorded signs of the plague hitting Rome. Gallus adopted Hostilian, Decius's son, perhaps as a way to assuage any rumors that his reign was a takeover and made him his co-Augustus. Hostilian died in 251 CE from the plague, confirming its presence in Rome. Gallus became unpopular during his reign for his perceived laziness; he remained in Rome throughout much of his reign "giving vent to his general concern by engaging in a sharp, but localized and uncoordinated, harrying of the Christians."[11] It was likely because of this sluggishness that M. Aemilius Aemilianus, a general in Moesia, urged his troops to attack the Goths and then move against the emperor. Gallus marched out to defeat him, but his troops assassinated him and defected to the side of Aemilianus, only to kill Aemilianus and defect to the side of Valerian two months later.

Valerian and his son P. Licinius Egnatius Gallienus split the empire into two fronts, with Valerian taking the Eastern frontier and Gallienus dealing with both the Goths in the North and the Western frontier. Valerian was successful in the East, "but the strain of the situation (with the

[9] For an in-depth look at the Crisis of the Third Century, see Bowman, A et al. *The Cambridge Ancient History XII: The Crisis of Empire AD 193-337*.
[10] The riots were a result of Priscus's attempts at heavily raising the taxes in Egypt. Philip dedicated a significant number of troops to quelling the riots, many of whom could potentially have been exposed before returning to Rome.
[11] Bowman, A et al. 2005: 40

plague also afflicting his army) was beginning to tell on Valerian."[12] Valerian was captured in battle, leaving Gallienus in solitary control of the empire. He was emperor from 260-8 CE, which means the bulk of the recurring epidemic occurred under his reign. He was in Rome from 260-4, presumably contending with the plague.[13] M. Aurelius Claudius Gothicus (Claudius II) took over after Gallienus's death, making great strides against the Goths and restoring the Roman territories. Unfortunately, his work was cut short as he fell victim to the plague in 270 that ravaged his troops while in Sirmium. It is unclear both how much longer after his death the epidemic haunted the empire and if the illness that took his life was, in fact, the same condition that Cyprian addressed in his works.

Ultimately, the history of the period is convoluted and "little of value can be drawn from the confused evidence for the period of the 'military anarchy' in which short lived or bogus emperors and usurpers appear and disappear with bewildering rapidity."[14] For the purposes of this paper, it is important to focus on a few facts: one, that there is evidence of the impact of the epidemic on significant figures, such as the emperor Claudius II; two, that the legions were incredibly active on many frontiers, likely aiding the spread of the responsible pathogen across the entire empire and beyond; and three, that the military was not crippled by the epidemic, but did seem to suffer its effects in camp.

2.2 Literary Sources

There are a variety of attributed literary sources that are contemporary with the epidemic. The bulk of the extant works discussing the plague come from Christian sources, which certainly

[12] ibid: 42
[13] Ibid: 46
[14] Ibid: 315

must be taken into consideration when studying the sources, which may contain inaccuracies fed by exaggeration and allusions to Biblical stories. Edicts against Christianity were passed before, during, and after the illness struck. This created tension between Christians, blamed for the plague in some cases, and non-Christians as well as between Christians and other Christians, as is seen when Cyprian returns from exile to find that many Christians who renounced their faith to avoid persecution desired to be baptized again now that the danger has passed. These tensions bleed into the Christian sources, which tend to accentuate the good deeds of the Christians and the tyranny of the pagans. The non-Christian sources likely contained bias as well; unfortunately, far fewer extant sources of this kind exist, preventing the comparison of the two to attempt to identify and eliminate biases. The echoes of these lost sources are seen through later writers and historians, ranging from the fourth century until well into the twelfth.

For the purposes of this paper, the focus will be on the sources contemporary to the plague itself or written by people who would have seen it. Since our only extant record of the symptoms lies with Cyprian, his writings must remain at the center of study, with supporting comments made from contemporary authors also considered when applicable. Unfortunately, we lack any medical author associated with this plague, unlike with the Antonine Plague, which is recorded by Galen. Cyprian and other authors list the plague as a symptom of social change or unrest, an event that causes tension and death. They do not approach the plague from an angle of treatment, as Galen did, or with the intent to make the illness identifiable for later people. The sources are not medical texts and cannot be approached as such; therefore, heavy scrutiny of claims made about impact and symptoms must occur.

2.2.1 St. Cyprian of Carthage

Cyprian of Carthage, for whom this epidemic is named, was a bishop living from circa 210 CE to a wealthy Roman family. Well known for his eloquence and oratory skills, he was sent to live with a priest named Caecilius, and soon after, in 246 CE was baptized, perhaps on Easter's Eve. During his time as Bishop, beginning in 248/9 CE, Decius passed an edict condemning Christians, particularly bishops. Cyprian fled Carthage and his certain death but returned around 251 CE to try to reunite the Christians and solve matters of rebaptisms. [15] It was at this time that the plague began to ravage Carthage. During the plague, pagan suspicions of Christian worshippers rose, leading to more edicts against their worship and the creation of compulsory sacrifices. Cyprian was sent into exile around 257 CE when he refused to renounce Christianity, where he stayed until he was recalled to Carthage the following year to be beheaded. He was considered the first African bishop to become a martyr and was awarded sainthood posthumously.[16]

Three of his extant works mention the Cyprian Plague, one of which is the only extant work describing symptoms. The first, a letter to Cornelius, the Pope at this time, only briefly mentions the enactment of mandatory sacrifices and the stress that the "time of disturbance" is placing upon him.[17] Though he never mentions the epidemic or the reason for sacrifices, it seems safe to assume these compulsory rituals were a side effect of the Romans' response to the plague and its high mortality rate. The second, *Ad Demetrianum*, supports this interpretation. It is an apologetic work, defending the Christians of Carthage from the ire of a local pagan,

[15] The edicts against Christians had caused many to renounce their faith. After it was lifted, they desired to return to the Church, but some members vehemently opposed their reconciliation. Cyprian was among those arguing for reinstatement on a case by case basis.
[16] For more information on Cyprian, see Deferrari 1958.
[17] Cyprian *Epistle 54*. Fathers of the Church. Translated by Deferrari 1958.

Demetrianus, who must have been among the many blaming the Christians' impiety to the traditional pantheon for the raging epidemic. Cyprian's response is largely one of warning, protesting that it is not the Christians who are to blame and that, when the population dies in droves, the Christians will achieve eternal salvation, and Demetrianus and his people will be cast into damnation. Most of his references to the plague in this letter are offhand, and do not add to the description of the symptoms. One, however, provides support for the claim of mandatory sacrifices being a direct result of the plague:

> Pestem et luem criminaris; cum peste ipsa et lue vel detecta sunt, vel aucta criminal singulorum; dum nec infirmis exhibetur Misericordia, et defunctis avaritia inhiat ac rapina. [Cyprian *Ad Demetrianum*]

> "…You accuse of the crime of plague and disease, although by plague itself and disease the crimes of individuals are either detected or increased, while mercy is not shown the weak and avarice and rapine await open-mouthed for the dead." [trans. Deferrari 1958]

The last work of Cyprian's that directly references the plague is also the one that is most useful to diagnosis. In *De Mortalitate*, Cyprian addresses the Christians of Carthage, attempting to assuage their fears regarding the presumably high mortality rate of the epidemic that was terrorizing the city while also consoling them for being denied a chance at martyrdom.[18] This likely is given in 252 CE, when a decree of Gallus ordered sacrifices be made across all the Empire, which may be the decree mentioned in his letter to Cornelius above. In the speech, he rallies the Christians against the plague, promising them that their suffering will ultimately confirm their faith in the Christian God and secure their place in paradise. Critically, it gives a graphic description of the symptoms that, although it falls short of Galen's in-depth notes for the Antonine, gives us our best opportunity at diagnosing the epidemic. As this work constitutes our

[18] Deferarri 1958: 195

basis for discussing symptoms of the Cyprian Plague, it will be discussed more fully in chapter three.

2.2.2 Dionysius of Alexandria

Dionysius was a contemporary of Cyprian, living in Alexandria for most of his life, though forced into exile again due to edicts against Christians. He became a bishop in 248 CE, writing many letters throughout his time that give insight into the life of Cyprian and the sociopolitical and religious climates, including mentions of the burden the epidemic has exerted upon the population. These letters except for one example, do not survive in their original form today. Instead, our source of Dionysius comes from the *Historia Ecclesiastica* by Eusebius, a fourth century writer attempting to write a chronological record of the development of Christianity from the 1st to 4th century in Greek. Eusebius, born in 260 CE, when the epidemic still lingered, references specific portions of some of Dionysius's many letters in his account of the time from Gallus to Gallienus (251-260 CE). Between these excerpts, Eusebius comments on the state of affairs in the empire and the church as the time, mentioning the scattered exiles of Dionysius, for example. Eusebius has a reputation as an unreliable source for a variety of reasons, including his preoccupation with 'demons' and his possible misquotations of his contemporary sources. However, it has been shown that at least one contemporary document quoted by Eusebius is accurate,[19] and neither his discussion of Dionysius's work, nor the quotes from Dionysius, are being used for the discussion of symptoms, which requires as much accuracy as possible. It suffices, therefore, to use Eusebius's quotations of Dionysius as a source of another contemporary author remarking on the plague.

[19] Johannessen 2016: 3

Dionysius's mentions of the plague do not include descriptions of symptoms, as in Cyprian. His first mention comes in a letter to Hierax, a bishop in Egypt, regarding a schism occurring between two groups of Christians with ideological differences. In this letter, he mentions that the total number of people from fourteen to eighty years old no longer can match the total number of people from forty to seventy prior to the plague; this implies a very high mortality rate and emphasizes the horrors of the epidemic.[20] His next letter, coming during a time of festival, continues the thought, wishing that only first-borns had died in each house, rather than the many dead from each family. He furthers the narrative by praising the Christians for putting themselves in danger of being exposed to the illness by helping bury the dead and administering aid to the sick when possible. In contrast, he outlines the pagans' rough treatment of the infected to avoid catching the disease, also stating that their efforts were in vain. This is likely an exaggeration meant to vilify one group while praising the Christians but may be a sign of just how contagious the epidemic was, infecting even those who purposefully avoided any contact with the sick. Both of these letters appear to occur during 249 BCE, placing the time of the outbreak in Egypt firmly before that in Carthage.[21]

2.2.3 Further Contemporary Literary Sources

There are further sources that are contemporary or close in time to the actual occurrence of the outbreak that require discussion, but either add little to the discussion or are no longer extant. One of our pagan sources, the *Thirteenth Sibylline Oracle* is used to support the claims of a devastating plague by suggesting the reigns of Trebonianus Gallus and Antoninus are being described in the Greek verse from the prospective of a member of the Syrian upper class.[22] The

[20] Williamson 1967: 304
[21] Harper 2015: 227
[22] Potter 1990: 141

Oracle references "many wars and battles and killings of men and famines and plagues…"[23] repeating this list again in another order a few lines later, and again near the conclusion. The repetition of a great many of disasters, mixed with the fact that "such lists of catastrophes are a common feature of Sibylline prophecies"[24] creates a tenuous at best connection between these prophecies and the actual incidence of epidemic in the third century.

Pontius of Carthage is another contemporary Christian source. Pontius, a devoted deacon of Cyprian, followed him into exile and, after his death, produced a biography of the bishop either immediately after his death in 258 BCE, or a within the years immediately following, the first Christian biography to become popular in the Roman world. The biography omits several details of Cyprian's life and does not discuss the plague in detail. This may be due to the target audience; since he wrote this only a few months to a few years after Cyprian's death, the audience would be able to fill in many details, including the horror of the epidemic.[25] Pontius's devotion to Cyprian, as well as the omission of some details with extreme focus on grandiose gestures, create some doubts as to the accuracy of the biography;[26] however, it seems unlikely that the sparse mentioning of the plague could be falsified. Pontius speaks of it as a devastating plague that transcends borders, affecting Christians and pagans alike, and killing many people each day. He speaks of how the Christians behaved during this plague, and their charity in burying the bodies.[27] Though it is possible he has exaggerated his claims in order to create an even more magnanimous image for the Christians, one must remember his audience was made up of contemporaries who would surely be familiar with the impact of the epidemic.

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[23] Trans. Potter 1990
[24] Potter 1990: 187
[25] Muller 2001
[26] Deferrari 1952
[27] Muller 2001

Another piece, *De laude martyrii* references the plague and appears to be written by another Christian living within the same time as Cyprian, perhaps even known to him.[28] This piece accentuates the novelty and extreme mortality of the disease, again accentuating the bloody and cruel nature of the plague, but unlike in Cyprian's works, it encourages seeking martyrdom over the acceptance of the disease as part of a greater divine plan:

> Atque ut transeam cuncta, meminisse debemus quanta sit Gloria ad Christum inmaculatum venire, consortem passionis existere perpetuaque cum Domino aeternitate regnare, carere exitiis imminentibus saeculi nec inter cruentam morborum populantium stragem communi cum ceteris sortem misceri.
> [*De Laude Martyrii*]
>
> And so that we may pass over all the rest, let us recall how great a glory it is to come to Christ without stain, to be a colleague in his passion, to reign in all eternity with the Lord, to be absent from the looming destruction of this age, and not to share the common fate of others amidst the bloody destruction of ravaging disease. [Trans. Ciccolini 2016]

Dating the piece has its own source of difficulties; sources attribute it to the years between 252-57, a relatively short period. However, the earlier estimates, making it contemporary to *Ad Demetrianum*, would firmly place it under the edicts of mandatory sacrifice. In contrast, dating the work later would place it towards the end of the epidemic, but may signify a resurgence of the sickness. The earlier case seems the strongest; the author seems to be referencing the persecution of Christians by using the common defense that the plague is not caused by impiety, but rather just a *senectus mundi*, an 'old,' overworked world.[29] This would also place the

[28] This writing comes to us within the works of Cyprian, but is widely thought not to be by Cyprian himself. For further insight into this debate, see Ciccolini *Corpus Christianorum* 2016. For the purposes of this paper, this work will be considered contemporary, but not by Cyprian himself.
[29] For further discussion of this defense, see: Zocca, E. 1995: 641-77

narrative alongside those of Pontius and Dionysius, both of whom describe the utter carnage and horror of the disease. Like those authors, this one focuses on the high mortality and fear associated with the epidemic, highlighting the novelty:

> Aut non cotidiana cernimus funera, cernimus novos exitus, diuturnis factis et saeuientibus morbis inexpertae cuiusdam cladis exitia ac stragem populatarum urbium intuemur? Unde possumus agnoscere quanta martyrii habenda sit dignitas, ad cuius gloriam nos cogere etiam lues coepit. [*De Laude Martyrii*]
>
> Or do we not see the rites of death every day? Are we not witnessing strange forms of dying? Do we not behold disasters from some previously unknown kind of plague brought on by furious and prolonged diseases? And the massacre of wasted cities? Whence we can recognize what great dignity there is in martyrdom, to whose glory even the pestilence is beginning to compel us. [Trans. Ciccolini 2016]

Two more sources are suggested, both Athenian historians. Neither of their accounts are extant. Philostratus, the first, is not well known, but is suggested by George Syncellus to have been writing under Aurelian, just after the plague.[30] A late 6th century writer, Evagrius Scholasticus, references Philostratus as saying the plague in his time lasted for fifteen years.[31] Dexippus is a historian much more well known in current times; it seems he was the main historian between 238-270 CE and was honored by his sons with a statue and inscription dedicated in 270 BCE.[32] The inscription appears to be commemorating his *Chronika*, a history stretching up to his death, and not his other works, including a history of Greece post-Alexander. From the *Chronika*, and his other works, we have only fragments and mentions by later authors.

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[30] Harper 2015: 231

[31] Harper continues tracing onward from this fact, finding other later authors who reference the fifteen-year period, and attributing their work to being based on Philostratus. I find this argument, based on just a common mention of duration, to be a bit too tenuous to be discussed further in this paper.

[32] Sibylline 74. This inscription calls him a historian, seeking to "set out the long span of time accurately…learnt by heart the events of the past…"

However, as he covers the reigns of Gallienus and Claudius, in particular, he almost certainly spoke on the epidemic.[33]

2.2.4 Later Literary Sources

There may exist further contemporary sources that, like Dexippus and Philostratus, do not survive into our time, but lay the groundwork for later works that discuss the plague. Any evidence of these are found in later literary sources, ranging from the fourth to the twelfth century CE. It is important, when reading these later histories and transmissions, to take into consideration some possible pitfalls: one, we do not always know whose account the later authors are using as a basis and whether it is historical in nature, or more bent towards a particular bias; two, it is often unclear how much access to contemporary accounts these later sources have, and whether they are working directly with those texts or referencing them from memory; and three, there is certainly bias from their own time that affects how the symptoms, effects, and events are portrayed. Bias is unavoidable in literary sources, but in sources contemporary to the event, the bias is much easier to ascertain. As a result, the later sources will be largely not considered for this thesis, except when a novel symptom or description is presented. Even in this case, the source will be heavily discussed for accuracy.

There is evidence that will be considered in the diagnosis that is from these later sources alone. For example, a text from the tenth century called the *Excerpta Salmasiana II*, believed to have been derived from Philostratus references the plague as lasting fifteen years and spreading from "clothing or simply by sight."[34] Another later source, Symeon Logothete in the late tenth

[33] Harper traces his work forward, with much more convincing results than with Philostratus. However, I will be discussing later transmissions, whomever their works may be based on, in the next section.
[34] Harper 2005: 232

century, repeats both the duration and transmission, signifying he had relied upon either the *Exerpta Salmasiana II* or the same source as it. It is this unclear transmission that requires pause before using this evidence as certain, or at least based on contemporary observations. Orosius also adds new information to the discussion, blaming the transmission on infected air, a common claim for Roman illnesses, and stating that it moved East to West across the empire. Zosimus, writing in the early sixth century, adds some information to the conversation, namely that the plague followed the Goths and their advance; the troops of Valerian were greatly affected by the plague in the battles leading to his capture;[35] and that the Heruli people invading from the east were badly struck by the epidemic.[36]

2.3 Archaeological Evidence for the Cyprian Plague

Beyond literary sources for a plague occurring during this time, we also have archaeological evidence in the form of coins and mass graves. Though these sources are less decisive than the literary, they still bear discussing in this chapter. Their presence supports the sources, particularly their claims on the overall impact on the population, which can be subject to claims of exaggeration. The decline of building work in northern Syria around 250/1 is supposed to be another indication, as well as a decline in registered taxpayers in some Egyptian settlements.[37] Using sources like this, however, is discouraged, since the decline or change in socio-political interactions can be easily affected by a number of factors other than plague, such

[35] Valerian, the first Roman emperor to be captured in battle, may have had his army crippled by the plague. Another sixth century source, Peter the Patrician, insists that it was this that weakened the army enough to cause Valerian to seek to bribe the Persian leader Shapur, who, seeking weakness, then pursued and overwhelmed the sickly Romans.
[36] Harper 2005: 236
[37] Bowman 2005: 398

as turmoil in leadership, as is seen in the quickly changing emperors, and an increase in military activity, to name a few.[38]

2.3.1 Numismatic Evidence

The coinage of this tumultuous time reflects the activity; gods, for example, were much more common than the representation of the emperor as *sacerdos*, representing both a greater attempt to seek the assistance of deities in state affairs and to demonstrate the connection between the emperor and the gods, solidifying them as predestined to rule.[39] Furthermore, according to Manders, the emperor and the message, or god, on the back are closely related, possibly connecting the emperor with the propaganda represented on the reverse of the coin. For example, during the time of Valerian and Gallienus' joint emperorship, a motif first used by Domitian of Jupiter handing a globe to the emperor, signifying the presentation of the empire itself, came back into use, presumably to solidify the idea that Gallienus was the rightful emperor.

The coin motif that seems to most accurately signal the presence of the plague during this period is the depiction of Apollo as a healing god, specifically Apoll Salutari or Apollo Salutaris (Image 1).[40]Although Apollo can be associated with causing epidemics,[41] his dual nature means he is also related to healing and prevention of epidemics**.** Apollo Salutaris is represented as Apollo, nude, standing contrapposto with a branch in his right hand and his left hand resting on a lyre set upon a rock. Tied directly to the emperor on the other side, he is believed to be

[38] James Greenberg discusses this more fully within the context of the Antonine Plague in his 2003 article.
[39] Manders 2012
[40] Stocker 1888
[41] Book one of Homer's *Iliad* illustrates this point. Chryses, a priest of Apollo, called Apollo to his aid after his daughter was dishonored. Apollo and his silver bow mercilessly attacked the Greeks and their livestock, killing so many that "the dense pyres for the dead burned endlessly." Trans. Kline 2009

representing a "saving" from the plague, or a cessation of illness.[42] If this epidemic was cyclical, these coins may have been minted during breaks in the plague, or, more likely, are a representation of desire for a cessation of the disease. It appears the branch in Apollo's hand is a laurel with berries in bloom; although the laurel is normally associated with Apollo, in this case it could be indicative of his healing nature. From Pliny the Younger, we know that the laurel was believed to be related to healing, and specifically used to treat infections of the bladder and uterus, as well as coughs and headaches, spasms, and paralysis. When made into oil, it cured or lessened the effects of inflammation and pain of the eyes, a symptom described by Cyprian, as well as fevers and nausea.[43] This design appeared specifically with Trebonianus Gallus, his son and co-Augustus Volusian, Aemilian, and Valerian, from 251-260 CE, matching the time in which Cyprian wrote his accounts of the epidemic.

Furthermore, Gallienus and his successor Claudius Gothicus represented Apollo with the phrase *SALVS AVG*˛ or SALVS AVGVSTI, a protector of the emperor; this was ineffective for Claudius, who was killed by the condition.[44] Gallienus also minted coins with SALVS PVBLICA, meant to protect the public, presumably from both exterior forces, such as invasion, and internal, such as political conflict and plague.[45] There is also a brief resurgence of the emperor as *sacerdos* motif from Trebonianus Gallus until Claudius Gothicus. For the Roman people, the plague must have seemed in part to be some sign of dissatisfaction at the rise of Christianity and the neglect of the pagan gods.[46] By representing himself as a priest, the emperor

[42] Stocker 1888
[43] For further description of the medicinal properties observed from laurels, please see Pliny *Historia Naturalis* Book 23, Chapter 43 "Oil of Laurel: Nine Remedies" and Book 23, Chapter 80 "The Laurel: Sixty-nine observations upon it." Translation consulted was by John Bostock 1855.
[44] Manley 2014: 38
[45] Ibid: 293
[46] Some Romans certainly felt this way. Christian scapegoating was seen in the Edicts of Gallus and other Roman emperors**.** Further proof can be seen in *Ad Demetrianum,* Cyprian's response to an unknown pagan citizen accusing the Christians of Carthage for causing the plague with their impiety and refusal to sacrifice.

would be making an unspoken promise to remain pious, bringing health to the empire and the favor of the gods.

2.3.2 Mass Graves

There are several mass graves that are indicative of the Cyprian Plague and its impact on the population. Mass graves are a useful marker of mortality crisis in the ancient world. Not only do these sites sometimes contain information as to the pathogen, such as graves from the Justinian Plague bearing DNA of *Yersinia pestis*,[47] but they often indicate a deviation from normal burial practices, indicating either a rush, as would occur with large numbers of dead, or a desire to avoid physical or religious pollution. Mass burials can also indicate a shift of social ideals, particularly in response to trauma; this is particularly evidenced by a change in burial rituals.[48] What then constitutes a mass burial? According to Michael McCormick, who has begun to track mass graves in the late Roman Empire, a mass grave is "a burial of a large number of human beings that violates the traditional norms by which society enmeshed and interpreted death."[49] There are several possibilities for Cyprian Plague caused mass burials from various parts of the Empire, from Thebes in Egypt, to Rome, to Parion in Asia Minor.

The first to be discussed is a mass grave found in 2002 in the catacomb of Saints Peter and Marcellinus in Rome, where previous excavations had removed over 20,000 burials from various periods[50]. This burial is believed to hold at least 1300 individuals, about 500 of which have been excavated as of 2015. The bodies appear to have all been interred at one time, in

[47] Raoult 2008
[48] For an example, see Soren 1999: 515-518. Excavation at a Roman villa repurposed into an infant cemetery reveals a change in burial practices with a focus in sacrifice of puppies, weighing down the dead, and other attempts to quell witchcraft or negative influence from Hecate.
[49] McCormick 2015: 329
[50] Blanchard et al 2015

multiple levels arranged next to each other to minimize the amount of space used (Image 2). Haste is evident in some places where the organization breaks down and bodies are on their side or prone. Sometimes sediment is found between individuals, but sometimes layers of bodies lay on top of one another without any sediment in between. A white-grey plaster with imprints of textile on the external facing covers most of the bodies, along with the occasional sign of residue believed to be amber, also used in mummification, on some specimens. This seems to mirror some attempt at preservation of the body such as mummification, perhaps related to early Christian rites, or as an attempt to eliminate odors; plaster and lime were also both used to hasten the decay of soft tissues in burials in Roman Britain, normally in cases of bodies bloated from disease or natural decay.[51] This fits McCormick's definition of defying social norms for burial, making this a clear indication of mass burial caused by unusual circumstances. Regardless, the presence of threads of gold, powdered amber, and perhaps silver make the burial seem to be of individuals of high social rank. The burial has been tentatively dated to the late second century to mid-third based on evidence of coins found near one of the largest deposits of bodies in the complex, coins of both Alexander Severus (222-235 CE) and Gordian (238 CE)[52]. Both were emperors before the Cyprian Plague, but reigned decades after the Antonine Plague was said to cease in 180 CE. Assuming these coins are a *terminus post quem*, this makes the deposition being the result of the Antonine Plague improbable. The massive amounts of burials at one time without obvious markers of osteological trauma indicate an epidemic; the timing points to either a much latter recurrence of the Antonine, or, more likely, the Cyprian Plague.

[51] Philpott is specifically speaking of attested gravesites in Roman Britain; however, these properties can be attributed to other parts of Rome with relative certainty.
[52] Harper 2015: 226

Our next example is found in the strange ongoing case of the funerary complexes of Harwa and Skhimenru in Thebes, Egypt.[53] The complex is associated with the Cyprian Plague for two main reasons: one, the body disposal methods in the burial are unusual, and seem to show a certain degree of haste; and two, the earliest material from is from the second century CE, with the bulk of oil lamps found on the premise being from the third and fourth century CE. In 1997, a mass grave with human bodies covered in at least 15cm of lime were found in a pillared hall in the Harwa complex. The unusual presence of lime as well as the unorganized deposition quickly led excavators to associate this deposit with a plague. Ceramic evidence, including a large amount of third century pottery and a number of oil-lamps, dated the deposit to mid- to late-third century CE, coinciding well with the Cyprian Plague. Lime is described by Pliny the Elder as something that "consumes away bodies" and is sometimes used in Roman burials as an attempt to "prevent the escape of miasma from the remains."[54] It is possible, however that this is not the case, as early Christians are supposed to have used lime in a way similar to its use in mummification, to slow decay and preserve the body for resurrection.[55] In 2009, lime kilns were discovered within the complex, adding to the picture of the fate of the dead in this complex. Due to the placement of coffin and mummy fragments found near the lime kilns, it is suggested that they had been used as fuel to create the lime used to hastily cover plague victims. A large bonfire was found outside the entrance to a niche used in lime creation in 2009, in which signs of human remains with traces of burning were found. Tiradritti has two possible explanations for this factor: either the bodies in the hall were being temporarily stored before being cremated or burned, or the sheer number of victims was overwhelming enough that

[53] F. Tiradritti 2014: 15
[54] Schotsmans 2015: 465
[55] Green 1977

burning was not fast enough, and some bodies were left under lime to decay on their own. [56] Whether the lime was used to prevent the "miasma" from escaping the dead and infecting the living or as an attempt to preserve the bodies under a religious idea of resurrection is uncertain; regardless, the presence of lime and so many bodies constitutes an unusual mass deposit of the dead, qualifying this as a mass grave with evidence dating it within the period of the Cyprian Plague.

In an epidemic said to have killed 2000 people in one day in Rome alone[57] there are more mass graves and hastily made disposal sites to be studied. In some cases, such as in San Callisto catacombs, a mass mortality event was suggested for at least part of the deposit, but it was not confirmed, or a range of dates of deposition was too difficult to obtain at the time. In the case of the San Callisto catacombs, the event was mentioned by G. Wilpert in 1910, but it wasn't until Blanchard et al found the burials in Saints Peter and Marcellinus that the theory of being related to the Cyprian Plague was discussed.[58] In 2017, a multi-chambered mass grave was unearthed in Parion, in Asia Minor.[59] At least twenty-five bodies have been excavated so far, with plans to continue the excavation underway. So far this site, like others, cannot be securely dated, making it impossible to tie to the Cyprian Plague. Both sites exemplify some of the obstacles associated with using mass graves as evidence for epidemic events, namely the uncertainty that can arise without secure dating or signs of fluctuation of burial practices, trauma, or even residual signs of the illness in question.

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[56] It is my opinion that the latter suggestion, overflow, seems most likely. Placing the bodies under lime to remove them later for burning seems a waste of resources in a troubled time.
[57] This is a claim by Dionysius. For more, see Harper 2015: 235
[58] Blanchard says that Wilpert briefly mentions San Callisto shows signs of deposition from an epidemic event but offers no further guesses. Blanchard et all, however, visited the site, and based on similar stratigraphic sections, suggested the site is also an aftermath of the Cyprian Plague.
[59] The site has not yet been published, but the article about the mass grave was published initially on Hurriyetdailynews.com

2.4 Overview of the Cyprian Plague Based on these Evidences

There is no doubt that a great epidemic, or multiple epidemics, crossed the Roman Empire from around 250 CE to at least 270 CE, killing two emperors and inspiring fear and imagery heavy literature about its extreme mortality (Image 3). The earliest evidence and discussion seems to derive from Egypt, with Dionysius of Alexandria and the mass grave at Thebes.[60] From there, it spreads west and north, reaching both Carthage and Rome by 251 CE and inspiring edicts, such as the compulsory universal sacrifices required by Decius,[61] and fear from Roman officials. These edicts create a tension between Christians and pagans that surely affect our remaining extant sources of the epidemic, including the eponymous Cyprian. As a result, it is easy to argue for an exaggeration of the effects of the disease, meant to glorify the citizens risking infection to bury the dead. This, however, seems highly unlikely; the sheer number of sources speaking on the plague and its horrors outnumber those of even the well-known Antonine Plague. Furthermore, our extant sources are mostly letters, sermons, and biographies aimed at an audience that was either currently experiencing the plague, or still recovering; for so many to exaggerate to an audience that knows the state of affairs is improbable.

Despite the multitude of sources, we have relatively few that mentions specific symptoms, and, as of the writing of this thesis, no physical depictions in art or microbial or otherwise evidence at burial sites are known. As a result, the diagnosis of this plague is difficult; no Galen exists to lead us along symptoms and treatments. A variety of diagnoses have been

[60] Although I am grouping this with Dionysius, the date is not secure enough to suggest a firm date of around 249 CE. However, it seems most likely that the center of incidence occurred in Egypt, which was suffering ecological changes at the time, and spread west and north. More on this will be discussed in the diagnosis chapter.
[61] Rives (1999)

proposed over the years, with perhaps the most recent being Kyle Harper's diagnosis of a Viral Hemorrhagic fever. This thesis will continue to assist the identification of the epidemic by applying a methodology of differential diagnosis to the symptoms created.

Chapter 3:

Differential Diagnosis of the Antonine Plague as a Model for Understanding the Cyprian Plague

3.1. Approaches to Diagnosis: Differential Diagnosis

Many of the markers of an illness are nonspecific, such as fevers and chills, and are caused mostly by our immune system attempting to overcome the pathogen affecting us. As a result, diagnosis can be difficult, especially when trying to discuss an epidemic from millennia prior. In the case of the Cyprian Plague, our diagnosis must be made from only a few lines describing symptoms. As individual symptoms, this is not enough to diagnosis the plague with any amount of accuracy; however, by using differential diagnosis, the epidemic can be narrowed down to a few diagnoses. Differential diagnosis works by eliminating possibilities by considering each symptom against symptoms displayed by each disease. There is precedence for the use of this technique in determining the diagnosis of plagues in antiquity. In their 1973 article, R. J. and M. L Littman employ this method by discussing each symptom as a separate entity, and then using them to eliminate possible conditions before arriving at the conclusion of hemorrhagic smallpox. This chapter will discuss their methods as a model to be used to diagnose other ancient epidemics and suggest improvements and extra information.

3.2. Model: Antonine Plague (168-180 CE)

The study of the Antonine Plague benefits greatly from its association with the medical author Galen, whose writings are an integral part of the study of the history of medicine. Galen, though his mentions of the epidemic are scattered throughout his works and tend to be brief,

would have seen the disease in person in Rome in 166 CE[62] and in Aquileia, a military camp in Northern Italy, in 168/9 CE[63]. Most of his descriptions outline his treatment of the disease and refer to specific cases, but occasionally he makes mention of sweeping symptoms common to all incidences of the disease he has encountered or heard word of through his travels. Although other authors of this time make mentions to a plague or great sickness sweeping the land, Galen alone discusses the symptoms with any detail.[64] Unfortunately, due to his focus on his own treatment methods and the progression of the disease, Galen does not linger on the symptomatology, nor try to create a full description for future generations to identify their plague as the same disease. As a result, it is impossible to dismiss a diagnosis based on the absence of description of a symptom in the patients, unless this symptom would have been integral in the discussion of another he has mentioned.

Perhaps because of the lack of corroborating sources and Galen's scattered and inattentive descriptions of the plague, scholars have put forth a variety of possible diagnoses for the Antonine Plague over the years. Early diagnoses included bubonic plague and typhoid fever, although typhoid fever is no longer considered alongside the other diagnoses in literature and has been almost thoroughly dismissed as a possible cause of the epidemic.[65] Bubonic plague has also lost support over the years as a diagnosis as well; the rash is atypical of Bubonic plague, which concentrates generally in the groin and armpit, or other parts of the body that most attract the fleas spreading the bacteria causing the disease. Galen's attention is largely spent on the exanthem, or large, widespread rash, which seems to match the description of measles, typhus, or smallpox. To ultimately distinguish among these options, it is necessary to deploy a method of

[62] Kuhn 19.15
[63] Kuhn 19.18
[64] Littman 1973: 245
[65] Stannard 1993

differential diagnosis, in which each possible diagnosis is eliminated through a systematic process, shrinking the probability of potential conditions until a clear diagnosis appears. Since the source of information for diagnosis of this plague is largely literary, the diagnosis must come from a close inspection of the symptoms laid out by Galen against the common symptoms associated with the proposed diseases. After the symptoms have been isolated and discussed, conditions that do not account for some of the manifestations recorded by Galen can be eliminated, until only one or a handful of possible diagnoses remain.

3.2.1 Symptoms

Galen describes many symptoms through his treatment of one individual during the Antonine Plague, a young man suffering from symptoms who makes a full recovery. It is with this case that we see many of the symptoms described and, importantly, their timing. The worst symptoms seem to cluster between the ninth to twelfth day, with either death during that time or a recovery made about three days after.[66] During this time, the most characteristic symptom of this condition arises, a full body rash that is dry and ulcerated, and occasionally black.[67] The black exanthem seemed most common when there was no black color in the diarrhea that occurred in all cases observed by Galen. In many cases, the stool was clearly colored by blood, and in cases where the bloody stool was particularly dark, the victim always perished.[68] Upset stomach[69], internal fever[70], and a cough[71] was common in all cases, with other symptoms, such

[66] Kuhn 10.367
[67] Kuhn 5.115
[68] Kuhn 5.115
[69] Kuhn 5.12
[70] Kuhn 17.1.885
[71] Kuhn 10.360

as vomiting[72], rotten breath[73], and coughing up of blood[74] were present in some cases, but not others. Other symptoms, such as insomnia and confusion[75] are found late into the disease.[76] These symptoms may not be present in all cases, as Galen speaks largely of independent patients, which allows for multiple strains or multiple physical manifestations of one disease to be present during the epidemic.

3.2.2 Eliminating Possible Diagnoses

With the symptoms identified, the process of eliminating diagnoses can begin. With the Antonine Plague, there are a few historically favored diagnoses that can be removed from the pool easily. Bubonic plague, for example, does not produce a rash across the entirety of the body, nor is it known for particularly deadly bouts of diarrhea, ulcers, or blisters, but instead creates buboes in the groin and armpit most often.[77] Epidemic typhus, measles, and smallpox are the three that present in ways most close to Galen's description of the symptoms, and can, even in modern times, be confused in their early stages. All three produce a bad fever, foul breath, and a distinctive red exanthem. It is the exanthem that is perhaps the best tool for determining which of the three seems most accurate. Galen describes the exanthem as pustular, yet dry, removing measles with its distinctively flat rash, from the running; furthermore, he mentions it displaying as black when the patient was hemorrhaging, which occurs in neither typhus or measles.[78]

[72] Kuhn 10.367
[73] Kuhn 9.357
[74] Kuhn 10.367
[75] Kuhn
[76] For a more in-depth discussion of these symptoms and the source material, see Littman 1973 and Cunha
[77] Barnes 2005
[78] Raoult 2008

Smallpox seems the obvious diagnosis; however, some still argue against it. Survivors of smallpox incur immunity for life, which affects the mortality rates in recurrences.[79]

3.3 Conclusions from Smallpox Diagnosis

The Antonine Plague's overall effect on the Roman World has been widely debated throughout the years; sources like Otto Seeck estimate half the population falling to the epidemic, while J.F. Gilliam makes a much more conservative claim of 1-2%.[80] The large range of estimates derives in part from the lack of secure data and the creation of claims based on uncertain conjecture from evidence such as military discharges and tax records.[81] These estimations have been drawn largely through looking at ancient sources which are almost entirely non-contemporary and prone to exaggeration and vague figures about their particular city. As many diseases, smallpox included, can have various morbidity or incidence rates based on population density, sanitation, time of year, and so on, it is inaccurate to conclude that the mortality rate in Rome, for instance, would match the mortality rate of a provincial Roman village.

After a diagnosis has been proposed, questions of morbidity and mortality in a population struck by the epidemic can be addressed from a more quantitative viewpoint. It is important, however, to remember that there are still fluctuating factors in determining these rates from diagnosis alone. Strains of smallpox, for example, can vary in mortality rates from 1-80%, and multiple strains can even be present in a population at one time.[82] Furthermore, the effect of

[79] Barnes 2005
[80] Gilliam 1961 makes this claim based on a variety of factors, including a lack of secure evidence of mortality rates and skepticism in some evidences used by previous scholars, such as tax documents.
[81] James Greenberg discusses the problems with using non-literary data such as the frequency of building projects to estimate mortality rates more comprehensively in his 2003 article.
[82] Littman 1973

the disease can be augmented by the population's previous exposure to the virus, which confers immunity in those that survive the initial infection. During a pandemic, the overall death rate is likely to average about 25% of those infected, which is usually around 60%-80% of the population.[83] This leaves the total amount of the population lost to the pandemic between 15-20%; however, the plague lasted for about 23 years with flareups across a large geographic area where smallpox had previously been endemic. Because of this, the mortality rate was like much lower, around 10%, causing about 3.5-5 million deaths in the outbreak of 165/8 CE.[84]

[83] Ibid: 254
[84] Ibid: 255

Chapter Four:

Diagnosing the Cyprian Plague

4.1 Proposed Diagnoses

The Cyprian Plague, like the Antonine, has been assigned many diagnoses over the years. McNeil in 1976 proposed smallpox, as another recurrence of the Antonine Plague, or measles as the diagnosis; this diagnosis has remained popular and is still quoted as the firm diagnosis by articles like Tiradritti's 2014 article on the Theban mass grave and even popular resource sites like Wikipedia.[85] Bubonic plague, an always popular diagnosis that is almost certainly responsible for the later Justinian Plague, was proposed by Haeser in 1839. Recently, Kyle Harper has suggested some sort of viral hemorrhagic fever (VHF) may be responsible, which still leaves a variety of possibilities open within this classification, including Ebola and Yellow Fever. To differentiate among these diagnoses, we will apply a similar formula to that used by Littman and Littman: first, we will discuss the symptoms as laid out by Cyprian and other sources and try to remove any distortions caused by religious bias or the passage of time; second, we will discuss each diagnosis and how viable it is; and finally, we will discuss the best option, which I believe to be a type of VHF caused disease similar to Ebola virus disease and the possible ramifications of this diagnosis.

4.2 Symptoms

To create our list of symptoms, we must consider the Latin, mostly Cyprian's *De Mortalitate:*

> Hoc, quod nunc **corporis vires** solutus in fluxum **venter** eviscerate, quod in faucium vulnera conceptus **medullitus** ignis exaestuat; quod assiduo vomitu

[85] Sources: McNeill 1976; Wikipedia lists smallpox or measles on its page on the Cyprian Plague; Tiradritti 2014

> intestina quantiuntur, quot oculi **vi sanguinis** inardescunt, quod quoramdam vel pedes vel aliquae memborum partes cantagio morbidae putredinis amputantur, quod per iacturas et damna corporum prorumpente languore vel debilitatur incessus, vel auditus **obstruitur**, vel caecatur **aspectus**, ad documentum proficit fidei. [Cyprian *De Mortalitate]*
>
> That now, the **bowels**, loosened into a stream, dissipate the **strength of the body**, that the fire taken up from the **marrow** boils up into wounds of the throat; that the intestines are shaken by constant vomiting, that the eyes burn with the **force of blood**, that the feet or other members of the body are amputated by the rottenness of the diseased infection, that either the gait is crippled through loss and weakness of the body, damaged by weariness, or the ears are made **deaf**, or the **eyes** are made blind,

From this passage, occurring in section fourteen of his address to the Christians of Carthage, we can pull out several main symptoms: severe diarrhea, a fever coming from deep inside and creating ulceration of the throat, continuous vomiting, eyes burning and bloody, limbs amputated after putrescence, and loss of hearing and vision. It is important to discuss a few words where there may be some possible fluctuations in meaning, specifically related to where in the body symptoms occurred. *Venter* can mean several anatomical regions, including the belly, intestines, and even the womb. Here, I have chosen to use it as "the abdomen as containing the excretory system, the bowels."[86] If it were sex specific, and meant womb, then Cyprian would have doubtlessly mentioned the dead were women alone. The stomach could also 'loosen' and be violently expelled; however, vomiting is mentioned soon after this, which would be redundant if this refers to vomiting. Harper argues that *venter* tied with *corporis vires* is meant to depict a bloody or black stool, a sign of hemorrhaging.[87] *Medullitus* is another Latin word that does not

[86] OLD: 3
[87] Harper 2015: 242

have a convenient English anatomical equivalent. The Oxford Latin Dictionary lists it as "from the marrow"[88] or "from the depths of the mind or heart,"[89] while Lewis & Short adds the definition "inwardly, in one's inmost soul."[90] Though it unclear what is meant, the idea that the fever comes from deep within is certain; it seems, perhaps, that the fever is similar to that described by Galen.

It is also worth mentioning and discussing additional information that may help identify the pathogen. The epidemic spread incredibly far, nearing Pontus and Syria in the East, and going as far north as Illyricum, Thrace, and Pontus. In the west, we are certain it went as far as Carthage and Rome, but could have stretched farther; similarly, we know the plague affected areas as far south as Thebes, but we do not know for certain if it bound by the Sahara or Nubian Deserts (Image 4).[91] Previously discussed literary evidence, as well as suggested mass grave evidence provides boundaries of the spread, but they cannot be seen as definite; it is likely peoples outside the Roman empire suffered these as well, and there is no guarantee all the lands between the areas of evidence were affected. Regardless, to cover such a large area, especially in a relatively short time,[92] it is probably that it was a new pathogen, or at least a new strain or severity. This is further supported by a passage from the *De laude martyria*, which calls it an unknown disease and uses this newness as part of the horror of the disease. The Roman ideas on medicine and illness do not lend to an understanding of pathogens, so it is uncertain if the author is remarking on the newness of the pathogen itself, or instead mentioning that the symptoms or severity are presenting in a way that appears different than previous experiences or

[88] OLD: 1
[89] OLD: 2
[90] L&S: 3
[91] Harper 2015: 244
[92] It was able to influence severely Rome within a year or two of its outset in Alexandria.

documentation. Both Christian writers and later writers working off assumed pagan sources speak of the high mortality and quick transmission, emphasizing the bravery of those who interact with the infectious sick and dead and the suddenness of the disease.

The epidemic also does not seem to have preference for any population density, striking cities like Alexandria and Rome, as well as smaller cities like Thebes and Illyricum and villages, according to later historians. Zosimus, and other late historians, mention that the epidemic traveled with the army at times, both Roman and Goths, moving into and out of the Empire with invasions and defense. Because of this, and an offhand mention in Kedrenos, another late historian writing in the 11th century CE, of some cities being hit by the epidemic twice, it is possible that the epidemic worked in waves; instead of continuous, devastating presence in every city, it would move from place to place, but resurge in areas during the next season, or when the hosts of the pathogen became ready to sustain the infectious agent once again. A fall to summer seasonality is mentioned in later sources, presumably coming from Philostratus, but without a secure contemporary source, it is possible that this was a later addition. Therefore, although it will be considered, it will ultimately not be a deciding factor in diagnosis.

4.3 Differential Diagnosis of the Cyprian Plague

I will consider the popular diagnoses in this section, grouped into similar presentations. There are several precautions when approaching this: one, we have a singular source for the physical presentation and symptoms of the disease with Cyprian, who was not interested in the medical aspects, so likely did not record all symptoms, especially subtle ones; two, some of our symptoms, such as seasonality, come from later sources that have no extant contemporary source; and three, there is the possibility that presentation of illness can change over time, which includes drastically different mortality rates between modern epidemics and ancient.

Furthermore, we must acknowledge that there may not be one singular diagnosis for this epidemic; instead, it could be a period of several smaller epidemics across the empire. With only one author reporting symptoms, this is entirely possible; however, we will disregard this theory for the purposes of this paper, as we cannot prove or disprove the presence of multiple epidemics with our current evidence.

4.3.1 Smallpox and Measles

Smallpox and measles are caused by viruses that are incredibly infectious. Both were offered as a possible diagnosis by McNeill and have been quoted as the cause of the Cyprian Plague for many years. Measles is easy to eliminate from the pool of possibilities. Caused by a RNA virus member of the *Morbillivirus* genus, Measles is easily passed from person to person through exposure to respiratory droplets let loose in coughing. An acute fever, excessive coughing, and inflamed eyes are common symptoms, as well a characteristic rash across the body that is often red, and, unlike smallpox, flat.[93] Perhaps the most obvious argument against measles is the lack of mention by Cyprian of any sort of rash or physical marring of the skin. Although Littman makes it clear in the Antonine model that the lack of a symptom being mentioned in an ancient source is not enough to discount that this symptom was present,[94] it seems unlikely that Cyprian would leave out mentioning of a large rash, especially as this easily could be used in religious propaganda as an exterior signal of internal moral decay. Furthermore, measles does not affect the limbs in a way described by Cyprian, causing rotting of the members; the most common complication causing

[93] For further information regarding the symptomology, clinical presentation, etc. of measles, see Moss, W 2017.
[94] Littman 1973: 246. "One cannot argue out of hand that a sign or symptom was not present, simply because Galen does not describe it, unless the symptom would be an integral part of the specific item Galen is describing." Littman argues that Galen may ignore what we know to be a symptom because it is either irrelevant or does not fit his narrative. Similarly, Cyprian may not mention symptoms that he either is unaware are side effects of the illness or that simply do not fit his narrative.

death in measles is pneumonia, which, although possibly present, has gotten less attention from Cyprian than the bowel issues. The assertion by later authors that the epidemic recurred in some cities also gives pause; measles confers immunity to those who survive, which would leave cities and villages facing a recurrence of the virus much better equipped to deal with it. Measles also tends to be more harsh and deadly for children below six, which would not accurately account for the drop in the adult population mentioned by Dionysius. The mortality rate, even with severe complications, is between 10-30%, although it is possible that in a previously unexposed population, this could rise much higher. Finally, molecular clock analysis on measles done in 2010 suggested it developed in humans in the 11th or 10th century, with the earliest being 5th or 7th century, well after the Cyprian Plague.[95]

Smallpox, still one of the favored diagnoses for this epidemic, fits much better than measles. Caused by the *Variola* virus, one of the pox viruses that affect many species, including humans. It thrives in large, dense human populations, but can be sustained in small, dense rural groups, and could easily be spread by military movements across the countryside. Like measles, it is spread predominately through contact with respiratory droplets, but it can also be spread with the pus from lesions or dried scabs from the pustules. Depending on multiple factors, including humidity and temperature, the virus can stay active in the dry scabs for weeks**.** It does not otherwise survive well outside the body and cannot survive well in a population that has gained immunity through exposure, as with measles.[96] The symptoms match the description of diarrhea, ulceration of the throat, and resulting blindness given by Cyprian. If the seasonality listed by later authors is considered, smallpox fits the bill; a study from 2009 calculates the seasonality of smallpox to peak

[95] Furuse, Y et al 2010
[96] Barnes 2005

in winter, specifically January.[97] This correlation is less related to temperature, and more to humidity, according to the study; if there truly was a period of great drought, smallpox could spread much more easily.[98]

Again, the lack of a description of the characteristic rash, in this case raised with pus, creates doubt in this diagnosis. Smallpox is also not known to cause putrescence of the limbs or resulting amputations. The descriptions given by Cyprian of blood in the eyes, ulcerated throat, and extreme diarrhea, potentially bloody, only occurs in about 2% of smallpox infections when the disease manifests as hemorrhagic smallpox. Furthermore, those who survive this strain, only about 20-30%, are disfigured by scars, another very physical symptom not mentioned by Cyprian. Since both the minor strains and major strains can and are often present in an epidemic, it is difficult to determine the exact mortality rate, but it seems to be between 30 and 50%.[99] This mortality rate would likely have been affected by the Antonine plague, less than a century prior. Although it is likely many of the survivors of the Antonine plague, which may have had its last reoccurrence around 190CE, [100] had died, leaving the population again without gained immunity, it is highly unlikely that Cyprian or the other well educated writers on this plague would not have recalled Galen's recollection of the plague, or, as in later sources, referred to it as *novus*, or new. Furthermore, one of the lingering arguments against smallpox as a diagnosis of the Antonine Plague has been that the outbreaks during the Cyprian Plague, assumed to be smallpox by these scholars, would then have been far less severe. [101]

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[97] Nishiura 2009
[98] Both Cyprian and Dionysius mention a great drought leading up to the plague. Cyprian pairs it with famine and Dionysius with flood, making it possible that this drought was a metaphorical reference to Biblical disasters, for example referring to a rough patch for Christianity as a drought, or an exaggeration of slightly drier time.
[99] Wilkinson 1959
[100] Littman 1973
[101] Raoult 2008

4.3.2 Bubonic Plague

Bubonic plague, one of three plagues caused by the bacteria *Yersinia pestis*, is transmitted by fleas. Rats carrying the fleas enter human domiciles, exposing those humans to the plague carrying fleas. It manifests with many of the symptoms described by Cyprian: vomiting, fever, and pain in the extremities. A further type, the Septicemic plague, occurs when the bacteria enters the bloodstream and most often occurs as a rare complication of bubonic plague. It causes septic shock, diarrhea, and internal bleeding. The third, pneumonic plague, occurs when respiratory droplets from an infected individual are inhaled. Untreated bubonic or septicemic plague will also develop this when and if it spreads to the lungs. It comes with cough and weakness and is the only form that can be spread directly between humans.[102]

Once again, the main argument against *Yersinia pestis* lies in the lack of mentioning a characteristic skin legion by Cyprian. In the Bubonic, and most common form, large black protrusions, called buboes, are seen in the groin, neck, and armpits. The other two forms, septicemic and pneumonic, are much rarer, and would surely, to the Romans, seem to be almost a different disease with different presentation. One form alone does not account for all the symptoms listed by Cyprian; therefore, all three would have to be present in significant quantities to inspire him to mention all these symptoms. While this is perfectly possible, it does not explain why what the most common symptoms would be, the necrosis at the entry site and the buboes, would not be included in the narrative.

[102] Barnes 2005

4.3.3 Viral Hemorrhagic Fevers: Yellow Fever, Ebola, and More

Viral hemorrhagic fever (VHF) is a designation given to diseases caused by at least 23 RNA virus species from one of five taxonomic families: Arenavirdidae, Bunyaviridae, Filoviridae, Flaviviridae, or Paramyxoviridae.[103] These viruses create diseases ranging from geographically limited conditions, to endemic diseases affecting many, to epidemic diseases. As is evident by the name, VHF diseases always include a high fever, fatigue, and hemorrhaging, especially internal. Most of these viruses also cause vomiting and diarrhea, adding to the symptoms of Cyprian that they match. With such a big variety of VHF diseases that at least partially match symptoms, it can be difficult to narrow it down to find the best fit. Lassa, for example, presents as Cyprian describes, even causing bleeding of the eyes and sensorineural deafness. It is, however, doubtful this could be our answer for a number of smaller reasons: one, the primary animal reservoir for the virus is the mouse genus *Mastomys*, enzootic in sub-Saharan and West Africa, making the spread from East to West a bit less likely; two, the mortality rate is much lower than implied by Cyprian and other sources, at around 10-15%; and three, it does not typically cause the putrescence of limbs.[104] Instead of seeking one diagnosis from this bunch, we will seek one to use as a model to discuss impact and transmission.

Dengue fever and Yellow Fever, both caused by a virus in the Flaviviridae family, are also possibilities. Yellow Fever causes fever, bleeding, nausea, and headaches. After a brief period of remission, about 15-20% of those infected regain symptoms, adding the blood in the eyes and jaundice, excessive vomiting mixed with blood, and delirium.[105] Since only a small percentage of infected get to this stage, the majority recovering after the first stage, the death rate is relatively

[103] Paessler 2013: 411
[104] Yun 2012
[105] Paessler 2013: 419

low, at 5-10%, making it unlikely to be the one described by Cyprian. Dengue fever has the characteristic symptoms of a VHF virus, as well as a characteristic skin rash, but only creates complications leading to serious illness in about 5% of cases. It is most dangerous for children and pregnant women, a demographic not only not mentioned by Cyprian, but also not seen in high numbers in mass grave evidence. Furthermore, both share a vector that makes them improbable diagnoses: the mosquito, specifically *A. aegypti.* Later sources attribute a seasonality focused on winter; even without this evidence being true, the northern reaches of the disease would be less affected if the mosquito oversaw the spread, due to climate restrictions on the range of *A. aegypti*.[106]

Ebola is the best fit from the VHF viruses. Its initial manifestation comes with fatigue, an incredible fever of at least 101 F (38C), vomiting, diarrhea, and severe abdominal pain. Chest pain and coughing comes next, along with a possible rash. The whites of the eyes may show signs of bleeding, causing permanent eye damage.[107] A reaction of the immune system in the more severe cases causes putrescence in the limbs, leading to the infirmity and amputation mentioned by Cyprian. Passed from person to person via bodily fluids, including excrement, vomit, mucus, urine, and even semen, into permeable membranes or open wounds, it is incredibly contagious. The Ebola virus can survive days inside of dead bodies,[108] making burying and handling the dead treacherous, as Cyprian describes. Ebola does not confer immunity to the infected, so a settlement recovering from the illness, only to be hit again, makes perfect sense. Furthermore, the Ebola virus can lay dormant in semen and breast milk for weeks to months after the infected has recovered, only to be

[106] Harper 2015
[107] Barnes 2005
[108] Schotsmans 2015: 465

passed on to any exposed to their semen or breastmilk later. Since the Ebola virus is passed from person to person in fluid contact, climate would not greatly affect the spread of the virus.

4.4 Discussion of Results

From the above discussions, we can eliminate several diagnoses with ease (Figure 1). The following figure summarizes the exhibition or lack of the symptoms mentioned by Cyprian in the general presentation of the proposed diagnoses, as well as notes when symptoms occur only in less common severe forms of the disease. Cyprian describes these symptoms as omnipresent among the infected; therefore, a presentation in less than 15% of cases is not sufficient.

SYMPTOM	SMALLPOX	MEASLES	BUBONIC PLAGUE	YELLOW FEVER	EBOLA
SEVERE DIARRHEA	■	●	■	●	●
ACUTE FEVER	●	●	●	●	●
ULCERATION OF THROAT	■			■	●
CONTINUOUS VOMITING	■		●	■	●
CONJUCTIVAL BLEEDING	■	●		■	●
PUTRESCENCE OF THE LIMBS			●		■
SEVERE DEBILITATION			■		■
LOSS OF HEARING AND VISION	■	●		■	●
TRANSMITTED RAPIDLY	●	●	●	●	●
SEASONAL: FALL TO SUMMER*	●		●		

*Figure 1: Symptoms of the Cyprian Plague and their appearance in various diagnoses. • denotes their presence in the majority of cases, while ■ denotes their presence in less than 15% of cases. * denotes a category based on later authors alone.*

As seen by the above, Ebola is the best fit given the symptoms mentioned by Cyprian. There are many other VHFs present in Africa and even northern areas like the Mediterranean,

however, that were not discussed here, or possibly have not yet been identified by modern scientists or no longer exist. Therefore, we shall proceed with caution; although we will be using Ebola virus disease as a model approach the mortality information given by the ancient sources, the possibility that it is an entirely different VHF disease remains. Ebola virus disease, and other VHF diseases, have their reservoir in animal populations; they inhabit these species without killing them, and only become deadly when they move into a new species, such as humans. Ebola, for example, is believed to have its natural reservoir in bats; in rural areas of Africa, where it is endemic, it enters the population, infects a few, and seemingly disappears from the population after those infected have succumbed or recovered from the disease. The 2013-2016 Ebola virus disease epidemic occurred because Ebola virus was exposed to a large and dense population in African cities; there, enough uninfected people existed that the virus did not rapidly burn through hosts and was able to persist[109]. The Cyprian Plague was likely a similar rurally endemic disease that was brought to urban centers such as Alexandria, Carthage, and Rome, possibly by the Roman legions. In these dense populations, the virus found a new reservoir, and became epidemic.

From this diagnosis, I will discuss the possible mortality rates and estimate the overall effect of the epidemic on the Empire. For this, I will consider the model created by information from the 2013-2016 Ebola virus disease epidemic that spread through Guinea, Liberia, and Sierra Leone, with isolated cases carried largely by health workers into other countries, such as the United States. The differences between the two are large, namely in access to medical care, sanitation,[110] and identification of the illness; however, there are enough similarities to make the

[109] Cordner 2017

[110] It is important to note that the Romans did have strong sanitation methods. See Koloski-Ostrow 2015 for more. Burial methods were also adjusted in response to the epidemic, as seen in section 2.3.2, which suggests some knowledge of the dangers of transmission from the dead existed.

comparison worthwhile. For example, although modern medicine more easily identifies and treats the disease, the countries affected have weak health systems in place.[111] Furthermore, Ebola virus disease presents almost identical to many other endemic diseases in early stages, including malaria and other viral hemorrhagic fever diseases. This stymies the prevention of the initial spreading the infection, leading to increased morbidity rates that are similar to those in a society such as the Romans, who had no identity for this disease.

After the first nine months of the Ebola virus disease outbreak of 2013-2016, the World Health Organization's Ebola Response Team published the initial mortality rate estimates along with predictions of future rates. At that time, the mortality rate was around 70.8% of reported cases; this, of course, did not account for unreported cases, which likely included many people in remote regions or who did not seek medical attention.[112] One of the exacerbating circumstances for the large spread of Ebola virus during this time was unprotected handling of the dead common in funeral rites in both Guinea and Liberia.[113] This initial mortality rate fell sharply during the rest of the epidemic, leading to an overall mortality rate of approximately 40%, with extreme variation by country and response. The decline of fatalities comes largely from the efforts of the World Health Organization to contain and treat the infected; however, other factors, such as a change in burial customs[114] during the epidemic likely assisted in the decline of fatalities.

[111] Cordner 2017: 303. "There are only 150 doctors for Liberia's 4 million population."
[112] WHO Ebola Response Team 2014
[113] Cordner 2017: 304. An example comes from the case of the funeral of one individual that was linked to at least 85 confirmed Ebola cases as mourners bathed, kissed, and touched the body during the funeral.
[114] ibid: 304. The President of Liberia, for example, decreed that all dead bodies, at least in the capital and surrounding areas, had to be cremated even though the large Christian population normally preferred interment.

It is likely, then, that we can assume a mortality rate of about 40-70% of infected among the Roman population. Morbidity is much harder to estimate. Even the numbers for the 2013-2016 outbreak are difficult to estimate, and the spread of the Roman epidemic was much different. In general, Ebola seems confined to Africa in modern epidemics[115], with the occasional outside case coming from travelers out of the region. In the 2013-2016 outbreak, the outside cases, such as those in the United States, did not spread as in an epidemic; instead, isolation of the infected occurred quickly. This isolation likely did not occur in the Roman epidemic, and the primary spreading forces were likely survivors of the initial infection who came into sexual contact during travelling or the sick during burial or travel. It seems unlikely, however, that Zosimus was correct in his assertion that it affected all places regardless of population density; instead, the bulk of the incidence likely occurred in dense cities, such as Rome, Carthage, and Alexandria, with infections occurring along lines of heavy trade or military movement. Unfortunately, with the confusion and lack of firm records during the third century, it is difficult to track this information and confirm.

Not one among Cyprian or his contemporaries mention any specific mortality rates, preferring instead to emphasize the danger to all. Dionysius does provide some information with his assertion that the number of inhabitants of Alexandria has changed significantly, as was discussed in chapter two. From this assertion, T. G. Parkin created a sample model of the population of Alexandria at this time and calculated the total loss of population to be 62% over two years.[116] Of course, the causes for this decline include the deaths from the epidemic, as well as from other causes, and possible flight from the city that is natural during epidemics. Since the

[115] Barnes 2005. Ebola virus is endemic to equatorial Africa and may have its natural animal reservoir in a species of bats native to that area.
[116] Parkin 1992: 63-64

exact cause of the decline of population is not measured out, it is not possible to draw conclusions regarding the overall morbidity and mortality of the epidemic from this information; to try to force out exact percentages of these rates by applying modern trends ultimately will lead to inaccurate information. It seems safe, however, to contribute a mortality rate of between 40-70% of the infected, as well as a decent amount so socio-political stress. It is problematic to associate current mental health standards and problems to ancient populations, but it is worth noting the extreme raise in anxiety, depression, and social conflict noted in the 2013-2016 West African epidemic.[117]

At this point, another comparison must be made. Poggio Gramignano in Lugnano, a Roman villa that was repurposed as an infant cemetery in the 5th century in Italy, is an example of the possible social ramifications of an epidemic. The evidence from this excavation points to the presence of an outbreak of malaria during this time. It was due to this outbreak that the infants were interred in pairs or individual burials; there are at least 47 infants found in this site with a deviation from general burial standards, making it meet the requirements of a mass burial by McCormick. The most striking deviation occurs in the presence of signs of "witchcraft" among the burials; despite the likely Christian surroundings, the burials returned to appeasing to Hecate with the addition of puppy sacrifices, frogs, and other signs of pagan rituals.[118] This marked return to pagan ideas was likely a local attempt to stymie the affects of the outbreak; similarly, Decian in the 3rd century passed an edict requiring compulsory sacrifices to attempt to slow the spread of the Cyprian Plague. These edicts are dropped within a few years, but the epidemic did not cease; it is likely, therefore, that the sacrifices did not seem to have any effect

[117] For more on these noted effects, see Ji, D, Ji, Y, et al 2017, which focuses specifically on the psychological health of survivors and healthcare workers during the outbreak in Sierra Leone.
[118] See Soren 1999

on the epidemic. This would be visible to all, and probably did much to strengthen the cause of the Christians, who, instead of claiming to be able to stop the plague, merely emphasized that there was paradise waiting for believers after their death.[119] After all, "no one doubts that the church was much broader and more confident in 300 than it had been in 200, and that the latter half of the 3rd c. was particularly consequential in its advance."[120]

[119] See Cyprian *de Mortalitate*
[120] Harper (2015): 257

Conclusion

The Cyprian Plague is just one of many widespread epidemics occurring in the ancient Mediterranean and just one of three heavily affecting Rome between the 2nd and 6th centuries, but, despite its prominence in contemporary literature, it is rarely studied in comparison to the Antonine and Justinian plagues. It occurs in the middle of a chaotic time for the Empire: The Crisis of the Third Century, during which the economic value of Roman coin plummeted and the "barracks emperors" took power and were displaced with another in rapid succession. To assume that the plague did not strongly affect the floundering empire would be folly; the only difficulty lies in *how much*.

Unfortunately, the bulk of evidence for this plague lies in literary works alone, and none of these are so thorough as Galen from the Antonine Plague. Physical evidence, such as mass graves in the Near East and Egypt, as well as Rome itself, and numismatic evidence, seen the in adoption of a healing Apollo on coins during the time of the epidemic, all attest to the presence of the plague; however, they do not give insight into the severity or even symptoms of illness. Literary sources abound, from Dionysius of Alexandria to Cyprian of Carthage, to Sibylline Oracles in the Near East, with echoes of these and more spreading forth into as late as the twelfth century; these too, however, focus mostly on confirming the presence of a plague and emphasizing its damaging effects on the empire. These effects, however, are not quantified in a way that adds to the current discussion by any sources other than Cyprian.

It is from Cyprian's depiction of the illness, delivered in a stoic speech to his constituents urging them to accept death and not fear the handling of the dead, that this paper derives its discussion of differential diagnosis. By eliminating some of the proposed diagnoses given by scholars over time, this study narrowed it down to a viral hemorrhagic fever akin to Ebola viral

disease. I feel the evidence strongly supports an outbreak of Ebola viral disease or a similar VHF near Egypt, spreading west across Africa and North into Southern Italy initially from travelling and military travel. The spread was exacerbated by unfamiliarity with the disease and a lack of understanding of the causes, and therefore preventions, of infection. The military, highly active as the barracks emperors received pressures from external invading forces, as well as internal political forces, aided greatly in this spread; these traveling forces brought the VHF to new population centers, where the reservoir of uninfected humans was high enough to allow the virus to flourish for years. Unfortunately, most viral hemorrhagic fevers do not leave traces in the archaeological record, so confirmation of this via physical evidence is unlikely.

A discussion of the most recent outbreak of Ebola virus disease, a VHF with the most similar presentation to that described by Cyprian, followed, with conclusions of mortality and morbidity cautiously being drawn when possible. Morbidity proved the most difficult to quantify, as rates of spread depend highly on many external factors, including density, sanitation, preventative measures, and burial practices. Many of these are unknown or vary over the expanse of the empire; furthermore, they vary from ethnographic examples, making comparison and conclusions fraught. Without this morbidity data, the only mortality that can be guessed is the overall mortality of those infected, which likely ranged from 40-70%. This by no means implies that 40-70% of the population was affected; in fact, the number was likely less than 4%. Regardless, the large mortality rate of those infected likely made this epidemic have a large social impact; from heightened anxiety mirroring mental health deterioration experienced in the most recent Ebola outbreak to a possible increase in practice of Christianity, the social affects of the plague were likely great.

The full effects of the Cyprian plague are not yet understood, but it is my hope that this work can encourage further research into it alongside a greater understanding of possible side effects of the plague.

Appendix A: Images

Image 1: Apoll Salutari coin from the reign of Trebonianus Gallus c. 251-53 CE. Trebonianus Gallus on obverse with laurel wreath. On reverse, Apollo is nude holding a laurel branch in one hand and his lyre in the other. Image from British Museum: 1867.0101.804.

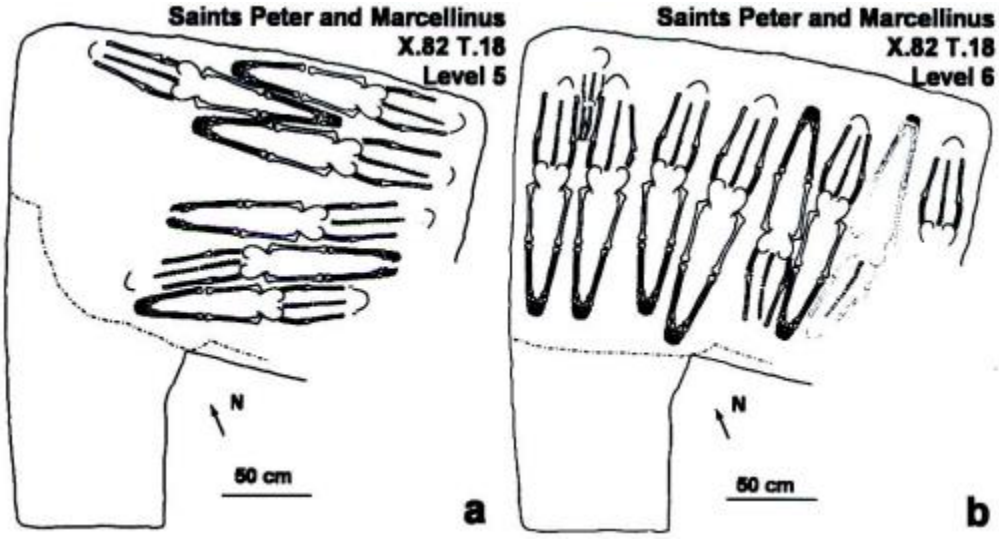

Image 2: Two successive levels of the catacomb of St. Peter and Marcellinus. The bodies in (a) are oriented east-west, with (b) oriented north-south immediately below. This suggests that the orientation was being alternated in order to save space. Image from Blanchard et al 2007.

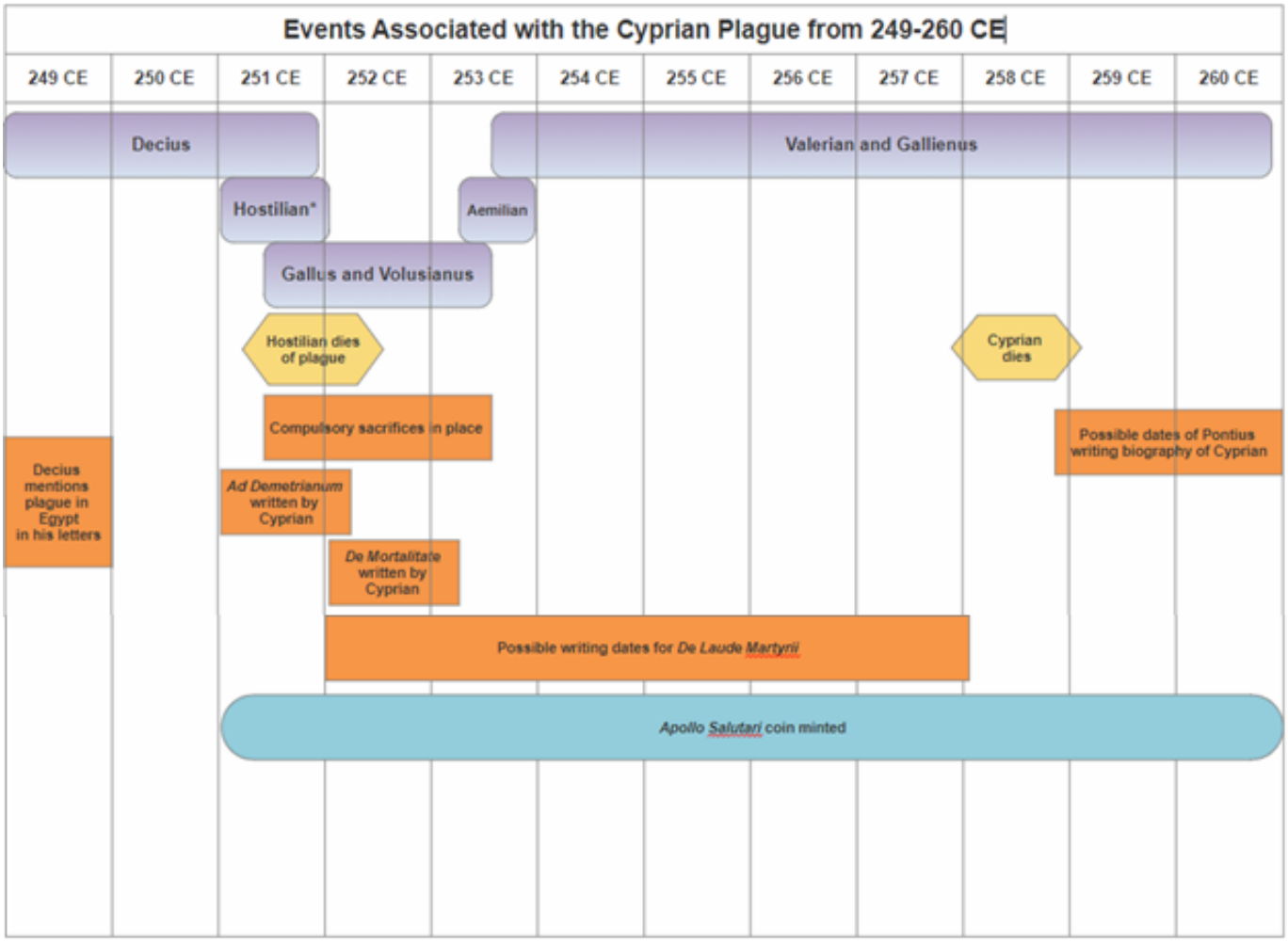

Image 3 Timeline of significant events relating to the Cyprian Plague from 249 CE-260 CE. Although the plague goes until around 270 CE, the evidence centers around this time predominately.

Key:
Rounded rectangles (purple): Emperors
Hexagon (yellow): Death of significant figures
Rectangular (orange): Literary Evidence
Oval (Blue): Archaeological evidence

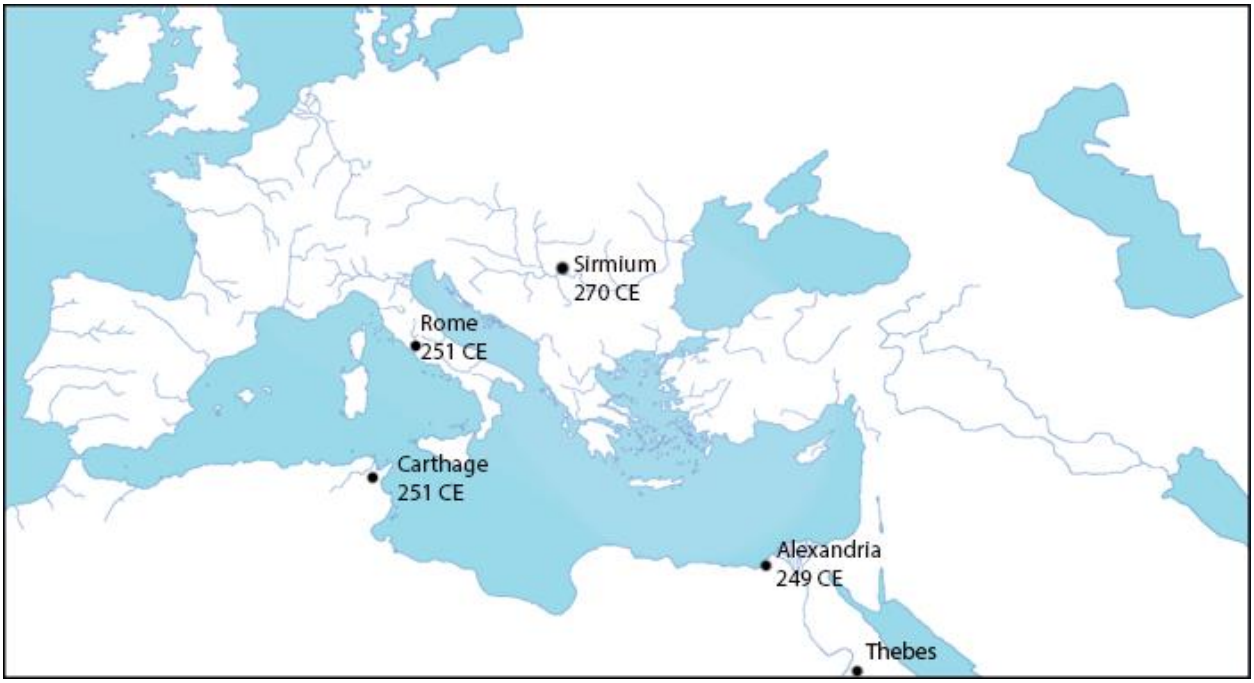

Image 4: Map of recorded incidence of Cyprian Plague and the time of incidence, when known. The recorded instances seen here are population dense areas. It is likely towns and cities in between these were also affected.

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Thirteenth Sibylline Oracle

De laude martyrii

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