Southern Mediterranean Economic Trends in the 3rd Century A.D.:

A Case for Agricultural Stability

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Abstract

The 3rd century A.D. was undoubtedly a period of significant change for the Romans, transitioning from the Principate to the Dominate of the later empire. Typified by constant civil wars, invasions, and an absence in the security that the Romans had once enjoyed, the 3rd century is considered to be the nadir of classical antiquity. While this has been accepted to be the case for the northern empire, upon closer inspection the provinces of North Africa display an economic stability not found elsewhere. Comparing the Imperial heartland of Italy and the city of Rome to North Africa, economic stability and even growth is found in the southern Mediterranean. This is achieved through an examination of interdisciplinary approaches, including archaeology, papyrology, numismatics, and looking at the historical record. North Africa's providence appears to have been dependant on its production of staple commodities such as grain and olive oil. These foodstuffs were a necessary part of the *annona*, Rome's public dole program, which was extended by the Emperor Aurelian to include pork and olive oil in addition to grain during the 270s A.D.

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Introduction

The events of the 3rd century A.D. undoubtedly brought change to the Roman world, which saw the end of the *Pax Romana* and the Principate at the beginning of the century, and the ushering in of the Dominate in its last decades. Most often economic fallout, caused by political instability and domination by the military is the first thing that comes to mind with the 3rd century. While it is true that this was the case for most of the northern half of the empire, was the southern Mediterranean adversely affected to the same magnitude? By examining the economic state of the regions of Egypt, Tripolitania, and Africa Proconsularis, my goal is to obtain a more conclusive assessment for the southern half of the Roman Empire. The region of Italy and the city of Rome will be used as a standard to which the state of the southern Mediterranean will be compared. Looking at the archaeological record, as well as primary sources including ancient authors and the economic records of the period, I will assess the economic state of this region during the 3rd century. Before examining the Southern Mediterranean, however, the overall status of the empire during the 3rd century must be established.

In his 1975 article "Observations on the Transformation of the Roman World in the Third Century," Peter Charanis gives a good interpretation of the accepted view of the Roman world in the 3rd century, a summary of which is as follows:

> -A government headed by a military leader who took his seat by force and was constantly in danger of losing it in the same way
>
> -A constant state of war leading to a lack of security and public order

-A retrogression in urbanization leading to depopulation, and a stalling of public works and social/commercial immobility

- Depressed economic activity spurred by a lack of commerce, debased coinage, and uncontrollable inflation

-An increased rise in a provincial military, manned overwhelmingly by peasants[1]

Charanis paints a despondent picture of the Roman world during this period. How is it that we have come to consider the 3rd century to be the nadir of the Roman Empire? This view is based largely on historical records written after the fact. Moreover, the majority of them are biographical. Focusing on the seat of the emperor, they deal with factors relating to an emperor's rise and fall. During the 3rd century these factors were largely political and military, so factors, namely economic, that affected the populace were not covered.

The pagan Byzantine historian Zosimus, writing in the late 5th to early 6th centuries A.D. focuses the majority of the first book of his *Historia Nova* on the 3rd century. Zosimus proceeds to go through the nearly rapid-fire succession of emperors during the 3rd century, whose legitimacy was almost always contested immediately. After the collapse of the Severan dynasty in 235, the only emperor to rule more than a decade was Gallienus (253-268), and even he was destined to fall by the hands of his own praetorian prefect.[2]

[1] Charanis, 1975. Pp. 552-3
[2] Zosimus, *Historia Nova*, Book I, Ch. 40

The *Scriptores Historiae Augustae*, while remaining one of the few sources for the 3rd century, continues to foster controversy and debate to the present day. It covers the reigns of the rulers of the Roman Empire, both legitimate and usurper, from the reign of Hadrian, and ends before the reign of Diocletian. Purportedly written by six different authors, there is debate as to whether or not the entire work was penned by one individual. Even more confusion is caused by the fact certain sections are dedicated to different emperors, including Diocletian, Constantine, and Constantius Chlorus. While at first glance the dedications seem to point to an ongoing authorship during the 4th century, some philologists claim that is was written at the end of the 4th century or the beginning of the 5th century.[3] Augmenting the inherent confusion caused by the suspect dating of the *Scriptores Historiae Augustae*, much of the information included in the text is considered to be at best an exaggeration of the times, and at worst a collection of unreliable tall tales based on little actual information.[4]

Despite the plethora of late historical accounts, some from the 3rd century do survive. The Syrian historian Herodian wrote during the first half of the 3rd century. His *Roman History*, in eight books, concludes with the ascension to the purple of Gordian III in 238. Herodian starts off his work by stating that from the reign of Augustus to Marcus Aurelius that there had not been so many disasters, political, economic, and natural as there had been in the sixty year period after Aurelius' death.

[3] Honore, 1987. Pg. 160
[4] For a discussion of the SHA see Honore, "Scriptor Historiae Augustae," JRS Vol. 77, 1987. Pp. 156-76

He equates this to the fact that this period had, as he put it, "more emperors than the years warranted."[5]

In addition to his opening caveat, Herodian describes the downfall of the last of the Severan Emperors, Alexander Severus. Again, he uses language which all too well depicts the overall sentiment of the age. Speaking of Alexander's dealings with German barbarians, Herodian states that he offered the Germans a large cash settlement to end the constant battles between the Romans and the Germans. Disgusted at the prospect that their emperor would rather pay off an enemy, rather than to subdue them militarily, his legions conspired to proclaim one from their own ranks as emperor, "a man called Maximinus, from one of the semi-barbarous tribes of the interior of Thrace."[6] The legions "planned to do away with Alexander and to declare Maximinus emperor and Augustus, because he was their fellow soldier and camp-mate…"[7] Thus the stage was set for the rapid succession of emperors and military control of the state.

The primary sources go on at length about the struggles between the different generals of the 3rd century who aspired to become emperor. They do not, however, explain in detail the social or economic factors of the 3rd century. Obviously, one would infer from the political instability that social and economic security went hand in hand with the loss of a stable governing body. But how is it in the modern era that we have obtained what information we do have about the economics of the 3rd

[5] Herodian, translated by C.R. Whittaker, 1970. Book I, Ch. 1. Pp. 5-7
[6] Herodian, translated by C.R. Whittaker, 1970. Book VI, Ch. 8. Pp. 131-33
[7] Herodian, translated by C.R. Whittaker, 1970. Book VI, Ch. 8 Pg. 137

century? A combination of different disciplines has helped to alleviate this dark cloud. Surviving only in the arid climates of North Africa and the Middle East, papyrus scrolls are largely responsible for most of the information that we have for Imperial Egypt. More common, however, are excavations and field surveys of different sites throughout the Roman Empire that help scholars determine when sites were abandoned, what they produced commercially, and the overall quality of life for the inhabitants. Finally, through the examination of numismatic evidence, including composition of precious metals and iconographic information, modern scholars have attempted to lift the veil off of the 3rd century. By briefly examining this numismatic evidence, the economic stress of the 3rd century becomes more apparent.

That 3rd century coinage experienced debasement cannot be disputed. In particular, the *denarius*, the economic standard for the Roman economy, was affected by debasement in the 3rd century more than other Roman coin. The fact that the amount of silver in the *denarius* dropped to an astonishing two percent from the years 260 and 268 clearly displays that the Romans were going through a currency crisis. Moreover, the *aureus* dropped fifty percent in weight between the years 215 and 253. Then after 253 its purity also dropped, with some examples displaying a content of only sixty-six percent gold. Debasement of silver coinage had occurred at different periods through Rome's history, but the *aureus* had never been debased before the 3rd century.[8] With severe debasement being established in Roman coinage during this

[8] Howgego, 1995. Pg. 136

period, what were some of the possible reasons that led the civil authorities to try to deceive the public at large by circulating impure currency?

The tendency to increase the pay of soldiers during the 3rd century in order to obtain their loyalty could have something to do with the debasement of currency. The rate of legionary pay rose three times in the course of forty years, being doubled in 197, increased by fifty percent in 212, and being doubled again in 235. By the end of the 3rd century, however, while the pay in coin stayed the same, the legions also received supplementary income in the form of payment in kind.[9] This additional income in goods became so great that it reached a point where it became a larger part of their income than the actual monies they were paid.[10] Although keeping the legions well-paid was an apparent priority of the emperors of the 3rd century, another factor could have attributed to the debasement of the currency in addition to the necessity to produce coin in mass quantities. The possibility of a lack of precious metals coming into the Roman Empire due to Hadrian's policy of maintaining the existing borders of the empire in the 2nd century could have made the need for debasement even more acute. Without the constant influx of gold and silver from conquests outside of the empire which would then be used to mint new *denarii and aurei*, the state had to make do with what it had from its resources within its own territory. In turn, this could have led to the excessive debasement of the larger denominations of Roman coinage.[11] Now that a decline in the value of currency has been established during the 3rd

[9] For an overview on legionary pay rates, see Speidel, 1992.
[10] Howgego, 1995. Pg. 127
[11] Howgego, 1995. Pg. 137

century, how does all of this fit into the economic state of the Southern Mediterranean?

By looking at the historical record for the period as well as the state of debasement of currency, the overall picture of political turmoil and economic stress seems to corroborate the literary portrayal of the 3rd century. The question must be asked again, however, is this the case for the entire empire? Was the southern Mediterranean immune to the adverse effects that political turmoil and a debased currency could have on its economy? In the following sections I will make the argument that the further away from the politically and militarily problematic regions of the empire in the 3rd century the more economic stability a region held. I will also make the correlation that the more food staples a region produced, the more economic stability it had. Some areas even show signs of economic growth during the 3rd century, dispelling the myth that the adverse effects of the 3rd century affect the entire empire at all levels.

Rome

Being the political, religious, and economic center of the empire the city of Rome is an obvious starting point for this regional survey. As Rome was the largest city in the Mediterranean world at the time, it was naturally the biggest importer of food commodities. Since this required Rome being secure from invasion for most of its existence, due to the threat of a German invasion, the emperor Aurelian found it necessary to build a new circuit of walls around much of the city during the 270s.

Since Rome is still a large urban cultural center in the present day, not much archaeological information from the 3rd century can be gleaned from excavations. However, along with the Aurelian Walls, Monte Testaccio is a surviving artifact from the 3rd century, which has been a boon to ancient economists and archaeologists alike. In addition to what survives at Rome, the imperial port city of Ostia has provided an archaeological paradigm to the city of Rome due to its abandonment in Late Antiquity.

The most prominent sign that Rome felt itself in distress is the construction of the eponymous Aurelian walls. The last time the Romans had felt it necessary to construct circuit walls around their city was after the sacking of Rome by the Gallic chief Brennus in the year 390 B.C. The *Scriptores Historiae Augustae* as well as Zosimus state that Aurelian decided to construct his wall circuit after the citizens of Rome had rioted early on in his reign. Upon hearing that a force of Germans had invaded Italy, the people of Rome panicked and demanded action. This threat of an impending Germanic invasion of the Roman homeland had also occurred during the reign of Gallienus. Not wanting to repeat history, Aurelian decided he had to do something to defend the city and keep the citizens from rioting, but at the same time had to take the military with him on campaign as well. His solution was the construction of the Aurelian Walls.[12]

[12] SHA, Aurelian. chs. ix-x
Zosimus, *Historia Nova*. Book I, ch. IL

While the Aurelian walls did not cover the entire boundary of 3rd century Rome, it extended for an impressive nineteen kilometers in length.[13] Most of the wall was built in sections roughly fifteen to twenty Roman feet in length, and is twenty feet high and twelve feet wide.[14] Constructed of brick-faced concrete, where its core is visible it appears to consist of a tufa aggregate. Surprisingly for the 3rd century, the wall's core is made out of mostly freshly-quarried material. The facing of the wall, however, was constructed of reused roof tiles, mainly displaying brick stamps of a Hadrianic dating. None of the tiles can be dated to an Aurelianic production date. Ian Richmond states that the Hadrianic stamps imply that these tiles were taken from buildings that were demolished for the construction of the wall.[15] Approximately ten percent of the wall was made up of already existing structures, and includes, among others, portions of the Aqua Claudia aqueduct, the outer walls of the Horti Sallustiani, Horti Aciliorum, and the praetorian camp, and even some tombs including the pyramid of Gaius Cestius by the Porta Ostiensis. While many of these structures were incorporated to save on building costs, the wall was usually constructed directly in front of the aqueducts, so as to protect them from sabotage and from being used by besieging armies as a platform to attack the wall's ramparts.[16]

Alaric Watson states that Aurelian walls were built to be a psychological deterrent as much as they were a physical barrier. The fact that they incorporated existing structures and included a large number of entrances points to them being

[13] Watson, 1999. Pg. 145
[14] Richmond, 1970. Pp. 57-60
[15] Richmond, 1970. Pg. 58
[16] Richmond. Pp. 12-15

erected to fend off a barbarian attack until military reinforcements could arrive. Watson claims that the walls were incapable of protecting Rome from a large-scale assault incorporating sophisticated siege technology. He justifies this statement by stating that the Emperor Maxentius, barely thirty years after the construction of the walls, doubled their height, excavated a trench around the city, and closed off many of the entrances into the walls. Faced with the prospect of being besieged by a technologically-equal Roman army under the command of Constantine, Maxentius had to reinforce the walls in order to make them suitably secure.[17] The Aurelian Walls display the insecurity felt at Rome during the latter part of the 3rd century, but Monte Testaccio, another monolithic 3rd century Roman site, can give us more information.

One of the best sites for examining the economy of the city of Rome during the mid-Imperial Period, Monte Testaccio is a man-made hill composed entirely out of broken imported olive oil amphorae. Located in region XIII of Ancient Rome, roughly the area pertaining to the southern slopes of the Aventine Hill and its surrounding area, Monte Testaccio was situated by the *Emporium*, the city's first commercial port on the Tiber.

The amphora deposits that have been studied from Monte Testaccio date from the period of 140-260 AD, and consist of three types of oil amphorae. These three types of amphorae are the Dressel 20 from the Baetica region of Hispania, the Keay 3/Africano 1 from Central and Northern Tunisia, and the Keay 9/11- Tripolitanian 2/3 from Tripolitania. The Dressel 20 accounts for 85-90 percent of the excavated

[17] Watson, 1999. Pp. 150-52

samples, suggesting that the majority of imported olive oil into Rome during this period originated in Spain.[18] An important tool in the study of these amphorae are the *tituli picti*, which are commercial inscriptions that were painted onto the outside surface of the Dressel 20s. These *tituli* recorded a plethora of information. This information includes the region/estate of origin, the weight of oil contained, and the names of the officials who inspected them before departure. Additionally, on samples dating from after 137, the consular date is included, which gives a definitive *terminus post quem* for the amphora samples with *tituli picti*, though the deposits at Monte Testaccio likely started in the Augustan era.[19] Augmenting the Dressel 20s, some stamps on North African amphorae at the site have been identified.[20] Monte Testaccio has therefore supplied archaeologists with some information about the economic imports into the city of Rome.

The most important evidence from Monte Testaccio concerning the breakdown of Rome's oil supply is the latest datable *titulus pictus*, stating that the Emperor Gallienus is the sole Emperor, putting it no earlier than the year 261. Although the possibility exists that amphorae without *tituli picti* continued to be deposited at Monte Testaccio after this date, it is highly unlikely. Theodore Pena states that a reason for the disruption of olive oil imports into Rome may be partially due to the secession of the Gallic Empire under the usurper Postumus in 260, which initially claimed the region of Hispania in its possessions. While Pena states that

[18] Pena, 1999. Pg. 21
[19] Pena, 1999. Pg. 22
[20] Instead of the painted *tituli picti* on the Dressel 20s, these amphorae have information stamped into the clay itself, however, much research still needs to be done; see Mattingly, 1988. Pp. 48-9

Hispania was recovered by the Romans in 268, the lapse in imports from Baetica during this period would have been devastating to the economy of Rome.[21] The oil crisis seems to have finally been rectified by the Emperor Aurelian, who had ordained an allowance of olive oil to the citizens of Rome in addition to bread and pork in his *annona* program, putting an end to the oil shortage at no later than 275, the year Aurelian was assassinated.[22] While the evidence displays a dominance of Spanish olive oil, Monte Testaccio may be a unique phenomenon in Roman commerce. The possibility remains that it does not account for all of the oil that made its way to the people of Rome.

In addition to Monte Testaccio, the port city of Ostia, just outside the city of Rome at the mouth of the Tiber has given some insight into the oil imports into Rome at the turn of the 3rd century. Excavations were carried out from 1966 until 1975 at an imperial bath building at Ostia dubbed the "Baths of the Swimmer," so named because of one of its decorative mosaics.[23]

Excavations indicated that the bath complex was built during the reign of the Emperor Domitian in the late 1st century A.D. and abandoned in the beginning of the 3rd century. Following abandonment, it was used as a trash dump by the inhabitants of Ostia. Among the conclusions reached by the excavators was that there was a definitive increase in the import of North African olive oil beginning in the 3rd century, based on the large amount of remains of North African transport amphorae.

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[21] Pena, 1999. Pg. 25
[22] SHA, Aurelian. ch. xlviii
[23] Rickman, 1981. Pg. 216

A. Carandini, the excavator, claimed that this caused a fallout in the production of olive oil from the Italian regions of Latium and Campania. However, G.E. Rickman, in his review of Carandini's compilation of the findings criticizes Carandini's conclusions. Rickman states that Carandini was trying to map out the entire economic climate of the region through partial remains of an excavation which had not been completely catalogued and synthesized at the time of its publication.[24] However, the Baths of the Swimmer do call into consideration that North Africa had more oil imports into Rome than the findings at Monte Testaccio display.

Less controversial and more conclusive is the work of Russell Meiggs. Meiggs was a 20th century British archaeologist whose life's work was compiled into *Roman Ostia*, which tells a similar story for the rest of Ostia as that of the Baths of the Swimmer. Meiggs claims that during the 3rd century Ostia experienced a decline, both in population and in commerce. The city was heavily supported by the Imperial bureaucracy during the 2nd century, but it exhibits signs that many buildings, both commercial and residential, fell into disrepair during the 3rd century. In particular he notes the decline in commerce from the ruins of a major bakery for the city. The bakery is located just east of the House of Diana. The bakery had burned down in a fire around the middle of the 3rd century. Instead of rebuilding it or erecting a new edifice at the site, the people of Ostia had decided to completely demolish the building and to establish a walking path over the ruins. Two large *insulae* in addition to the bakery were found to have been abandoned after suffering fire damage in the 3rd

[24] Rickman, 1981. Pp. 216-17

century. Meiggs conjectures that these sites were abandoned because Ostia no longer had the population that it needed to fill all of its *insulae*, let alone warrant the output that a bakery of that size produced. [25]

Augmenting the abandonment of businesses and residential sites, he cites as evidence for economic decline the spoliation of old inscriptions from the 2nd century. He found that an inscription to the Emperor Gallienus' wife Salonina in 262 was carved on the back of an earlier inscription to the Emperor Septimius Severus from the late 2nd century. In fact, the majority of inscriptions at Ostia date to the 2nd century, with very little existing from the 3rd century.[26] As the population of Ostia went through an apparent decline during the 3rd century, the wealth of the city appears to have been kept in the hands of an elite few, with a shift from the large *insulae* to the individual family homes of the wealthy, the *domus*.

Excavations beginning in 1938 dispelled the previous assumption that Ostia was all but abandoned in the 3rd century. Upon further examination, many of the 3rd century *domus* in Ostia had been built into the walls of older *insulae* and commercial properties. Many of the earlier *domus,* like the *insulae*, had private businesses incorporated into the floorplan of the residences. However, the *domus* of the late Imperial period retained little to none of these businesses. Consequently, Meiggs found that when many of these old buildings became economically unviable the wealthy reused the original foundations to save on construction costs. The House of

[25] Meiggs, 1973. Pg. 85
[26] Meiggs, 1973. Pg. 84

Amor and Psyche, an Ostian *domus*, was built into the outer walls of a previous *insula*, whereas the House of the Dioscuri, another late Imperial *domus* retains the layout of the entire first floor of the *insula* into which it was built, albeit without the shops.[27] The evidence that Meiggs collected points to a decline in population and general wealth, but also that the wealthy were able to take advantage of this decline in prosperity to fashion their homes out of previous structures.

The historical record, along with physical remains from 3rd century Rome seem to indicate a breakdown in security and commerce during the period. While the Aurelian walls indicate that for the first time in almost 700 years the Romans felt threatened enough to enclose their city in circuit walls, there is some debate to whether the influx of food commodities into the city was disrupted as well. Monte Testaccio clearly depicts the large influx of Spanish olive oil into the city, but the excavations at the Baths of the Swimmer at Ostia points to a possible increase in the import of olive oil from North Africa, namely the regions of Tripolitania and Africa Proconsularis. In conjunction with the abandonment of the Baths of the Swimmer, the razing of a large bakery and abandoned *insulae* indicate a drop in the population of Ostia, as well as the commercial viability of the port. While many of these structures were abandoned, some of them were reused by the aristocratic population to build their private homes, or *domus*, indicating a consolidation of wealth as well as a pragmatic usage of already available resources.

[27] Meiggs, 1973. Pp. 258-59

Italy

Being the heart of the Roman Empire, Italy was the cultural center as well as the source of Romanization for the rest of the Empire. Despite the importance of Italy to the rest of the Roman world, some scholars claim that the agricultural state of Italy was in distress due to an influx provincial imports by the late 1st century A.D. [28] However, not until around the year 250 is there a sign of large-scale decline.[29] By comparing statistics gathered from field surveys around Italy, Richard Duncan-Jones has formulated that roughly fifty to sixty percent of villa sites were abandoned after the middle of the 3rd century.[30] Whether this points to a trend of *agri deserti*[31] or larger estates consolidating smaller parcels of land is still uncertain.

Fig. 1: MAP OF ITALIAN SURVEY AREAS

[28] Witschel, 2004, Pg. 261-64
[29] Whittaker, 1976. Pg. 162
[30] Duncan-Jones, 2004. Pg. 50; Duncan-Jones takes this number from an average of percentages of abandoned sites between the "early" and "late" imperial periods
[31] Lit. "Deserted fields," See Finley, 1976.

The agricultural state of Italy appears to have suffered by the last quarter of the 3rd century. Through examining field surveys of the central and southern regions of the peninsula, a decline in the number of inhabited sites indicates a trend towards negative growth. In some regions there was a pragmatic shift in the manner of agricultural organizations, while in other regions there is an almost complete abandonment of farms and villas. Furthermore, the *Scriptores Historiae Augustae* records the Emperor Aurelian's expansion of the *annona*, or public dole program for the city of Rome. The augmentation of this program displays that there was a necessity for public assistance at the time, and provides a correlation between Aurelian's program and the shift towards purpose-driven agricultural production in some of the southern Italian regions.

At the Upper Volturno Valley in south-central Italy, field walking surveys and excavations conducted by Richard Hodges throughout the early 1980s concluded that the area had been virtually abandoned in the 3rd century (see fig. 1). The one exception found in the survey was a sizable shepherd's transhumance camp which did show some signs of wealth. The shepherd's camp contained samples of not only coarse pottery, but glass and African Red Slip ware, dating its occupation to the 4th century.[32]

Further south, at Oria near Brundisium, a field survey was carried out by Douwie Yntema from 1981-83 (see fig. 1). After surveying an area of 66.9 square kilometers, the survey revealed a growth in the size of countryside villas in the 2nd

[32] Hodges, 1997. Pp. 177-9

century. By the 4th century, out of the fifteen sites extant during the 2nd century, only eight remained inhabited (see fig. 2). While a significant drop in the number of large estate villas in the region did occur, the still-inhabited sites showed a considerable gain in wealth and production, including the presence of glass fragments, wall paintings, and heating provided by hypocausts and *tubuli*. The survey also found that at two of the remaining sites, large numbers of artifacts turned up in multiple areas rather than at a single location. Yntema states in his report that this evidence points to operations being extended to multiple sites at these villas in addition to the main residence. Consequently, the findings display a consolidation of population on these more successful estates as smaller estates were abandoned.[33]

Lucania in southern Italy also shows decline during the 3rd century. Field surveys carried out by Claude Roberto around the area of San Giovanni di Ruoti yielded a larger drop in inhabited sites during the 3rd Century than at Oria (see fig. 1). From an original twenty-six inhabited sites in 220 AD, only six remain by 350 AD (see fig. 2).[34] At San Giovanni itself, excavations headed by Alastair Small and Richard Buck concluded that the villa site was abandoned from roughly 220-340.[35] Moreover, a major increase in hog remains and a decrease in the remains of cattle and goats occurred from the 2nd century. By the 4th century, however, there was distribution of all three, but hog remains still accounted for seventy-five percent of all

[33] Yntema, 1993. Pp 222-3
[34] Small and Buck, 2002. Pg. xxii
l[35] Small and Buck, 2002. Pg. xviii

animal remains.[36] Hog farming was the specialty in Lucania and the increase in these remains shows a pragmatic shift in agricultural development. The *Scriptores Historiae Augustae* states that after his victories in the East against Zenobia of the Palmyrene Empire, Aurelian gave each man in the city of Rome a daily ration of both bread and pork, in addition to wine and oil.[37] By the reign of Constantine, special laws were enacted to secure the flow of hogs from southern Italy into Rome. The Theodosian Code provides evidence that some hogs were driven to the city, as precautions were taken under Valentinian I (r. 364-375) to weigh the live hogs before and after transport to Rome.[38]

Similar evidence for *agri deserti* is found in central Italy at the *Ager Veientanus* (see fig. 1). Foremost in the study of this part of Italy is the Tiber Valley Project. Reevaluating pre-existing evidence from archaeological findings beginning with J.B. Ward-Perkins' original survey of South Etruria, the project ran from 1997 until 2002 and was headed by Helen Patterson.[39] Patterson, synthesizing a consolidation of data from central Italy, has concluded that more than fifty percent of Republican and early Imperial rural sites in the Tiber Valley had been abandoned by the year 250 A.D. The lack of pottery dating from the 3rd century was Patterson's main evidence for abandonment of these sites.[40]

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[36] Small and Buck, 2002. Pp. 84-5
[37] SHA, Aurelian, chs. xxxv, xlvii
[38] For a detailed description of the role of pork in the *annona*, see Jones, 1986. Pp. 702-04; for primary evidence see CTh book xiv, ch. iv
[39] Patterson, 2008. Pp. 499-500
[40] Patterson, 2008. Pp. 506-8

The major urban center of the *Ager Veientanus* also declined quite a bit. Excavations at Veii were started in the 1950's by J.B. Ward-Perkins and are ongoing into the present day (see fig. 1). The results of these excavations have shown that Veii experienced a huge boom in civic development and population in the late Republican and early imperial period. Epigraphic evidence indicates some renovations and dedications by a Caesonius Athictus during the 3rd century[41], but a transition to rural over urban habitation predominates. In fact, the city itself has yielded no epigraphic evidence to support habitation after the dissolution of the Tetrarchic system in the late 4th century.[42]

Instead of wholesale *agri deserti* as is the case further south, the villas surrounding Veii sustained their wealth and became the major populated areas as the city and surrounding smaller farms were abandoned. In the late 1970's Tim Potter found that in the *Ager Veientanus*, seventy-five percent of rural sites occupied at the end of the 2nd century were abandoned in the 3rd century, with the abandoned farms accounting for ninety-five percent of the total number of established agricultural centers in the region. The abandoned villas, counted among the farms, only accounted for ten percent of the overall number of abandoned sites.[43] Helen Patterson reinforces this by stating that recent survey work in South Etruria has found of the roughly 1300

[41] CIL XI. 3807
[42] Patterson, 2004. Pp. 22-4; CIL XI. 3796
[43] Potter, 1979. Pp. 140-1

sites identified as occupied from 100-250 A.D., only about 400 of them remain occupied during the period of 250-450 A.D. (see fig 2).[44]

Conversely, excavations carried out by Steven Dyson from 1974-76 in the *Ager Cosanus*, another region of Etruria, produced a large reduction in the number of inhabited villa sites during the 3rd century (see fig. 1). Out of ninety-three sites excavated, just ten were found to have been established in the 3rd century, and only six produced evidence in the form of pottery shards to show constant habitation from the Republican period through the 3rd century (see fig. 2).[45]

Based on the evidence from the rural areas of central and southern Italy, there was a consolidation of agricultural settlement during the 3rd century. While the excavations at San Giovanni di Ruoti and the *Ager Cosanus* show an outright depopulation of the land, the other Etrurian surveys, the Tiber Valley Project, and Yntema's survey of Oria reached different conclusions. Evidence in the form of multiple scatter sites from 3rd century villas points to a consolidation of smaller farms and villas into larger, multifaceted estates which could hold more tenants and produce more goods. Imperial reform of the state relief program, the *annona* in the last quarter of the 3rd century also helped the transition to larger estates as the demand for pork in Rome led southern Italian agriculturalists to the production of goods necessary to the *annona*. Additionally, finds of wall paintings, glass, and heating systems in some of these 3rd century villas also show that a degree of wealth was retained on these estates.

[44] Patterson, 2004, Pp. 18-19
[45] Dyson, 1978. Pp. 260-1

The notion is to assume that the transition that took place in Italy during the 3rd century was one of people relocating en masse to larger, more productive villas. Many field walking surveys in the past, however, have overlooked smaller hilltop villages. Many of these are still unknown or are just beginning to be excavated due to the remoteness of their locations.[46]

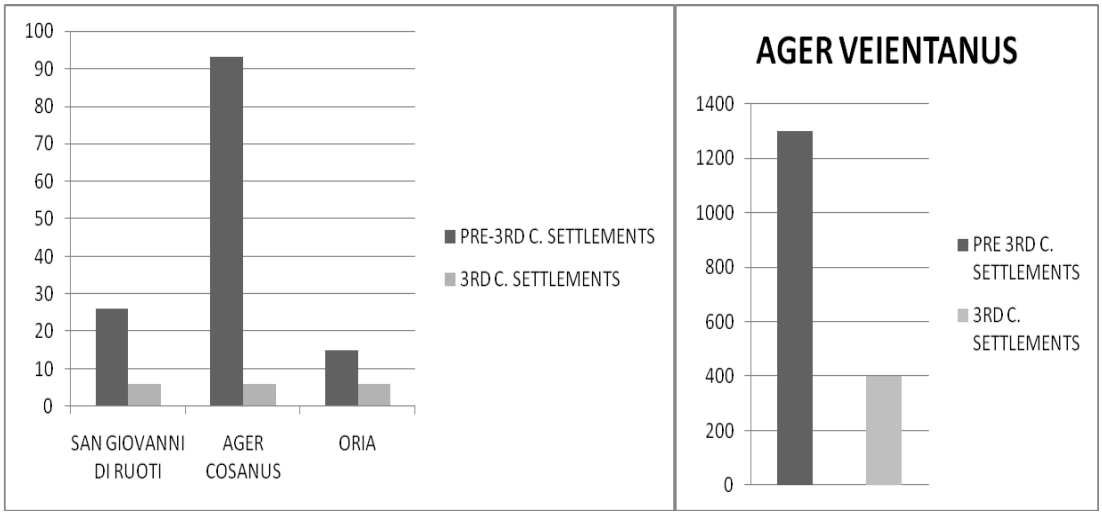

Fig. 2: Numbers of inhabited agricultural sites before and during the 3rd century

[46] Witschel, 2004. Pg. 263

Egypt

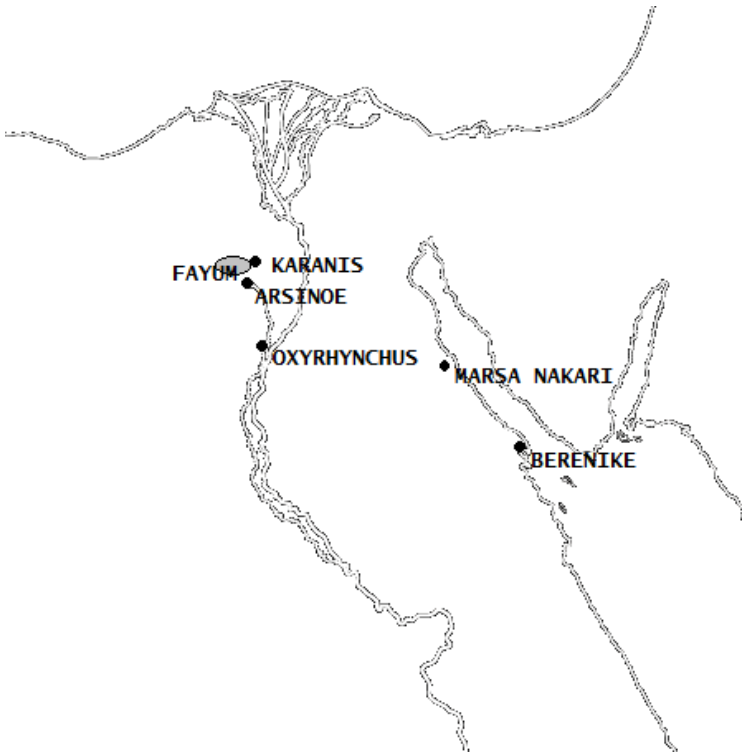

Fig 3: MAP OF EGYPTIAN SURVEY AREAS

Egypt was the most unique Roman province, from its religious practice to its bureaucratic administration. This is evident mainly through the large quantity of surviving written documents on both rolls of papyrus and on ostraka. Because of this large corpus of surviving written documentation, papyrology has been a larger focus of scholarship in unraveling the history of Roman Egypt than archaeology. Through examination of the extant corpus of papyri, the apparent decline in agricultural output seen in 3rd century Italy is virtually unseen in the Fayum, Egypt's major agricultural producer. In contrast, the western port cities of Roman Egypt through which many trade goods from the East passed on their way to eager Roman buyers were abandoned

throughout the 3rd century. While the written evidence offers vivid insight into the running of estates and of personal affairs, the archaeological record for the Roman period is still scant.[47] In addition to papyri, 3rd century Egyptian economic evidence comes from numismatics.

Before the Tetrarchy, Egypt had a unique monetary system based on the silver *tetradrachma* that had its origins in the Ptolemaic period. One *tetradrachma* was roughly equivalent to the Roman *denarius*.[48] During the 3rd century, however, Egyptian coinage went through debasement just as standard Roman coinage had. The *denarius* was debased to a mere two percent of silver during the 3rd century, and the *tetradrachma* reached a level of silver purity almost as low at three percent.[49] Numismatic evidence has shown that while the debasement in Alexandrian *tetradrachmae* occurred from 250-260, price inflation in Egypt did not occur until 274-275.[50]

Returning to the papyrilogical record, one of the largest bodies of papyri dating from the 3rd century is the *Heroninos Archive*. The *Archive* is named after the manager of a large agricultural estate in the Arsinoite Nome of the Fayum, the main agricultural region of Roman Egypt (see fig. 3). Furthermore, the Arsinoite Nome was the main administrative sector in the Fayum region. While the *Archive* is a name given to the collection of about 450 papyri, these are scattered among different institutional collections. In addition to the published papyri, as many as 600 still await

[47] Pollard, 1998. Pg. 147
[48] Howgego, 1995. Pg. 121
[49] Howgego, 1995. Pg. 125
[50] Howgego, 1995. Pg. 127

to be examined at different academic institutions worldwide.[51] Dominic Rathbone, using the *Heroninos Archive* attempted to piece together the inner workings of the Arsinoite estate. Much of the information gathered from the papyri is economic, but also contains information on aspects of daily life on the estate. Everything from official titles, to personal information, to the prices of trade goods were analyzed and recorded by Rathbone.

Through his research of the *Archive* Rathbone found none of the problems that would be expected during the 3rd century. Records show no signs of inflation in the prices of wheat and wine up to the year 264 A.D.[52] Rathbone compared prices from sales receipts for units of wheat and wine on the Arsinoite estate to existing papyri from other Egyptian sites. He found that from September 250 to December 260 the price of wheat actually dropped eight *drachmae* from an original sale price of twenty *drachmae* in 250 to a price of twelve *drachmae* in 260. This equated out to an overall average sale price of sixteen *drachmae*, four *obols* per unit (see fig. 4).[53]

The papyri from other sites in Egypt have a less precise dating. Only four used in comparison have a definite 3rd century date, and the remaining four possibly date from the 2nd or 3rd century. The prices per unit start at twenty *drachmae* with the earliest papyrus, and increase to twenty-four *drachmae* on the latest papyrus from 270. The average sale price for wheat in these papyri from other sites in Egypt are

[51] For an introduction on the *Heroninos Archive*, see Rathbone, 1991. Pp 1-5
[52] Rathbone, 1991. Pg 403
[53] See P. Prag. Varcl ii 2.12, ii 4.8, ii 6.10; P. Lond. 1226 recto 10; P. Flor. 321.9, Rathbone, 1991. Pp. 427, 457

seventeen *drachmae*, two *obols* per unit (see fig. 5).[54] Two government purchase prices from the 3rd century show the government paying more per unit for wheat than private buyers from the Arsinoite estate. Both of these purchase prices are significantly higher at twenty-four *drachmae* in March of 246 and at thirty *drachmae* at an indeterminate time in the 3rd century[55]. While the government purchase prices are considerably higher, the private purchase prices for the Arsinoite estate are less than a *drachma* in difference on average when compared with those in other Egyptian sites.[56] This discrepancy is due to local commerce worked on a barter system using grain as a currency, unaffected by the inflation of the *tetradrachma*. The government, however, would still have to purchase grain with standard coin.[57] Evidence survives for the use of grain as currency in Oxyrhynchus papyri.[58]

20 dr.	September 250	*P.Prag.Varcl* II 2.12
20 dr.	November 251	*Text* 2.10
24 dr.	April 252	*P.Prag.Varcl* II 4.8
16 dr.	June 253	*Text* 1 recto. 9
12 dr.	September 254	*P.Lond.* 1226 recto. 10
12 dr.	March (255–60)	*P.Flor.* 321.9
12 dr.	December 260	*P.Prag.Varcl* II 6.10
16 dr. 4 ob.	Average	

20 dr. II/III A.D.	*BGU* VII 1717	Arsinoite
18 dr. II/III A.D.	*P.Iand.* VI 94	Arsinoite
12 dr. II/III A.D. (a 'low' price)	*P.Mich.* inv. 341 (*ZPE* 36 (1979), 77–81)	(unknown)
20 dr. II/III A.D.	*P.Mich.* inv. 1026 (*Stud.Pap.* 22 (1983), 15–19)	(unknown)
12 dr. Feb. 226/242	*P.Laur* 11 recto. 10–11	Arsinoite (Posidonios estate)
16 dr. August 255	*BGU* I 14.14	Memphite
16 dr. May 260	*P.Oxy.* XLIX 3513; 3516; 3518; 3519	Oxyrhynchite
24 dr. (June?) 270	*P.Erl.* 101.30	Oxyrhynchite
17 dr. 2 ob.	Average	

Fig. 4: Wheat prices for the Heroninos Estate[59] *Fig 5: Wheat prices for the rest of Egypt*[60]

[54] See BGU i 1414, BGU vii 1717; P. Iand. vi 94; P. Mich. Inv. 341, P. Mich. Inv 1026; P. Laur. 11; P. Oxy. xlix 3513, 3516, 3518, 3519; P. Erl. 101.30
[55] See P. Oxy. xlii 3048; SPPxx 75.ii.23
[56] Rathbone, 1991. Pp. 464-5
[57] Parsons, 2007. Pp. 118-121
[58] P. Oxy. Xxxi 2589, 2591
[59] Rathbone, 1991. Pg. 464
[60] Rathbone, 1991. Pg. 464

The prices of wine display a similar correlation to the prices of wheat. Papyri from the *Archive* dating from February 247 to August 268 indicate little fluctuation in the prices of wine on the Arsinoite estate, with overall average of twelve *drachmae*, two *obols* (see fig. 6).[61] As with the prices for wheat in other regions of Egypt, the dating for all of the papyri is not as precise as the papyri from the *Archive*. The average of prices for these papyri come out to eleven *drachmae*, two *obols* (see fig. 7).[62] The price ranges per unit on the Arsinoite estate stay fairly stable, with a deviation of no more than four *drachmae* except in one or two instances. Moreover, they average less than a *drachma* in difference with prices from other parts of Egypt. Rathbone states that while there are a few instances of price spike, it is important to remember that quality of wine played a factor in price, and different vintages would fetch different prices depending on quality.[63] Following a similar trend as the prices for wheat in Egypt, private wine sales stayed stable if the issue of vintage is taken into consideration.

In addition to his synthesis of the economic data of the Arsinoite estate, Rathbone states that it was not until the mid 4th century that the Fayum started to show signs of depopulation. He postulates that this is a cause of the rigidity of professions and high taxation caused by Diocletian's reforms which enforced strict quotas for each estate. The fact that villages around the estate had apparently been stealing water from

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[61] See P. Prag Varcl. Ii 1,284-99, 2.7-8, 6.8-9, 38; P. Prag. 104; P. Flor. 123,124, 135, 143, 146, 150 verso. 10. 160, 196, 321.6-7. 322.11-12;
p. Laur. 99.iii.11, 14; P. Lond. 1226 recto. 7-8; Rathbone, 1991. Pp. 427, 457

[62] See BGU vii 1717; P. Oxy. vii 1055, xii 1577, 1578, xlix 3513, 3515, 3516, 3518, 3520, 3521; P. Oslo. Ii 63; PSI 811; SB x 10885

[63] Rathbone, 1991. Pp. 466-68

the communal irrigation system did not help the increased strain from the new economic reforms. The neighboring village of Theadelphia shows in its tax petition of 332 A.D. that there were only twenty-five taxpayers and makes no mention of the Arsinoite estate in the *Archive*.[64] While there is no previous statement for the population of taxpayers in Theadelphia, a number this low, along with the apparent disappearance of the Arsinoite estate points towards a decline in prosperity for the region. Augmenting this, P. Sakaon 33, a fragmentary account of judicial proceedings, reveals that in 320 citizens from Theadelphia were experiencing problems due to the blockage of irrigations systems by men at nearby Andromachis.[65] By the mid 4th century the economic prosperity experienced in the Fayum had come to an end.

10 dr. 2 ob.	Feb. 247	*P.Prag.Varcl* II 1.284–99
9 dr. 1 ob.	Sep. 247–May 248	*P.Brux.* descr.
9 dr. 1 ob.	April 248	*P.Flor.* 322.11–12
9 dr. 1 ob.	Oct. 248 (?)	*P.Laur.* 99.iii.11, 14
10 dr. 6 ob.	Aug. 250	*P.Prag.* 104
9 dr. 1 ob.	Sep. 250	*P.Prag.Varcl* II 2.7–8
10 dr. 2 ob.	Nov. 251	*Text* 2.6–7
12 dr.	April 252	*P.Prag.Varcl* II 4.5
12 dr.	June 253	*Text* 1 recto. 6–7
8 dr.	Sep. 254	*P.Lond.* 1226 recto. 7–8
9 dr. 5 ob.	March (255–60)	*P.Flor.* 321.6–7
18 dr.	Dec. 260	*P.Prag.Varcl* II 6.8–9*
21 dr.	May 262	*P.Flor.* 135*
12 dr.	Sep. 264	*P.Flor.* 202
14 dr.	Oct. 264	*P.Flor.* 143
18 dr.	Dec. 264	*P.Flor.* 146
20 dr. (?)	(c. 270?)	*P.Flor.* 150 verso. 10
12 dr.	Dec. (249–60)	*P.Flor.* 196*
16 dr.	(250–61)	*P.Flor.* 123; 124*
10 dr.	(249–68)	*P.Prag.Varcl* II 38
8 dr.	Aug. (250–68)	*P.Flor.* 160*
12 dr. 2 ob.	Average	

Fig 6: Wine prices on the Heroninos Estate[66]

12 dr.	II/III A.D.	*BGU* VII 1717	Arsinoite*
12 dr. (vintage of 259)	May 260	*P.Oxy.* XLIX 3513; 3515; 3516; 3518; 3519	Oxyrhynchite*
16 dr. (vintage of 258)	May 260	*P.Oxy.* XLIX 3515; 3520; 3521	Oxyrhynchite*
11 dr.	June 267	*P.Oxy.* VII 1055	Oxyrhynchite*
9 dr. 1 ob. / 10 dr.	III A.D.	*P.Oslo.* II 63	Arsinoite
9 dr. 1 ob.	Jan., III A.D. (year 2)	*P.Oxy.* XII 1577	Oxyrhynchite
9 dr. 1 ob.	Nov., III A.D. (year 4)	*P.Oxy.* XII 1578	Oxyrhynchite
12 dr.	III A.D.	*PSI* 811	Arsinoite (Appianus/ Posidonios estate?)
12 dr.	III A.D.	*SB* X 10885	Arsinoite
11 dr. 2 ob.	Average		
12 dr. 0 ob.	Average of both sets		

Fig 7: Wine prices for the rest of Egypt[67]

[64] Rathbone, 1991. Pp. 407-9; See also P. Sakaon collection
[65] Rathbone, 1991. Pg. 227
[66] Rathbone, 1991. Pg. 466
[67] Rathbone, 1991. Pg. 467

Augmenting the conclusions of Rathbone's survey of the *Heroninos Archive*, Nigel Pollard re-evaluated the 1931University of Michigan excavation at Karanis (see fig. 3). Pollard's re-evaluation supported Rathbone's findings of 3rd century stability from the papyri. He states that Karanis was continuously populated up until, if not later than the 5th or 6th centuries A.D. Pollard was able to obtain more conclusive dating of pottery and amphorae sherds in Karanis than had been possible at the time of the excavation. He found that the remains of Red African Slip ware, as well as the large amount of late Roman and Byzantine amphorae pointed to continual habitation of Karanis during the 3rd century A.D.[68]

Moreover, some 31,000 coins were documented in the excavation. In this collection, approximately 20,000 legible coins dated from between the reign of Probus (276-282 A.D.) and the monetary reforms of Diocletian in 294 A.D. These coins were mostly in large hoards, constituting the majority of the 24,747 legible coins extracted from the site. Pollard does state that hoards are not reflective of population numbers, and that they indicate the uncertainty of the times. Because the coins date up to the reign of Theodosius II (datable from ca. 425-450) habitation during and after the 3rd century is likely.[69]

While the city of Karanis and the Arsinoite estate seem to have prospered during the mid-3rd century, the city of Oxyrhynchus, south of the Fayum, appears to have had a different fate. By the year 235, according to the papyrilogical record,

[68] Pollard, 1998. Pp. 149-59
[69] Pollard, 1998. Pp. 159-61

many of the urban dwellings were abandoned, and in 246 grain supplies were so low that the bureaucracy had to resort to compulsory purchase from private buyers.[70] A government mandate from March of 246 indicated that all citizens of Oxyrhynchus had to register their private grain supplies within twenty-four hours. This was done "so that the city can have its supplies and also the public necessities can be fulfilled."[71] However, by 265 the city had set up a public grain dole modeled after the *annona* program at Rome, and in 273 the city was the site of the Worldwide Capitoline Games, pointing to a recovery by the last quarter of the 3rd century.[72]

The stability of Egyptian agricultural production is apparent in most of the Fayum during the 3rd century, but long-distance trade did not enjoy the same security. The port city of Berenike on the Eastern coast of Egypt was a vital stop on the trade route between Mediterranean civilization and the Far East (see fig. 3). Berenike's importance as a trade stop began long before the Romans took control of Egypt from the Ptolemies. The city has been excavated, although not in its entirety, by Steven Sidebotham and W.Z. Wendrich. Between 1994 and 2001, the team found that Berenike went through three stages of economic growth; the first was during its initial foundation in 275 B.C. by Ptolemy II, the second during the 1st century A.D., and the final period in the 4th to 5th centuries A.D.[73]

The city shows signs of decline and desertion from the late 2nd to early 4th centuries A.D. Evidence for this interpretation is the reuse in Late Antiquity of older

[70] Parsons, 2007. Pg. 59
[71] Parsons, 2007. Pg. 173
[72] Parsons, 2007. Pg. 59
[73] Sidebotham, 2002. Pp. 217-18

epigraphy pertaining to public and religious buildings. This spoliation of earlier buildings infers that many of them had fallen into a state of disrepair and decay by Late Antiquity. As Sidebotham states in his summary of the excavations, there is a high likelihood that many other buildings which did not have inscriptions on them were also reused.[74]

The reason for the depopulation of Berenike during the 3rd century is still unknown but is attributed to the political and social unrest that was suffered throughout much of the Roman Empire during this period. While the port city lost its economic importance, signs of activity were found in a shrine located in one of the excavation trenches. A dedication to the cult of Julia Domna and Caracalla by a Roman auxiliary was dated by the team to September 215.[75] While there is a lack of any further substantial evidence to show occupation in the 3rd century, Berenike's revitalization in the 4th century appears to correlate with the zenith of the Axumite Empire in modern-day Ethiopia, as well as other trading civilizations in the southern Arabian peninsula.[76]

The Axumites were a Semitic people who grew in power throughout the first half of the first millennium A.D., and whose high water mark came with their conquest of the Roman city of Meroe in the mid 4th century A.D.[77] The first account in the Greco-Roman record of the Axumites is in the *Periplus of the Erythraean Sea*, a late 1st century A.D. sailing guide written by an anonymous Romano-Egyptian. It

[74] Sidebotham, 2002. Pg. 225
[75] Sidebotham, 2002. Pg. 235
[76] Sidebotham, 2002. Pg. 239
[77] Burstein, 1998. Pp. 17-18

states that Axum was a major commercial center for the southern Red Sea, citing the Axumite port city of Adulis as the main African hub for ivory.[78] The 5th century Roman historian Priscus also relates interaction between the Axumites and the Roman Egyptians, as he speaks of a treaty between the Roman military governor of the Thebaid, a certain Maximius, and neighboring barbarian tribes. Maximius had tried to quell raids from these southern barbarian tribes by taking hostages and enacting treaties. According to Priscus, these efforts fell apart upon his death and left the southern regions of Roman Egypt to be overrun.[79] As the Axumites gained territory and political importance in the region, it seems that more trade goods made it up the coast to Berenike.

Further up the Red Sea coast from Berenike is another port city, Marsa Nakari, which was excavated by John Seeger in 1999 (see fig. 3). Marsa Nakari displays a lack of habitation during the 3rd century similar to Berenike. While many of the pottery sherds found were too small to be accurately dated, some of the amphorae sherds, as well as part of an *unguentarium* were positively dated to the 1st century A.D. Unfortunately, Seeger does not state how many pottery sherds were recovered during the excavation, nor how many were large enough to be datable, but insists that no finds dated conclusively from either the 2nd or 3rd centuries.[80]

Moreover, the lack of numismatic evidence points to depopulation during the 3rd century. During the excavation, seven coins were found, with two dating to the

[78] Burstein, 1998, Pp. 79-82
[79] Burstein, 1998. Pp. 106-7; Priscus, Frag. xxi
[80] Seeger, 2001. Pp. 79-81

late 1st century A.D., while the other five all were dated to the 4th century. Two of the five 4th century coins clearly display busts of Constantine I and Constantius II.[81] Further evidence for 3rd century depopulation comes from oil lamps. This includes an intact specimen that dates to no later than the 1st century and fragments of a 4th century oil lamp. Correlating with the numismatic evidence, these lamps leave a void during the 2nd and 3rd centuries.[82] Seeger suggests that this may be attributed to the social and political unrest of the period or to the Antonine plague of 166 A.D. which had devastating effects throughout the empire.[83]

Information from papyrology, a reassessment of previous excavation findings, and recent archaeological surveys portrays Egypt as a strong 3rd century agricultural producer. However, the city of Oxyrhynchus did experience grain shortage, and major eastern port cities along the Red Sea coastline were abandoned. With the stability of the Tetrarchy came a reconnection with the trade routes to the Far East and the repopulation of the coastal ports. Consequently, the rigid taxation guidelines imposed by the same bureaucracy that provided stability caused problems for the grain-producing Fayum, which had difficulty in keeping up to the quotas set by the new regime.

North Africa

North Africa follows a similar trend as Egypt during the 3rd century. Whereas the more centralized agricultural areas appear to not have been adversely affected

[81] Seeger, 2001. Pp. 84-5
[82] Seeger, 2001. Pg. 81-4
[83] Seeger, 2001. Pg. 88

during the 3rd century, the outlying frontier regions go through economic decline. The Tunisian coastal and steppe regions experienced a boom during the 3rd century with olive production.[84] Conversely, the pre-desert regions of Libya were mass-producers of cereal crops and oil during the 2nd century A.D., but by the end of the 3rd century many of the large villa estates which existed had been abandoned for smaller, fortified subsistence-level settlements.[85] The historical record also displays that the rising aristocracy in North Africa during the 3rd century had considerable power as well, as this region rose in importance as a agricultural producer for the rest of the Mediterranean.[86]

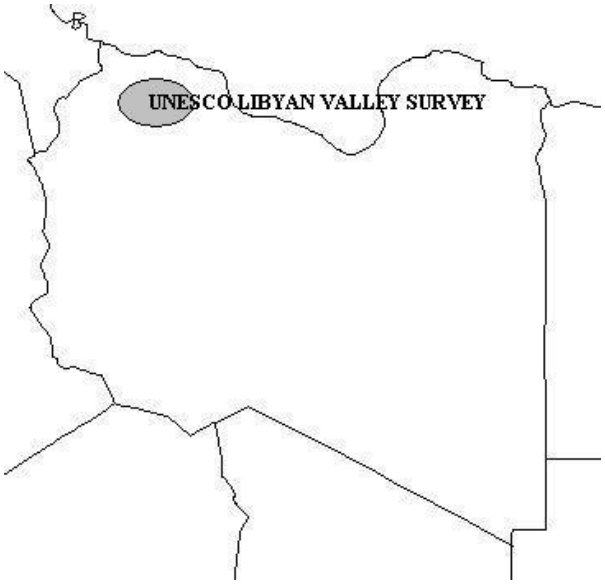

Fig 8: LOCATION OF THE UNESCO LIBYAN VALLEY SURVEY

[84] Mattingly, 1998. Pg. 47
[85] Mattingly & Barker, 2005. Pg. 189
[86] Raven, 1993. Pp. 141-43

A UNESCO-funded survey of the Libyan Valley conducted by David Mattingly and Graeme Barker 1979-1989 was carried out to map the Roman pre-desert areas of the Libyan Valley (see fig. 8). The survey included a variety of approaches, including vehicle surveys, walkthroughs of established sites, and careful mapping and sherding of established sites of human habitation.[87]

The findings indicated that the area was mainly utilized by pastoral nomads until the late 1st century A.D. when Roman influence and technology first appears in the survey. While the buildings were Roman in style, the surviving epigraphy pointed to construction by Libyan aristocracy who established villa farms to capitalize on Roman agricultural demands. From these farms came a diverse assortment of agricultural goods from cereal crops to olives and wine. Many of the farms surveyed contained large presses for olive oil and wine, with storage vats that could have contained a surplus pointing to a production beyond subsistence agriculture.[88]

An evaluation by J.N. Dore during the first four seasons of the UNESCO Libyan Valley Survey revealed a shift in types of settlements during the 3rd century. The transition was from the traditional farms (larger, unfortified villa-type settlements) built in the *opus africanum* style (see fig. 10) of wall construction of the early Imperial period to *gsur*[89] (fortified hilltop villages surrounded by farmland) type settlements (see fig. 9). The findings were based on the collection of some 43,000 sherds

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[87] Mattingly & Barker, 2005. Pp. 187-89.
[88] Barker, 2002. Pg. 494
[89] Although fortified, the *gsur* still retained some apparatus for processing of agricultural goods. However, the chronology of the introduction of the *gsur* into the landscape is still somewhat of a problem. See Mattingly and Dore, 1996. Pp 133-140, 155

ranging from 1100 archaeological sites. The sherds were categorized into five groups. The pertinent 3rd century categories were later African Red Slip ware from the 3rd and 4th centuries and early Tripolitanian Red Slip ware from the late 3rd century.[90]

Dore's findings point to a decline in the large villa estates during the 3rd century, after they had reached a peak habitation in the late 2nd century. The further south a settlement was, the more inclined the inhabitants were to establish *gsur* in the first half of the 3rd century. By the end of the 3rd century, most of the villa settlements were replaced by the *gsur* settlements based on findings of early Tripolitanian Red Slip ware. Dore asserts that the shift from the larger, unfortified estates to the smaller, hilltop agricultural villages was for security purposes, due to economic tension from the stressed agricultural conditions the further south a settlement was.[91] Mattingly elaborates further that this shift was also caused by internal social problems, arising from increasing competition between the Libyan elites, which ultimately led to the downfall of the larger villas. While these larger villas were mostly abandoned, the *gsur* thrived until the 5th century, some even lasting up until the Arab conquest of North Africa.[92]

[90] Dore, 1985. Pp. 107-11
[91] Dore, 1985. pp. 122-24
[92] Mattingly & Barker, 2005. Pg. 190

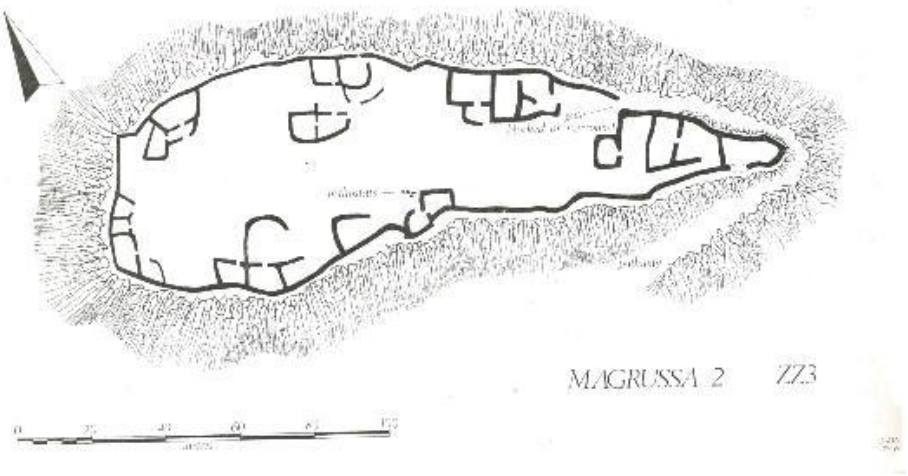

Fig. 9: Layout of a Gasr settlement in the Libyan Pre-Desert[93]

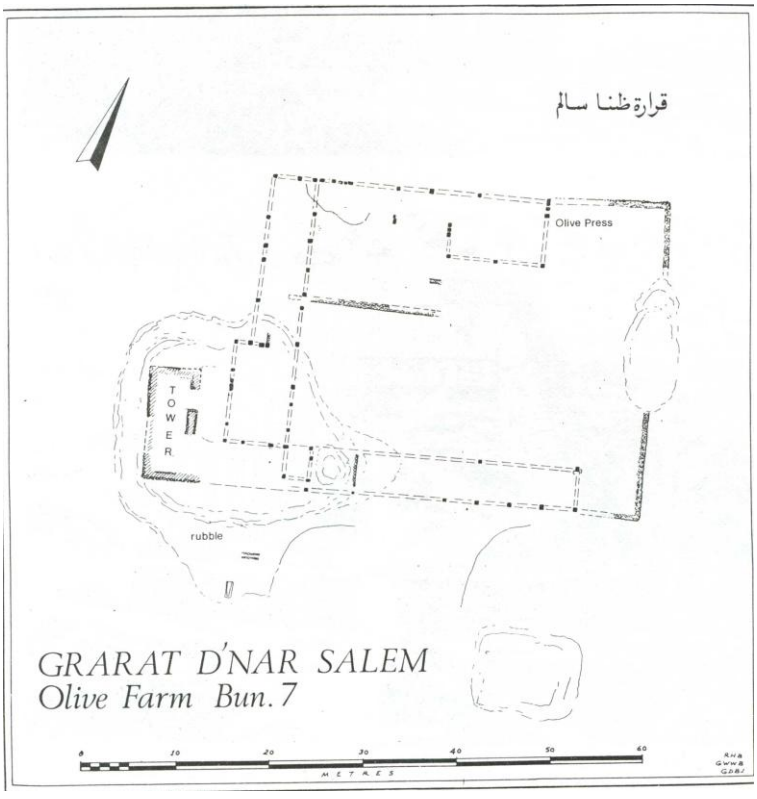

Fig. 10: Layout of the villa estates in the Libyan Pre-Desert[94]

[93] Jones, 1985. Pg. 268

An early explanation for the decline in large villa farming in the Libyan pre-Desert was the inability of Roman engineers to build effective dams in the *wadis*, or riverbeds that the locals cultivated as farmland. Using the *Wadi Caam*, the largest of the Roman dams as an example, Brent D. Shaw states the dam was unable to hold in the silt buildup, and was eventually eroded by flash flooding. Based on current local damming methods, Shaw reached the conclusion that the native population had the upper hand in dam building while the Romans effectively failed. This approach, however, fails to account for the lack of settled agriculture before Roman occupation.[95] D.D. Gilbertson and C.O. Hunt state in their synthesis of the UNESCO survey's data on the *wadi* system that these were in fact huge feats of architecture and engineering, and heavily based on the knowledge of the local topography. Furthermore, in some ways these systems still function into the present day. In fact they are a major environmental factor influencing vegetation in the region, contributing to the productivity of the plants and animals that currently inhabit these riverbeds.[96]

If the failure of the *wadi* system was not to blame for the transition from villa to *gsur*, then what was? At the conclusion of the synthesis of the data from the survey Graeme Barker reiterates that the successful farming of the Libyan pre-Desert was brought on by the Roman occupation, which fostered the breakdown of tribal barriers between peoples. It was in fact the competition between the local elites who owned

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[94] Jones, 1985. Pg. 269
[95] For a discussion of Shaw's approach to the decline of intensive agriculture in the Libyan Pre-Desert, see Shaw, 1984.
[96] Gilbertson & Hunt, 1996. Pg. 224

the land, and not the supposed failure of the *wadi* systems that led to the downfall of the larger villas in the region. In conclusion, he states that as this competition increased, the fortified *gsur* became more popular because of their defensible nature. He also speculates that this in turn led to a nucleation of the farmers at the settlements of the elites.[97]

Fig. 11: MAP OF TUNISIAN SURVEY AREAS

While the pre-desert region of Libya was experiencing a decline in the number of large-production villas during the 3rd century, in Roman Tunisia the appearance of large agricultural villas seems to have increased during the 3rd century. The northern Sahel region of Tunisia was apparently the major producer of olive oil for the area (see fig. 11), but poor preservation of archaeological sites, as well as modern farming in the

[97] Barker and Gilbertson, 1996. Pp. 348-49

region have led to difficulties in excavation and analysis of data.[98] Despite the void of archaeological data for the Sahel, stamps on amphorae from Monte Testaccio indicate large production of shipping containers from the Tunisian coast and possibly inland as well.[99] Although undatable, aerial photographic surveys have revealed an astonishing number of remains of olive orchards plotted out in standard Roman centuriation. From the aerial photographs, the *centuriae* appear to have been covered, by at least sixty percent olive orchards. Some of these *centuriae* displayed remains of tree pits equating to about forty trees per square hectare.[100] Mattingly further postulates that if only ten percent of 4000 sq. km. of the centuriated land in Byzacena was set aside for olive orchards, the allocated land would have contained nearly ten million olive trees.[101] Using his calculation of roughly four kilograms of oil rendered per tree per season, the Sahel could have conservatively produced up to forty million kilograms of oil per season.

Although most of the information on olive oil production for the Sahel region is hypothetical, the majority of it can be augmented by results from the Kasserine Archaeological Survey. This survey, centered on the Central Tunisian Steppe, in particular the Roman towns of Cillium and Thelepte, was conducted by Bruce Hitchner throughout the 1980s (see fig. 11).[102] The 1987 field season, however, brought to light Tunisian oil production in the Roman period. During the season, the

[98] Mattingly, 1988. Pp. 44-45
[99] Mattingly, 1988. Pg. 48
[100] Mattingly, 1988. Pg. 45
[101] Mattingly, 1988. Pg. 45
[102] Hitchner, 1990. Pp. 231-32

team discovered eighty-nine new sites with twenty-one of these sites being positively identified as settlements displaying signs of habitation from the 1st century to the 6th century A.D. In particular, two large agricultural sites from the collection of settlements, categorized as KS 223 and KS 225 were large olive oil producers.[103] Despite the fact that many of the working presses during the Roman period have left no physical trace, a total of forty olive oil presses were found in the region of Cillium and Thelepte. Other excavations and surveys found an additional forty-three presses in the region.[104]

Mattingly, in conjunction with Hitchner on the Kasserine Survey, drew up numerical figures based on the eight presses at KS 223 and KS 225, which he used to estimate oil production in the Sahel. After examining the size and capacity of the presses, he found that each of these large-scale presses were capable of producing on average a 10,000 kg. seasonal production rate. Based on these conclusions, Mattingly states that in peak production seasons the presses at KS 223 and KS 225 could have produced anywhere from 40,000-80,000 kg. of olive oil, on par with the current facilities at the modern-day Kasserine oilery.[105]

A large crop of olive trees would have been necessary for the production of such a large quantity of oil. Hitchner found that the remaining agricultural settlements around KS 223 and KS 225 were small facilities based around a central courtyard without a central, monumental building. These were centered on the tops of ridges

[103] Hitchner, 1990. Pg. 233
[104] Hitchner, 1990. Pg. 248
[105] Hitchner, 1990. Pg. 255

and were associated with both irrigation and field systems.[106] Hitchner also states that these agricultural settlements were dependencies which were part of a larger estate based around KS 223 and KS 225, where the rendering of the olives and the production of the oil took place.[107]

Through examination of the pottery remains found during the survey, large-scale cultivation and processing appears to have begun in the 3rd century and continued until the 6th century. Lucinda Neuru catalogued the excavated sherds from the survey and found that habitation began in the late 1st to early 2nd centuries A.D. from the presence of different forms of African Red Slip wares from the north and east-central coastal regions of Tunisia. By the 2nd century, however, local production of fine wares and cooking wares appears to have taken precedence over imports.[108] Moreover, the transport amphorae used on premises for the storage and transport of oil fall into two categories; locally-produced (and datable) African transport amphorae and foreign (and non-datable) transport amphorae. Of the locally-produced African amphorae, all but one of the classifications date from a production range beginning in the 3rd century and ending in the 6th century. Neuru states that while these types of African amphorae mainly date to period of the mid to late Roman Empire, examples dating as early as the 1st century A.D. were found in small quantities.[109]

The criteria for economic stability, and even growth during the 3rd century has been theoretically established for the Sahel region, but the historical record also shows

[106] Hitchner, 1990. Pg. 239
[107] Hitchner, 1990. Pp. 244-46
[108] Hitchner, 1990. Pp. 256-67
[109] Hitchner, 1990. Pp. 257-59

the power that the villa owners, and their tenant workers, or *coloni* had on the rest of the Empire. These North African landowners at first appear unimportant in the political turmoil during the 3rd century. However, the control that they could wield from owning these vast olive plantations gave them the ability to proclaim an emperor.

The first soldier-Emperor of the 3rd century, Maximinus Thrax had ascended to the purple after the death of the last of the Severan Dynasty, Severus Alexander in 235. Not wanting to incur the same fate as the previous Emperors, Maximinus increased the pay of the legions to the point that the imperial coffers were running dry. Having no other place to turn for funds, he set on extracting as much tribute as he could from the citizens of the Sahel. In her book *Rome in Africa*, Susan Raven attributes this to the Sahel's new agricultural affluence, evidenced by the construction of a new amphitheater in the Sahel city of Thrysdus.[110]

Herodian elaborates that in the year 238 the local procurator for the area extracted as much tribute as he could from the aristocratic youth of Thrysdus. Enraged by this, they formed together and conspired to assassinate him. Arming themselves and their *coloni*, they obtained a private audience with the procurator and assassinated him. Next, the conspirators sought counsel with the proconsul of Africa, Gordian and declared him *imperator*, forcing him to accept the nomination. Shortly thereafter, Maximinus was assassinated by his own troops and Gordian was officially proclaimed emperor. Less than a month into his reign, he committed suicide when Numidians still loyal to Maximinus marched on Carthage after killing Gordian II in

[110] Raven, 1993, Pg. 142

battle.[111] While his reign was short-lived, the ascension of Gordian to emperor shows just how much influence this affluent area had in the realm of imperial politics.

To summarize, the apparent boom in agriculture in Tripolitania during the late 2nd century foreshadows the rise of Africa Proconsularis as a major producer of olive oil during the 3rd century. Competition between indigenous elites seems to have been the downfall for the villa estates in Tripolitania, leading to the construction of hill forts, and a growing reliance of the agricultural population on these elites. The factors leading to the agricultural decline in this region appears to be internal and due to infighting rather than being related to external factors predominating the 3rd century. In contrast to Tripolitania, the local aristocracy further west helped facilitate the rise in economic importance of the Sahel and Kasserine steppes of Africa Proconsularis. During the 3rd century they were even able to use their political pull to denounce the emperor and install their own candidate. Additionally, Mattingly and Hitchner state that during the 3rd century North Africa had become a wealthy cultural epicenter with a high quality of life.[112] Consequently, Roman centuriation and amphora stamps from Monte Testaccio display that Africa Proconsularis had become the major producer of oil. Through paradigms in the Kasserine steppes, David Mattingly convincingly displayed the agricultural output that Africa Proconsularis was capable of. Instead of being influenced by the problems faced by the rest of the empire, the North African aristocracy was able to influence other regions of the empire due to its growing wealth.

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[111] Herodian. Book VII, Chs. III-IX
[112] Mattingly & Hitchner, 1995. Pp. 183-187

Conclusion

Charanis' statement that the 3rd century is a period marked by military usurpation, economic instability, social immobility, and political turmoil refers to the city of Rome. The construction of the Aurelian walls, along with the termination of Dressel 20s with *tituli picti* at Monte Testaccio, and the abandonment of the *insulae* and large commercial ventures at Ostia confirms this assumption. While there appears to be an overall decline in communal wealth in Rome towards the end of the 3rd century, Meigg's findings at Ostia display a trend toward a consolidation of wealth in the aristocracy, albeit pragmatically through the conversion of existing buildings into the private *domus*. The findings at the Baths of the Swimmer, however, seem to verify that North Africa was beginning to become a large wholesale supplier at Rome beginning in the 3rd century.

Southern Italy, in concert with the findings at Rome and Ostia displays a shift to more nucleated agricultural ventures in the 3rd century. The majority of sites show consolidation on larger villa estates and a drop in smaller agricultural ventures overall. While the drop in inhabited sites is dramatic, the apparent rise in wealth at the larger villa estates reaffirms the consolidation of agricultural output into larger, more secure commercial ventures, such as hog farming, that could meet the demands of Aurelian's augmented *annona* program at Rome.

The economy of the grain-producing Fayum region of Egypt fared better during the 3rd century than its counterparts in Southern Italy. While it was not without

its problems, local prices for both grain and wine throughout the first three quarters of the 3rd century were kept at stable levels, even though the local currency followed the same trend of debasement as the standard currency for the rest of the empire. Despite this, the Fayum appears to have remained stable until the economic reforms of the early Dominate forced Egypt to adopt the Roman currency system along with the standard form of governance from which Egypt had been exempt from since its inclusion into the Roman Empire under Augustus. The archaeological evidence from Karanis supports this conclusion with the vast majority of coins found at the site dating to before the monetary reforms of Diocletian in 294.

While the grain, which was vital to the upkeep of Rome and the army, secured the existence of the Fayum, long-distance trade out of Egyptian port cities on the Red Sea came to a standstill during the 3rd century. Repopulated in the 4th century, it may have been the same regime which crippled the Fayum that made these port cities flourish once again. The rise of the Axumite Empire to the south of Egypt also contributed to the resurgence of activity in these cities. Trade with external powers could have slowed during the 3rd century, due to the constant state of civil war.

Agricultural predominance seems to also be a major factor in the stabilization of wealth for Tripolitania and Africa Proconsularis. Tripolitania eventually declined in agricultural importance during the 3rd century, but the factors leading to this outcome appear to have less to do with the political and military problems of the Roman Empire at the time, and more to do with internal factors, including competition among the aristocracy to meet Rome's growing demand of olive oil and cereal crops.

Conversely, Africa Proconsularis appears to have become the major oil producer for Rome, based on the calculations of David Mattingly and the surviving evidence of locally-produced amphorae and extensive Roman centuriation in the region. Finds at Ostia at the Baths of the Swimmer appear to verify this conclusion with a large array of African transport amphorae found on site. Going beyond the state of stabilization that existed in the Fayum during the 3rd century, Africa Proconsularis actually experienced an increase in its economic output. In addition, the historical record verifies the power of the local aristocracy, who were able to use their political pull to their advantage, demonstrated by the Gordian Rebellion of 238.

While the Imperial heartland of Rome and Italy displays the decline and instability expected of the 3rd century, the grain and olive oil producing regions of the southern Mediterranean experienced a much higher level of stability with the exception of the Libyan pre-Desert. The *Scriptores Historiae Augustae* and Zosimus give away the importance of these regions, as Aurelian found it necessary to augment the *annona* program with an emphasis on grain and olive oil. It was economic instability at Rome that secured the perpetual output of these regions, which were necessary for the public dole system the people of Rome had come to depend on. Furthermore, the fact that these regions were out of the realm of barbarian invasions and the massive civil wars of the 3rd century helped to stabilize their output. By correlating the economic situation in Italy to that of the Southern Mediterranean, the empire's dependence on the staple crops that were produced in these regions helped to insulate them from the adverse effects of the 3rd century.

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