

The solidus hoard of Casa delle Vestali in context

Abstract

In this paper, I discuss the context of a Late Roman solidus hoard found in the Casa delle Vestali on the Forum Romanum in Rome. The hoard consists of 397 solidi, Late Roman gold coins. Most of the hoard consists of uncirculated solidi struck in the name of the Western Roman emperor Procopius Anthemius (AD 467–472). By means of situating the hoard within the context of the reign of Anthemius and the collapse of the Western Roman Empire, the aim of this paper is to determine if the coins in the Vestal hoard can be related to other contemporary coin hoards by means of numismatic typology; this information could add to our understanding of why Anthemius' reign is considered such an unmitigated failure and why the Empire collapsed soon after his murder. In this article, the composition of the hoard is examined, and the contents are compared to other contemporary solidus hoards in the Mediterranean, Gaul, Poland and Scandinavia. I argue that this comparison shows that the Vestal hoard is not part of a larger network but that the hoard constitutes the remains of an isolated occurrence—as initially suggested by its unusual composition and location.

Keywords: coin, solidus, hoard, Rome, Anthemius, mint, die-link, die-identity, *officina*

Introduction

The purpose of this article is to discuss the context of a Late Roman coin hoard found at the heart of the City of Rome.¹ The hoard consists of 397 Late Roman solidi (see *Table 1*) and has become colloquially known as the “Vestal hoard” due to

the fact that it was discovered under the floor of a backroom in the Casa delle Vestali in the north-eastern part of the Forum Romanum in 1899 (*Figs. 1–2*).²

Why is it so important to study the Vestal hoard and what can further research on the hoard tell us? Few coin hoards exhibit such a monolithic composition, where a stock of non-circulated coinage has been withheld from entering circulation.³ Thus, the key to contextualizing the Vestal Hoard lies in the comparative study of dies. In this paper, it will be determined if the coins in the Vestal hoard can be related to other contemporary coin hoards by comparing different solidus types and their dies. The terms “die-identical” and “die-link” need some clarification. These terms designate anything from a minimal pair of two different coins struck by the very same die on at least one side of a coin, to a long series of coins produced with the same tools. In this paper, for the sake of clarity, “die-identical” designates coins that share both the same obverse and reverse, whereas a “die-link” designates either a reverse or obverse shared by at least two coins. To differentiate the levels of connectedness amongst die-identical or die-linked coins, I refer to die-identical coins found in the same hoard as “internal die-identities”; while die-identities or die-links connecting different hoards are referred to as “external die-identities” or “external die-links”. This comparative study will be achieved by matching the standardized typology of late 5th-century solidus coins, *RIC X*,⁴ with the Vestal hoard

¹ This research has been financed by the 2012 Enbom and Gihl Fellowships of the Royal Swedish Academy for History, Antiquities and Letters (KVHAA). The two fellowships enabled me to stay at the Swedish Institute in Rome in March 2013, and access to the British School in Rome and the Escuela Española de Historia y Arqueología en Roma. I am very much indebted to R.W. Burgess and L. Lind for their generous assistance, encouragement and pertinent critiques, and to Roger Bland and Kris Lockyear for reading and suggesting improvements to the paper. Needless to say, all errors herein are my own.

² Boni 1899; Van Deman 1909.

³ The geographical distance between the hiding place and the actual Roman mint cannot have been more than a few kilometres or so. Therefore, the hoard surpasses the Szikancs hoard that while being a tight-knit assembly had managed to find its way to Hungary from Constantinople (see Biro-Sey 1976; Guest 2008).

⁴ Kent 1994.

Table 1. The Vestal hoard. After Ungaro 1985, 48, table 1, with emendations.

	Emperor	Reign	Mints						
4th century			Nicomedia	Constantinople	Rome	Ravenna	Milan	Imitation	Total
	Constantius II	337–361	1						1
5th century									
West	Valentinian III	425–455			2	4		1	7
	Libius Severus	461–465			1	1			2
	Anthemius	467–472			341		4		345
	Euphemia	467–472			10				10
East	Marcian	450–457		8					8
	Leo I	457–474		24					24
Total			1	32	354	5	4	1	397

publication,⁵ the Scandinavian material,⁶ the Belgian hoard of Vedrin,⁷ and a recent new find from Italy.⁸ The comparison will assist in determining whether the Vestal hoard constituted part of a larger network of hoards or the remains of an isolated hoard.⁹ It is a challenge to compare the Vestal hoard with the other assembled material due to the peculiar nature of the hoard. There is no other solidus hoard in the Roman Empire that can be convincingly related to a brief sequence of political events: the solidus hoard deposited in a backroom behind a staircase in the Atrium Vestae or Casa delle Vestali was probably a coincidence of the chaos surrounding the fall of Rome in the Summer of AD 472, during which Anthemius may have been murdered by barbarian mercenaries under Ricimer.

The man behind the coins— Anthemius

To understand how and why the Vestal hoard was first assembled, and then buried and abandoned, it is necessary to summarize the background of the emperor whose coinage characterizes the hoard—Procopius Anthemius. The hoard is both symbolic and representative of the mercurial reign of Anthemius.¹⁰ In AD 466, Procopius Anthemius was a middle-

aged nobleman with considerable experience as a senior-level bureaucrat and military commander, with postings in Constantinople and the Balkans. He had been on the short-list for the position as senior emperor in AD 457, being the son-in-law of emperor Marcian (AD 451–457), only to be bypassed by Leo I (AD 457–474). Nine years into the reign of Leo I, Anthemius was sent from Constantinople overland sometime in the fall of AD 466 to run the Western Empire from the city of Rome. There, in AD 467, Anthemius was sworn in as junior co-emperor, sure of the awaiting consent of his senior, Leo I. But before he could be sworn in, he first had to pass through the minor capitals of Milan and Ravenna to be received by the military commander and de facto ruler of the West, Ricimer.

After arriving in Rome, Anthemius was supplied with generous sums of gold from the mint of Constantinople in AD 468. A subsidiary Roman mint, complete with die-cutters, was even brought in from Constantinople. These cut a number of closely related dies, which were used to strike new coinage meant to pay for military expenditure. Thereafter, Anthemius ran into a number of obstacles, notably unsuccessful wars against the Vandals and the Visigoths. Eventually, Ricimer turned against him. By the early fall of AD 471, Ricimer had moved south against Anthemius in Rome. In October of AD 471, Ricimer blocked the Tiber down to Ostia, thus isolating the city. This had dire consequences for the half million people living in Rome. A severe famine was followed by an epidemic disease. Rome fell to Ricimer's troops on 2 July, AD 472. Anthemius was supposedly murdered on 11 July, AD 472. While Anthemius was not the last junior emperor to be dispatched from Constantinople to Rome, his brief reign must be considered the last serious effort to rescue the Western Empire. It is therefore vital to explore the material remains of his reign.

⁵ Ungaro 1985.

⁶ Fagerlie 1967.

⁷ Lallemand 1965.

⁸ Arcangeli *et al.* 2012.

⁹ Boni 1900.

¹⁰ For specific details and a historiography of the source material, see Hossner 1900; Martindale 1980; Gunther 1982; Lacam 1986; Sivan 1989; Mathisen 1991.

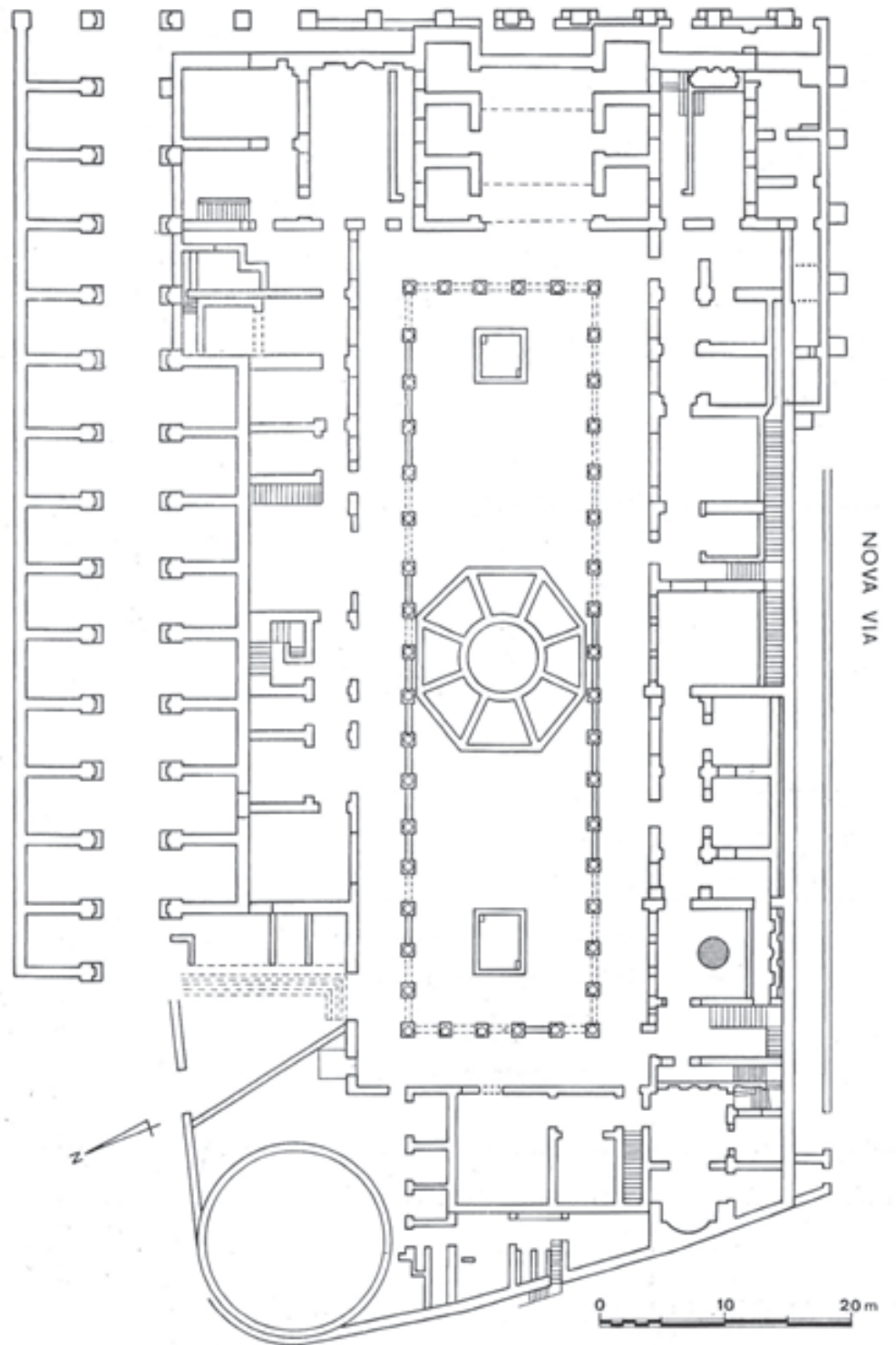


Fig. 1. The Casa delle Vestali. Ground plan. Hoard marked with grey circle. After Carretoni 1985.



Fig. 2. *The Casa delle Vestali. After Hülsen 1905.*

The site: Casa delle Vestali

It is of interest here to connect the Vestal hoard to the imperial persona of Anthemius. The hoard is unlikely to have been buried very far away from the imperial treasury or the emperor himself. The logical path of investigation is to seek a relationship between the hoard, Anthemius' court in Rome, and his residence in the city itself. Any further insight here could help us to disentangle the problems inherent in exploring a malfunctioning state apparatus in a very large city caught in a period of collapse. Alas, it is not known where Anthemius resided while in Rome from 468 to 472, the years leading up to the burial of the Vestal hoard; this is a key obstacle. The building complex on the southernmost part of the Palatine Hill is a possible location. However, this remains an educated guess at best since the emperor could easily have settled elsewhere in the city in more comfortable lodgings. It is therefore necessary to account for what can be ascertained about the burial site beyond generalizing assumptions that have become established semi-truths.

The Casa delle Vestali is situated in the north-western section of the Forum Romanum with its back to Via Nova, and above it is the Domus Tiberiana on the Palatine Hill. The building compound covers an area of *c.* 6,500 m², with an open inner courtyard of *c.* 930 m². The Casa delle Vestali ceased to serve its old function sometime after the Vestal cult was abolished by either emperor Gratian or Theodosius I, although an inscription dedicated to Coelia Concordia (the last chief Vestal) has been dated to AD 384.¹¹ The south-western parts of Casa delle Vestali are located along the stairs leading up to Via Nova and further up the Palatine Hill (Fig. 2). Giacomo Boni excavated these areas in 1899–1902.¹² As a result, the solidus hoard was discovered underneath the floor in the

¹¹ This could possibly have occurred as early as the tenure of the urban prefect Lucius Septimius Valerius Bassus, see *CIL* VI, 1183, *CIL* VI, 37312, *PLRE* I, 158. But it may have occurred as late as 391, during the reign of Theodosius I, see *CIL* VI, 2145.

¹² Boni 1900, 327; Carettoni 1985, 46.

first square, ground-floor room in the north-western corner, next to a room with a staircase leading up to the second floor and the Via Nova.¹³ As soon as the solidus hoard was discovered, the historical background of the hoard was more or less correctly understood right away, and the hoard was properly taken care of. It is currently kept in the Museo Nazionale Romano. The idea that the south-western parts of the building complex of Casa delle Vestali still served as part of a larger imperial compound as late as AD 472 stems from the subsequent research of E.B. Van Deman.¹⁴ She argued that after the last Vestals had been evicted from the premises, the building was subsequently used to house members of the imperial staff. A simple deconstruction of the matter reveals that this reasoning is a tautology: nothing besides the Vestal hoard provides an accurate date for a hypothetical continuous use of the building complex, while the adjacent Palatine Hill provides a blatantly obvious imperial context, even if it is uncertain that Anthemius ever lived there. It is reasonable to be critical of this deductive chain of reasoning, attractive as it may be.

First, the historical sources suggest that the Western emperors of the mid- to late 5th century AD rarely resided in Rome for long periods, with the exception of Valentinian III in AD 440–455.¹⁵ Their administration was smaller than before, and many administrative matters were in the hands of a few noble families with their own residences in the city. Other imperial residences within the city walls have been pointed out, notably the Domus Pinciana, which may have been used first by the Anicii and then supposedly by Honorius up to AD 410, and the Sessorian palace near the church of Santa Croce in Gerusalemme, which was allegedly used by Valentinian III.¹⁶

Second, the more recent excavations of the Casa delle Vestali have yielded nothing substantial to prove any continuous occupation during the 5th century AD.¹⁷ Thus, the tentative argument that such a famous building would not be abandoned rings very empty when one considers the fact that other far more important buildings were indeed abandoned or sacked for *spoliae*, such as the northern parts of the Palatine Hill. Hence, it is currently not possible to determine what kind of building the Casa delle Vestali represented in the summer of AD 472. Given that this path leads into a contextual impasse, one has to return to the actual coins of the Vestal hoard itself.

Method

There are two types of research associated with the solidi of Anthemius. First, there is the comparative evaluation of written sources. There are often many problems with the sources of the late 5th century, not least the conflicting chronologies and the scarcity of references to certain emperors in law codes, as in the case of Libius Severus (AD 461–465) and Glycerius (AD 473–474). Fortunately, the reign of Anthemius is comparatively well documented, not least due to the fact that Sidonius Appollinaris, a prolific late 5th-century AD intellectual in the Western Empire, wrote a hagiography praising the emperor.¹⁸ Second, there is the purely numismatic research, as exemplified by the current revision of *RIC X* being conducted by R.W. Burgess.¹⁹ Its primary source material, solidi struck in the name of Anthemius and his wife Euphemia, can hypothetically be assembled from just about anywhere, as the point of departure is strictly typological. The typological study is facilitated by the fact that Anthemius brought Eastern die-engravers to the imperial mint in Rome in AD 468.²⁰ This created a contrast with the die-engravers in Milan and Ravenna. Burgess divides the coinage of Anthemius into five series for each of the three different mints of Rome, Ravenna and Milan. After this, he lists a total of 269 different dies for the solidus coinage of Anthemius. Of these, some 80 obverses and 76 reverses are from Rome, 18 obverses and 28 reverses are from Ravenna, and 18 obverses and 18 reverses are from Milan. While not all the die-types of Anthemius' solidi are mapped, it is still possible to empirically verify the presence or absence of a die-linked connection between a hoard in very close connection with the imperial treasury and the hoards of barbarian mercenaries at the far end of Europe by means of die-links (*Figs. 5–7*).

The composition of the Vestal hoard

The Vestal hoard consists of 397 solidi from the period AD 345–472 (*Table 2*). The chronology of the Vestal hoard can be divided into three parts. The first part consists of an unworn single specimen struck for Constantius II in *c.* AD 351–353.²¹ The actual hoarding process in the second and third parts of the hoard relates to the available stock of solidi at the imperial court in AD 468–472. Thus, the second part contains a

¹³ Filippi 2001.

¹⁴ Van Deman 1909, 46.

¹⁵ Gillett 2001.

¹⁶ Derks 2006, 48.

¹⁷ Filippi 2001.

¹⁸ Loyen 1942; Gunther 1982.

¹⁹ Burgess *RIC X*.

²⁰ Kent 1994.

²¹ *RIC 8* Nicomedia 32. While there are Scandinavian finds of Constantius II, particularly in the Gudme area, this coin can certainly not be associated with 5th-century barbarian solidus hoards.

typical sample of Western solidi for Valentinian III and Libius Severus, and four issues for Anthemius from the Milan mint. These western coins mark the onset of the hoarding process, and the western coins in the hoard were augmented by eastern subsidies of very frequent solidi for Marcian, and Leo I. In total, the second part of the hoard consists of 45 coins covering the period AD 430–467: 13 specimens struck in the names of Western emperors Valentinian III, Libius Severus, and Anthemius from the mints of Milan, Ravenna and Rome, and 32 specimens for Marcian and Leo I which were struck in Constantinople. The minor mints of Arles and Thessalonica that were active in the period are notably absent. There are no internal die-links in the second part of the hoard, save for an obverse *RIC X 2890* for Anthemius from Milan. While there are only a few certain external die-links, the composition of the second part of the hoard would appear commonplace had the coins been found in a hoard from either Öland or Belgium, where both external and internal die-links are quite common.²² The reason for these coins being included in the hoard may perhaps be that they were currently in circulation among powerful people in Italy at the time. They are unlikely to share the same source as either the first or the third part of the hoard. A possible explanation is that they were part of a purse that was emptied into the larger sack while the full weight was being measured.

In the hoard, there are six official coins, which were struck for Valentinian III (coins 2–5, 7–8), four marked as being from Ravenna, and two from Rome. The typochronology for the coins of Valentinian III is very complicated, and some of the issues were very large indeed. I have therefore not yet been able to find die-links to these coins in the comparative material. Suffice to say that the entire active reign of Valentinian III is covered, including an imitation (coin 6).²³ In contrast, the two coins struck for Libius Severus are easy to integrate into a network of die-linked coins in contemporary hoards. The first coin is a *RIC X 2719* but it cannot be linked to other hoards. This is somewhat surprising as the 3 die-identical specimens from another die can were found in the Vedrin Hoard.²⁴ The second is a *RIC X 2704*. The eight coins struck for Marcian are difficult to disentangle from the anonymous mass. The types *RIC X 509–510* are very common, and die-links for Marcian between different hoards are extremely rare. There is every reason to suspect that Marcian ran a successful government and therefore used many dies and *officinae*, scrapping worn dies

frequently whilst keeping proper accounts of the sums of coinage being issued by each of the ten *officinae* in Constantinople. Still, coin 368 in the Vestal hoard is die-identical to the final coin 17 in the Stora Brunneby Hoard.²⁵ This is an interesting connection because it underscores the Italian background of Eastern solidi found in the mixed hoards from Öland.

There are 24 solidi struck for Leo I, c. AD 462–466 in the Vestal hoard. Although all are of the frequent type *RIC X 605*, none are die-linked to each other. This is somewhat surprising, given the comparative material from Scandinavia where the Åby hoard displays die-identical chains of the same type of coinage. A problem with the Vestal hoard catalogue of the coinage for Leo I is that it follows the reverse *officina* marks from *alpha* to *iota* and then lists similar samples in the catalogue of Fagerlie. In the case of *RIC X 605*, however, the *officina* mark on the reverse is less indicative of a typological relationship than the obverse die, where very distinct types evolve from the gracefully elongated, emaciated bust similar to that of Theodosius II and Marcian, to the more compact and grim-looking emperor typically found on *RIC X 630* and the coinage struck for Leo II. There are four coins struck for Anthemius from Milan, coins 11–14 in the Vestal hoard. These are of the types *RIC X 2885*, *2884*, and *2890*. These differ considerably from the Roman coinage in the third part of the hoard, and their distribution pattern is also quite different. They simply belong to a different power sphere of barbarian warlords in Italy, and did not circulate in the same networks as the bulk of the late Roman coinage. It should also be noted that not a single solidus struck for Anthemius in Ravenna is present in the hoard, despite the fact that we know of over 50 different dies from this mint during the reign of Anthemius.

The third part of the hoard consists of the remaining 351 coins struck in Rome—341 for Anthemius and 10 for his spouse Euphemia. The third part is what really sets the Vestal hoard apart from all normal hoarding patterns, in which a greater variety of coin types appear.²⁶ There are many different types of the still rather uniform Roman coinage in the hoard, but strangely enough, very little can be traced outside of the hoard. Above all, the most important feature lies in the long series of 335 die-linked obverse issues, with 334 reverse die-links of *RIC X 2831* and reverse die-links between *RIC X 2823* and *RIC X 2832*. This means that most other finds of *RIC X 2831* can be linked to the imperial treasure chamber of AD 468–472, notably the Vedrin hoard, yet only to a point.

²² This is particularly evident from the catalogue of Ungaro, which employs the catalogue of Fagerlie as its key reference for most of the types in the second part of the hoard.

²³ Coin 2: 2018, 3: 2019, 4: 2024, 5: 2010, 7: 2014, 8: 2015. Coin 6 is an imitation of interest; it is similar to *RIC X 3713*.

²⁴ Lallemand 1965.

²⁵ Fagerlie 1967, 43, coin 351, plate IX. The coin, a *RIC X 508*, is incorrectly described as a *RIC X 510* in Fischer *et al.* 2011, 200.

²⁶ The third part of the hoard contains the following *RIC X* types: 2809, 2816, 2820, 2823, 2825, 2827, 2829, 2831 and 2832.

Table 2. The composition of the Vestal board: internal die-links. After Ungaro 1985, 48, table 1, and Burgess. The table shows that many of the coins in the third part of the hoard, have a very limited number of dies behind them. This very low frequency of dies does not really match the comparative hoard material, which instead displays a tendency towards other dies from the mints of Milan and Ravenna.

	Ungaro cat. no.	Emperor	Reign	Mint	RIC X types	Tpq	Quantity	Obv. die-link	Rev. die-link
Part I	1	Constantius II	337–361	Nicomedia	(RIC 8, 32)	345	1		
Part II	2	Valentinian III	425–455	Ravenna	2018	430	1		
	3	Valentinian III	425–455	Ravenna	2019	430	1		
	4	Valentinian III	425–455	Ravenna	2024	440	1		
	5	Valentinian III	425–455	Ravenna	2010	455	1		
	6	Valentinian III	425–455	Imitation	3713	?	1		
	7	Valentinian III	425–455	Rome	2014	440	1		
	8	Valentinian III	425–455	Rome	2015	440	1		
	366	Marcian	450–457	Constantinople	509	451	1		
	368	Marcian	450–457	Constantinople	508	451	1		
	367, 369–373	Marcian	450–457	Constantinople	510	451	6		
	374–397	Leo I	457–474	Constantinople	605	462	24		
	9	Libius Severus	461–465	Ravenna	2719	461	1		
	10	Libius Severus	461–465	Rome	2704	462	1		
	11	Anthemius	467–472	Milan	2885	467	1		
	12	Anthemius	467–472	Milan	2884	467	1		
	13	Anthemius	467–472	Milan	2890	467	1	8 (2890)	
	14	Anthemius	467–472	Milan	2890 fn	467	1	8 (2890)	
Part III	15	Anthemius	467–472	Rome	2809	468	1		
	16	Anthemius	467–472	Rome	2820	468	1		
	17	Anthemius	467–472	Rome	2825	468	1		
	18–19	Anthemius	467–472	Rome	2823	468	2	1 (2823, 2832)	1 (2823)
	20	Anthemius	467–472	Rome	2816	468	1		
	21	Anthemius	467–472	Rome	2816 var	468	1		
	145	Anthemius	467–472	Rome	2831	468	1		
	22–144, 146–347	Anthemius	467–472	Rome	2831	468	324	2 (2831)	2 (2823, 2832)
	348–355	Anthemius	467–472	Rome	2832	468	8	1 (2823, 2832)	2 (2823, 2832)
	356–357, 359, 362, 364	Euphemia	467–472	Rome	2827	468	5	3 (2827)	3 (2827)
	358, 360–361, 363	Euphemia	467–472	Rome	2827 var	468	4	4 (2827 var, 2829)	3 (2827)
	365	Euphemia	467–472	Rome	2829	468	1	4 (2827 var, 2829)	

The empirical source value of comparative samples—randomness and representativeness

The previous section demonstrated that the Vestal hoard is peculiar due to the many die-identities of very few coin types.²⁷ From a scientific point of view, this means that the hoard has great source value in the reconstruction of the events surrounding the fall of the Roman Empire, with the important advantage that the scope of comparative material is relatively limited, while it also highlights the importance of a proper empirical method. From a larger perspective, one must employ a very strict source criticism, using only archaeological material. Decontextualized coins in auction catalogues, for instance, are useless because of their current pecuniary value. Written historical sources are only relevant if they can elucidate the chain of events or political conflicts that have caused a hoard to be deposited and abandoned. Instead, one must look for coin hoards.

In order to examine a given series of solidi belonging to specific die-chains, and events such as those in the Vestal hoard, one must locate the intersection between separate events and disentangle the mass of hoarded coinage caused by secondary circulation. A case in point is the corpus of solidus finds from Öland, which is the most numerous in Scandinavia. The solidi from the island have a narrow chronological range and most of the Ölandic hoards are more or less contemporary with the Vestal hoard. Consequently, Öland also has a very large amount of die-linked coins.

The hoards from Öland reflect the local apex of a peripheral network node during a period when the main distributor, the Western Roman state apparatus, was shrinking in terms of both size and importance. This occurred while the Western Roman Empire was caught during a period of decline—its worst prior to its ultimate collapse in AD 476. Thus, Öland is a very suitable comparative context, but a contextualization of the Vestal hoard needs far more than just one comparative sample. This is because solidi were transformed into mass material in the large sums of barbarian tributes and payments, and thus the Late Roman economy came to affect areas far beyond the Roman imperial borders. This adds another dimension to the distribution of the material. Solidus hoards that are surrounded by single finds (even with no explicit relation to historical sources), hail from the same area, and have been reported on a regular basis have a greater empirical validity than decontextualized and scattered hoards. The bona fide contexts recorded by past antiquarians reflect the total distri-

bution pattern by providing random samples.²⁸ The Scandinavian solidus finds provide exactly this kind of antiquarian background.²⁹ However, the Scandinavian hoards only provide one part of picture and can only be understood in relation to the two other fields—those of the historical sources and the numismatic typology.

Given that the hoards from Öland are contemporary with the Vestal hoard, they ought to reflect something similar or contemporary that is also present in the hoard. If not, an explanation is needed for why the Vestal hoard does not fit into the pattern. Prior to the introduction of the metal detector as a research tool, archaeologists working on the Scandinavian solidus material depended largely on the steel plough (introduced in the late 19th century) and farm workers walking with their heads down and their eyes fixed on the plough. The ensuing transformation of grazing areas into tilled land resulted in an accumulation of antique metal objects, in particular Roman solidus coins, which were offered for sale to the government. Over time, representative material emerged. The advantage in these cases was that the finds were random and thus representative of the totality—no farmer could decide that he was only going to find coins for one emperor one day, and another emperor the next. Instead, he would find a sample of what was in the ground, regardless of the size of the hoard. There is no difference in the typological composition of the hoards and single finds on Öland. Unauthorized metal detecting is a felony in Sweden. Illegal detectorists and antique dealers caught by law enforcement are sentenced to prison in accordance with the law of the cultural environment (formally known as *Kulturmiljölag* 2013:548). Since 1977, solidus coins from Öland have been reported only by the authorized personnel of the National Board of Antiquities and Kalmar County, and only when rescue-detecting previously plundered sites, that is, already disturbed contexts where coins have already been removed from the site and thus have been transformed into decontextualized loot. Meanwhile, the modern-day Ölandic farmers sit high up behind glass windows in the cabins of their tractors and do not see the plough behind them, save for an occasional glimpse in the rear view mirror.

By contrast, the introduction of the metal detector has caused a vast increase in the finds of new Roman coin in Denmark, where amateur metal detecting is legal (and extremely frequent on key sites on Bornholm).³⁰ This means that this earlier representativeness is no longer present on Bornholm either, although for a different reason. The absence of randomness in the new find material implies that one has to assess the entire find horizon of Öland and Bornholm anew and

²⁷ Ungaro 1985.

²⁸ Herschend 1980.

²⁹ Fischer *et al.* 2011; Fischer 2008.

³⁰ For a discussion of the situation on Bornholm, see Horsnaes 2013.

Fig. 3. *Solidus* hoards recorded in LEO, AD 306–641 (by Helena Victor; see Fischer 2011).



critically evaluate recent finds and future analytical strategy because Sweden and Denmark are about to diverge entirely as far as new finds from reliable archaeological contexts are concerned.

The comparative material by region

To understand how the Vestal hoard fits into the larger picture, it is necessary to analyse all published *solidus* hoards containing *solidi* struck for Anthemius by region. Known *solidus* hoards are easily mapped (Fig. 3) and can be ordered chronologically (Table 3). I have compiled some 49 contexts in Italy, Egypt, Scandinavia (including Scandinavian single finds), Austria, Germany, the Czech Republic, Hungary, Pomerania in Poland, and Gaul that contain *solidi* struck for Anthemius. To date, there are no published finds of *solidi* struck for Anthemius from Switzerland, Slovakia or the Balkans, although future finds are quite possible.³¹ Within these 49 contexts, it is also necessary to compare all other contemporary coinage. A combined match between die-links for Anthemius and die-

links to the other contemporary coin types in the Vestal hoard increases the likelihood of a direct relationship to the Vestal hoard. If there are merely die-links pertaining to unrelated coin types, this means that a stock of *solidi* has been distributed prior to the assembly of the Vestal hoard.

The large number of important *solidus* hoards in Italy is not surprising given the fact that there were three active mints—Milan, Ravenna and Rome—all of which were striking *solidi* in Italy during the late 5th century, in the midst of intermittent military conflict between AD 455 and 493.³² The youngest coins in Italian hoards can often be related to the specific mint which is nearest. Hoards from northern Italy thus usually contain coins struck for Anthemius in Milan and Ravenna. The source-critical problem of the Italian material lies in the loss of hoards that were reported but subsequently scattered (this continued well into the early 20th century).³³

³¹ See for instance Mirnik 1981 and Kolníkova & Pieta 2009.

³² The main *solidus* hoards from Italy are summarized in Lallemand 1965, Panvini Rosati 1985, Ungaro 1985, Kyhlberg 1986, Grierson & Mays 1992, Kent 1994. Earlier hoard catalogues include Brambilla 1870. A most important study on the Milan mint is Ulrich-Bansa 1949.

³³ The following hoards listed by Panvini Rosati (1985) and Ungaro (1985, 71–73) have been excluded from the survey: S. Lorenzo di Pusteria, Sedico, Aquileia, Carpignano, Parma, San Lazzaro, Nonantola, Reggio Emilia, Gravisca, Sabaudia, Cannitello, Comiso, Butera.

Table 3. The comparative hoard material: distribution. The comparative hoard material in Tables 3–4 has been compiled mainly from Fagerlie 1967, Westermarck 1980, Ungaro 1985, and matched with Burgess' concordance tables. The latter have been supplemented with recent coin finds in Horsnaes 2009 and still unpublished finds from Sweden.

Region	Hoard	Hoard cat. no.	Tpq	Solidi	Anthemius	Coin cat. no.	RM	MD	RV
Italy	Casa delle Vestali	Rosati 13	468	397	345	11–364	341	4	–
Italy	San Mamiliano	Arcangeli 2012	476	498	83	34–48	43	26	11
Italy	Zeccone	Brambilla 1870	476	49	14	21–35	5	9	–
Italy	Naples	Iluk 2007:100	476	255	14	Not acquired	3	1	10
Italy	Gernietto	Kent 1994	491	273	1+	Not acquired	1+	?	?
Belgium	Vedrin	Lallemand 1965	491	69	5	39–43	3	–	2
Egypt	Assiut	Dennison 1918	527	9	5		5	–	
Öland	Åby	F 99	476	80	3	F 154, 157, 169	1	1	1
Pomerania	Radostowo	Ciolek 198	476	23	2	19–20	–	–	1
Pomerania	Puck	Ciolek 196	467	5	2	4–5	–	–	2
Gotland	Botes	F 137b	527	84	1	F 167	–	–	1
Bornholm	Soldatergård	F 219	476	36	1	F 156	–	1	–
Italy	Brembio	Chiaravalle 1994	480	25	1	8	1	–	–
Öland	Övetorp	F 40	476	22	1	New find	–		1
Bornholm	Dalshøj	F 205	491	17	1	F 149	–	1	–
Bornholm	Kåsbygård	F 203	476	14	1	F 152	–	1	–
Öland	Spångebro	F 86	467	12	1	F 163	1	–	–
Öland	Präststommen	F 50	467	11	1	Not acquired			
Gotland	Harkvie	F 130a–b	491	11	1	New find	–	1	–
Gotland	Övede	F 135	491	11	1	F 168	–	–	1
Gotland	Norrkvie	F 153	491	8	1	New find	1	–	–
France	Houdain	Gricourt 1959	491	7	1	6	1	–	–
Öland	Bostorp	F 90b	473	6	1	F 150	–	1	–
Öland	Ingelstad	F 53	468	6	1	New find	–	1	–
Gotland	Sigvards	F 136	476	5	1	Not acquired			
Öland	Sandby i Högby	F 72	473	4	1	F 165	–	–	–
Öland	Ekelunda	F 100b	468	3	1	F 158	1	–	–
Öland	Stenåsa	F 113c	468	3	1	F 160	1	–	–
Öland	Egby	F 51a	467	2	1	F 166	1	–	–
Öland	Laxeby	F 52	468	1	1	F 159	1	–	–
Öland	Ormöga	F 36	468	1	1	F 153	–	1	–
Öland	SHM 5186	F 121c	468	1	1	F 155	–	1	–
Czechia	Zalusi	Droberjar 2008	468	1	1	Grave 26	–	1	–
Gotland	Davide	F 149	468	1	1	F 151	–	1	–
Scania	SHM 390	F 35a	468	1	1	F 161	1	–	–

<i>Region</i>	<i>Hoard</i>	<i>Hoard cat. no.</i>	<i>Tpq</i>	<i>Solidi</i>	<i>Anthemius</i>	<i>Coin cat. no.</i>	<i>RM</i>	<i>MD</i>	<i>RV</i>
Småland	Kalmar	F 19c	468	1	1	F 162	1	–	–
Pomerania	Elblag	Ciolek 41	468	1	1	5	1	–	–
Bornholm	Store Smørenggård	Horsnaes 2009	468	1	1	Horsnaes 18	1	–	–
Bornholm	Brændesgård	Horsnaes 2009	468	1	1	Horsnaes 31	1	–	–
Bornholm	Fagerlie 164	F 224a	468	1	1	F 164	1	–	–
Bornholm	Smørenggård	Horsnaes 2009	467	1	1	Horsnaes 17a	–	1	–
Bornholm	Fagerlie 170	F 224e	468	1	1	F 170	1	–	–
Austria	Velden	Viertler 2002	468	1	1		1		
Germany	Herrenberg	Ellminger 2002	468	1	1	Grave 291		1	
Hungary	Ömböly	Prohaszka 2009	468	1	1			1	
Bornholm	Sylten	F 215b	468	1	1	F 171	1	–	–
Öland	Mellby	F 103	467	1	1	Not acquired			
Öland		F 121d	467	1	1	Not acquired			
Öland		F121e	467	1	1	Not acquired			
<i>Total</i>	49			1965	513		419	54	30

Fagerlie listed 23 Scandinavian solidi as struck in the name of Anthemius.³⁴ Of these, nine were already lost and their exact typology could not be determined. Four new specimens have been found in Sweden since then, and three have been found on Bornholm. These 30 solidi make Scandinavia the second-largest hoarding area of Anthemius' solidi after Italy. The Scandinavian solidus material essentially falls into nine sub-regions. Of these, five are in Sweden (Öland, Gotland, the Mälars Valley, Småland, Scania), and four in Denmark (Funen, Zealand, Jutland and Bornholm).³⁵ The four sub-regions of Öland, Gotland, Bornholm and the Mälars Valley are the most important sources for the late 5th-century material, whereas Funen provides material from the 4th century. In these sub-regions, there are a number of central places where solidus finds are more frequent. Cases in point are the Gudme area on Funen (with important finds of solidi for Constantius II and Magnentius, c. AD 353–354), the Sorte Muld and Smøreng areas on Bornholm, and Helgö in the Mälars Valley.

Some 360 solidi have been reported from Öland as of late 2014 (Fig. 4). Only 11 solidi postdate AD 476—a distribution pattern that has not changed in the last century despite subsequent additions that are the result of rescue metal de-

tecting on plundered sites.³⁶ The overall picture of the material is clear because finds up to 1977 were generally reported to authorities and then acquired by either the National Museum of History (SHM) or the Kalmar County Museum (KLM) (Fig. 4). The Gotlandic material is generally as well reported as the Ölandic material. The respective chronological ranges are remarkably different, though. Most solidus hoards on Gotland include specimens struck in the name of Anastasius I (AD 491–518), either genuine or pseudo-imperial. Despite a number of early finds being scattered, the overall picture of Bornholm ranks somewhere in between Sweden and Italy in terms of clarity. Only three of the reported finds of Anthemius lack descriptions.³⁷ The body of material has grown considerably in the last decades, but there has been no need for a complete revision of Fagerlie's survey. Instead, the links and chronological ranges have become more distinct.³⁸ Bornholm, very much like Helgö, has a distribution pattern that is situated in between Öland and Gotland in terms of chronology.

The Polish 5th-century solidus finds from Pomerania are difficult to grasp, despite Ciolek's remarkable efforts at organizing the material in the last decade.³⁹ The late 19th-century antiquarian tradition and the ensuing wars of the 20th century

³⁴ Fagerlie 1967, 168–169.

³⁵ Norway has a number of grave finds but no solidus coinage struck after AD 425 (a looped specimen for Theodosius II). Finland has two finds of 5th-century solidi, for Valentinian III and Zeno.

³⁶ Westermark 1983; 1991.

³⁷ Fagerlie 1967, 210, 212, hoard nos. 215 b, 224a, and 224e.

³⁸ See Westermark 1983; Kromann 1992; Horsnaes 2001; 2010.

³⁹ See Ciolek 2001; 2007; 2009. Earlier works include Bolin 1926; Kunisz 1973; Kyhlberg 1986.



Fig. 4. Distribution of solidi on Öland. By Teodora Linton Fischer, after Herschend 1980.

have caused the solidus material to become very fragmentary.⁴⁰ Still, it is safe to say that the Polish material does not exhibit any immediate connection with the Vestal hoard. Similarly, there is no apparent pattern within very large hoards, where a token sample of Anthemius occurs due to the sheer quantity of assembled coins (as in the case of the Naples and Botes hoards). A further analysis of the solidus material discussed by Italian scholars reveals a strong link between the Italian and the Scandinavian material, where previously odd, small-hoard compositions in Italy make sense from a comparative Scandinavian perspective. This suggests that the Scandinavian hoards may already have been assembled as such in northern Italy prior to their exodus north, making the intermittent Polish connection sometimes alluded to by Fagerlie unlikely.⁴¹

The solidus material from Gaul (including Belgium, Luxemburg and France) is fragmentary. Despite Chiflet's accomplishment in 1655 with regard to the grave of Childeric, important solidus hoards in this region were being both reported and scattered as late as the 20th century.⁴² Anthemius is unlikely to have exercised much influence over the affairs of late 5th-century Gaul, despite his belated attempts to rectify this situation in AD 469–471.⁴³ Rather, the opposite seems more likely. The Visigoths ruling southern Gaul could have exercised considerable influence over the affairs of Italy. And they would also have struck their own solidus coinage in the name of Valentinian III and Libius Severus.⁴⁴

The Egyptian material consists of a single gold collar with mounted coinage.⁴⁵ The coins include a multiplum for Theodosius I, which was struck in Milan; two solidi for Theodosius II; five for Anthemius (two *RIC* X 2823, three *RIC* X 2835); one solidus for Basiliscus; one for Justinian; and four tremisses for Justinian. One may assume that the collar is some sort of military decoration or rank insignia similar to the finds from

⁴⁰ Similarly, one may suspect that many earlier finds from Poland and the Baltic countries were reported as early as the late 18th century but were decontextualized and brought to the imperial coin collections of the State Hermitage Museum in Saint Petersburg, Russia.

⁴¹ Kyhlberg (1986, 50, table 35; 72) was able to identify this relationship, albeit from analysis of a much smaller body of material, which included only the Zeccone and Reggio Emilia hoards from Italy.

⁴² Notably the Machtum hoard from Luxemburg in 1958, see Reinert 2008.

⁴³ Ulrich-Bansa (1949, 281 n. 60) still believed that evidence would be found for an active solidus mint in Arles during the reign of Anthemius. No such coinage has appeared yet. Rather, Kent's 1994 assumption that the Arles mint, which was active during the late reign of Majorian and the early reign of Libius Severus was closed in 462 and only reopened during the reign of Julius Nepos in 474–475 appears correct, given the new finds from San Mamiliano.

⁴⁴ Lafaurie 1973 argued that Aëtius rather than the Visigoths should be seen as the culprit behind the most frequent pseudo-imperial emissions from Gaul. For a critical discussion, see Callu & Barandon 1987.

⁴⁵ Dennison 1918; Mosser 1935; Kent 1994.

Udovice and Sorte Muld or those of the imperial bodyguard depicted in the mosaics of San Vitale in Ravenna. The unusual representation of specific die-identities from Anthemius' Roman mint, which have been kept together well into the reign of Justinian some 80 years later, suggests that the five coins struck in Rome for Anthemius share a common background with the Vestal hoard, and thus their presence in the Asiut collar is probably related to the employment of eastern military units in the service of the Western emperor.⁴⁶

The comparative material by hoard

Once the regional pattern for the distribution of Anthemius' solidi has been established, one can identify specific hoards and establish if they are connected to the Vestal hoard (*Table 4*). The most important hoard is undoubtedly the San Mamiliano di Sovana hoard that was discovered in 2004.⁴⁷ It consists of 498 solidi, 83 of which were struck for Anthemius. This hoard is definitely related to the Vestal hoard, but it also has a multitude of die-links with the entire network of late 5th-century hoards in Vedrin, Italy and Scandinavia. These die-links and their secondary complex networks are beyond the scope of this paper, and here the focus will only be on the relationship of the hoard to the failure of Anthemius to control the Western military state apparatus.⁴⁸

It is no exaggeration to describe the San Mamiliano hoard as a key hoard related to the assembly of Ölandic hoards in Italy because it includes extremely rare die-linked specimens for the last Western emperors (notably Majorian and Glycerius), which only have parallels on Öland. Importantly, the hoard is also connected to typically Italian contexts that are not linked to Barbaricum, such as the otherwise solitary Vestal hoard of Anthemius. The owners of the San Mamiliano hoard are quite likely to have been important key figures in the military state apparatus that operated from Milan, and it is possible that they functioned as intermediaries between the highest echelons of the imperial government in Rome and the lower-ranking barbarian mercenaries of the Western army. This suggests that the hoard owners were some of the *de facto* rulers of Italy in the last decades of the Western Empire, and thus the hoard has immense scientific potential.

The hoard from Monasterelo di Brembio outside of Milan was discovered in 1929. It originally contained 25 solidi. The finder was allowed to keep 13, which were not properly

recorded. The hoard contains one eastern-style specimen for Anthemius, which was struck in Rome.⁴⁹ The solidus has a reverse *RIC X 2822* but is unrelated to the Vestal hoard. What separates this hoard from most Italian hoards is that it also contains a Visigothic imitation for Libius Severus. In this case, it is an *RIC X 3754*, with the *officina* mark RA in the name of Libius Severus—something which is highly unusual for Italy but appears in southern Gaul, Helgö, and the English Channel, notably in the Patching hoard.⁵⁰ The Monasterelo di Brembio hoard may appear an oddity from an Italian point of view, but it makes sense when we consider it in relation to specimens that are typically classed as belonging to barbarian mercenary solidus stock. The hoard is not connected to the Vestal hoard.

The Gernietto hoard outside Milan, which was discovered in 1818 and reported in 1820, contained 273 solidi. Of these, some 136 were struck in the name of Anastasius I. Forty-four were struck for Zeno, of which three were from the Milan mint.⁵¹ The hoard also contained solidi for Theodosius II, Marcian, Leo I, Anthemius, and Romulus Augustus. Mints included Constantinople, Milan, Ravenna, Rome and Thessalonica.⁵² It cannot be excluded that some of the coinage in this hoard may have been linked to the Vestal hoard, although the hoard looks more similar to the Mrzezino hoard from Poland, the Botes and Smisss hoards from Gotland, and the Helgö hoard.⁵³ The vast number of solidi struck for Anastasius I suggests that these are not genuinely eastern, but rather they were struck in Italy by Theoderic, as is the case for the hoards from Helgö, Mrzezino and Botes. Moreover, the presence of Milan issues of Zeno together with pseudo-imperial issues of Anastasius I is a find-combination characteristic of the Helgö hoard.⁵⁴ It cannot be excluded that the Gernietto hoard has a possible connection with the Vestal hoard.

The Naples hoard contained 255 solidi dated to *c.* AD 402–476, of which 14 were struck for Anthemius.⁵⁵ I have been unable to find any illustrations of these. The hoard may well reflect the actual stock of Italian solidi in circulation within the Roman elite in the third quarter of the 5th century, given that as many as 98 solidi belong to the long reign of Valentinian III (AD 425–455), but there is only one specimen each for Petronius Maximus (AD 455) and Avitus (AD

⁴⁶ The idea of keeping a number of specimens of a specific issue together to mark rank or inherited status can also be found in the case of the Sorte Muld find (Horsnaes 2001).

⁴⁷ Arslan 2009.

⁴⁸ Barbieri *et al.* 2006; Arcangeli *et al.* 2012; Horsnaes 2013.

⁴⁹ Chiaravalle 1994.

⁵⁰ Arslan 2005; Arslan 2009, 127 n. 25; Fagerlie 1967, nos. 146–148; Callu & Barandon 1987, 202, fig. 2, nos. 1–13; Callu & Loriot 1990, no. 741; Bland & Loriot 2010, nos. 250, 279, 327, 884.

⁵¹ Ulrich-Bansa 1949, 321 n. 28.

⁵² Ungaro 1985, 56.

⁵³ Ciolek 2007; Kyhlberg 1986, 55, table 40.

⁵⁴ Lallemand 1965; Fagerlie 1967; Kyhlberg 1986, pls. I–IX.

⁵⁵ Kent 1994.

Table 4. The comparative hoard material: external die-links. Table 4 shows that rather few dies were used to produce the solidus coinage that arrived in Öland (and Poland) and that which was deposited in the Vestal hoard.

Region	Hoard	Hoard cat. no.	Coin cat. no.	Rome (RM) mint RIC X	RM series	Milan (MD) mint RIC X	MD series	MD dies	Ravenna (RV) mint RIC X	RV series	RV dies
Italy	Casa delle Vestali	Rosati 13	11–364	2809*, 2816*, 2820, 2823*	4a–5	2884*, 2885	3–4	1*–1*, 2–3*			
				2825, 2827, 2829, 2831*, 2832		2890, 2890 fm*		8*–5, 8*–8*			
Italy	San Mamiliano	Arcangeli 2012	34–48	2804, 2808, 2812, 2814, 2816*, 2821,	3–5	2884*, 2887, 2891,	3–5b	rev 3*	2866, 2871, 2876, 2880	1, 2, 5a	
				2822, 2823*, 2831*, 2833, 2834, 2835		2892, 2895, 2896, 2898					
Italy	Zeccone	Brambilla 1870	21–35	2831–2835?	4a–5	2884*–2885?	3	1*–1?*			
Belgium	Vedrin	Lallemand 1965	39–43	2809 (41)*, 2831 (39)*, 2835 (40)	4a–5				2872 (43), 2879 (42)	3, 5c	8–13, 16–24
Egypt	Assiut	Dennison 1918		2823*, 2835	4b–5						
Öland	Åby	F 99	F 154, 157, 169	2808 F 157	4a	2899 F 154	5b	17–17	2866 F 169	1	2–1
Pomerania	Radostowo	Ciolek 198	19–20						2872?	3	
Pomerania	Puck	Ciolek 196	4–5						2870–72, 2874–75 or 2879	3, 4–5?	
Gotland	Botes	F 137b	F 167						2869	2	6–10
Bornholm	Soldatergård	F 219	F 156			2884–2886?	3–4				
Italy	Brembio	Chiaravalle 1994	8	2822	4b						
Öland	Övetorp	F 40	New find						2877	5c	15–22
Bornholm	Dalshøj	F 205	F 149			2890	4	7–4			
Bornholm	Kåsbygård	F 203	F 152			2893	4	10–13			
Öland	Spångebro	F 86	F 163	2816*	4b						
Gotland	Harkvie	F 130a-b	New find			2899	5b	17–17			
Gotland	Övede	F 135	F 168						2866	1	1–1
Gotland	Norrkvie	F 153	New find	2835							
Öland	Bostorp	F 90b	F 150			2891	4	10–13			
Öland	Ingelstad	F 53	New find			2899	5b	17–17			
Öland	Sandby i Högby	F 72	F 165	2823*	4b						
Öland	Ekelunda	F 100b	F 158	2810	4a						
Öland	Stenåsa	F 113c	F 160	2833	5						

Region	Hoard	Hoard cat. no.	Coin cat. no.	Rome (RM) mint RIC X	RM series	Milan (MD) mint RIC X	MD series	MD dies	Ravenna (RV) mint RIC X	RV series	RV dies
Öland	Egby	F 51a	F 166						2880		
Öland	Laxeby	F 52	F 159	2834	5					5b	14–20
Öland	Ormöga	F 36	F 153			2884*	3	3–3*			
Öland	SHM 5186	F 121c	F 155			2899	5b	17–17			
Czechia	Zalusi	Droberjar 2008	Grave 26			2893	4	10–13			
Gotland	Davide	F 149	F 151			2890 fn*	4	8*–8*			
Scania	SHM 390	F 35a	F 161	2835var	5						
Småland	Kalmar	F 19c	F 162	2831*	5						
Pomerania	Elblag	Ciolek 41	5	2813 or 2815?	4a						
Bornholm	Store Smørengård	Horsnaes 2009	Horsnaes 18	2810var	4a						
Bornholm	Brændesgård	Horsnaes 2009	Horsnaes 31	2823*	4b						
Bornholm	Fagerlie 164	F 224a	F 164	2834	5						

455–456). It cannot be excluded that the Naples hoard has a possible connection to the Vestal hoard.

The Zeccone hoard, which was discovered in 1869 and subsequently reported by Brambilla in 1870, contained 49 solidi.⁵⁶ There were 14 coins struck for Anthemius. These are divided between Milan (9) and Rome (5). The presence of Roman specimens mean that the hoard could be related to the Vestal hoard. But we cannot be certain about this because only drawings of the Roman specimens remain, and thus it is not possible to establish an exact die typology for the Roman specimens. In contrast, the issues of Zeno and Julius Nepos from Milan in the hoard, together with the Constantinople issues for Basiliscus, suggest links to Vedrin, Bornholm and Helgö.⁵⁷ The Zeccone hoard has a possible connection to the Vestal hoard, but it should be noted that following Burgess' revised chronology, the coins in Zeccone were classed as belonging to the early reign of Anthemius in Milan, AD 466–468, whereas the Vestal hoard is reflective of the situation at the imperial court in Rome between AD 468 and 472.

The Åby hoard is the largest solidus hoard from Öland. It was discovered *in situ* in a ceramic jar, and it was reported in 1941. The 80 solidi consist of 1 of Arcadius, 2 of Honorius, 11 of Valentinian III, 23 of Theodosius II, 1 of Galla Placidia, 4

of Marcian, 3 of Majorian, a Visigoth issue struck in the name Majorian from the mint RA, 2 of Libius Severus, 3 of Anthemius, 26 of Leo I, 1 of Leo II and Zeno, and 1 of Romulus Augustus. The hoard is remarkable for its chains of internal die-identities as well as the multitude of external die-links. It is an important hoard which ranks just behind that of Vedrin in terms of importance. It has two die-links for Anthemius, thus connecting it to Milan issues found on Öland and Gotland. The Åby hoard cannot be connected to the Vestal hoard, however.

The Vedrin hoard of 69 solidi was discovered in 1920 and published by Lallemand 45 years later.⁵⁸ This hoard provides a link between the Vestal hoard, those from Zeccone, Åby and Helgö, and also the single finds from Blekinge and Gotland. The Vedrin hoard has all the normal characteristics of long-term hoarding combined with mercenary activities, with bits and pieces picked up from past generations. At least two parts of the hoard are distinct remnants of direct payments assembled in Italy in the 460s and 470s AD, the first part is very similar to Ölandic hoards in general, while the second part is more like the later Helgö hoard. However, the Vedrin hoard also contains two RIC X 2831 that share a reverse die-link and a RIC X 2809.⁵⁹ This means that three out of 69 coins in Vedrin are related to 323 out of 397 coins in the Vestal

⁵⁶ Brambilla 1870.

⁵⁷ Brambilla 1870, 26 n. 40; Ulrich-Bansa 1949, 21 n. 27 and 323 n. 33; Lallemand 1965; Fagerlie 1967; Kyhlberg 1986.

⁵⁸ Lallemand 1965.

⁵⁹ Lallemand 1965, pl. IV, nos. 39–40, 41; Ungaro 1985, 83, no. 15.



Fig. 5. Obverse–reverse: Fagerlie 168, RIC X 2866, Ravenna mint. Övede Hoard, Eskelhem Parish, Gotland. Photograph by Gabriel Hildebrand. Courtesy of the Royal Coin Cabinet (KMK), Stockholm.



Fig. 6. Obverse–reverse: Fagerlie 155, RIC X 2899, Milan mint. SHM 5186, Öland. Photograph by Gabriel Hildebrand. Courtesy of the Royal Coin Cabinet (KMK), Stockholm.



Fig. 7. Obverse–reverse: Fagerlie 169, RIC X 2808, Rome mint. Åby Hoard, Sandby Parish, Öland. Photograph by Gabriel Hildebrand. Courtesy of the Royal Coin Cabinet (KMK), Stockholm.

hoard via the imperial mint in Rome. Another possible link between the Vedrin and Vestal hoards is that the Vedrin hoard contained coinage from the solidus stock of the military state apparatus in Italy.⁶⁰

The people responsible for assembling the Vedrin hoard are likely to have been in close contact with the top brass of the Western Empire around AD 467–476. The only other solidus hoard of the same magnitude in the vicinity is that of the grave of King Childeric in Tournai.

Conclusion

The survey of the comparative material proves that very few hoards, regardless of their geographical location or the quantity of external die-links to other hoards, can be said to have any clear relation to the Vestal hoard, with two exceptions: the San Mamiliano hoard and the Asiut collar from Egypt. The Vedrin hoard is a close second in the hierarchy of the solidus distribution network, but is probably more related to the leading warlords such as Ricimer, Gundobad and Childeric than to Anthemius himself. Anthemius must have been either unwilling or unable to purchase the loyalty of the private military contractors from the barbarian periphery. This, in turn, must definitely be interpreted as evidence of a failure to gain control over the Western military state apparatus. Greed, ineptitude, or disloyalty among his state servants prevented Anthemius' attempt at rescuing the Western Empire from being enacted.

The other hoards in Belgium, Italy and Scandinavia often have several different solidus types in them, but rarely do they have the distinct concentration towards the late phase of the fourth Rome series of solidi struck for Anthemius that is so unique to the Vestal hoard. Instead, they all belong to the Milan and Ravenna mints, and have been augmented with other coinage struck in the East or in northern Italy, and the coinage of the successive Western emperors Glycerius and Julius Nepos. In particular, the evidence from Öland (Figs. 5–7) suggests an intricate subsidiary-economy network where different contingents left and returned at different times from the island. Seizing the opportunity from the periphery, local hierarchies of the South Scandinavian islands could have organized migrant contingents to go and seek collective bargains and advance payments. After a collective contract was established, many of these migrants could have stayed together as mercenary units that rotated their work force in accordance with the short-term contracts.

⁶⁰ Lallemand 1965, pl. IV, nos. 42, 43.

The elite of Öland must have found employment in Italy during the period AD 462–473, and there is significant evidence for direct payments of Ostrogoth and eastern coinage reaching Helgö and Gotland during the reigns of Odoacer and Theodoric the Great in Ravenna, and Zeno and Anastasius in Constantinople, *c.* AD 476–526. But the Scandinavian mercenary presence will have to be understood in a different manner than that of exact references in historical sources. One must not expect the Scandinavians to appear in historical sources as illustrious military units with fancy names or titles, despite all the attempts of 19th-century national romanticists to see the Gepids and Herules as some sort of Scandinavian diaspora of lost tribes of the chosen Germanic people of Ultima Thule. Rather, the Scandinavian mercenary units of the late 5th century must be compared to waged labourers, hired killers. They were nothing for an unstable regime to show off, and their salaried profession remains by definition a highly immoral one.

Another important point sets the Ölandic corpus apart from the gold coinage circulating in urban environments such as Constantinople, namely the conspicuous absence of empresses on the obverse sides—only four specimens struck for Eudocia, Honoria, Adriadne, and Galla Placidia are present in the Ölandic corpus. The latter type of coinage was generally distributed within the urban environment. It is very clear that barbarian interaction with the mints of the great urban centres was reduced to very specific occasions, *i.e.* exceptional payments in gold struck at the very core of the empire. Given that the new coins were added to already existing coins, which were predominantly of Eastern origin and had been struck during the long reigns of Theodosius II (AD 408–450) and Leo I (AD 457–474), it is not surprising that Scandinavian hoards are with one notable exception, Stora Brunneby, mixed with coins from the entire period of AD 402–476 even if they may have been finally deposited in the 6th century AD.⁶¹ But this distribution pattern is not likely to be a result of commerce. Rather, the process is that of acquiring minted gold in a short space of time at a specific location, from whence very little struck coinage emanates. Many of the hoards found in Scandinavia may thus have been assembled over decades within a closed circuit in Italy before reaching their final destinations.

The second part of the Vestal hoard hints at contemporary political affairs. The four specimens of Milan issues in the hoard suggest that the first coinage struck under Anthemius' reign in AD 467 had been distributed already, and was in the hands of political actors other than the imperial court. Similarly, the presence of 24 different issues of *RIC* X 605 struck

for Leo I suggests that the new Roman series was linked to a substantial influx of eastern subsidies during AD 468. These eastern subsidies obviously ended up elsewhere in Italy and eventually beyond the reach of the imperial court, since long chains of such die-identities of this type are found in the Åby hoard in particular. Yet die-links within the coinage of Libius Severus and the *RIC* X 605 type do not constitute sufficient evidence for a clear connection with the Vestal hoard.

The third part or the bulk of the Vestal hoard still appears relatively isolated outside of Italy. Besides the San Mamiliano di Sovana hoard, there is no obvious connection. Rather, it is the vast interconnectedness of the other hoards from the same period that becomes all the more evident. By looking at the exceptional Vestal hoard which was probably hidden away by someone in a relatively elevated position within the palace of Anthemius in Rome, *c.* AD 472, we get a glimpse of an emperor cut off from the rest of Italy while under siege in Rome by his own supreme commander, Ricimer.

This overview of the distribution of Anthemius' hoarded solidi allows for a more general hypothesis on what really may have caused the reign of Anthemius to be brought into being, to exist, and finally to cease. Above all, it seems that money kept Anthemius safe in Rome from AD 468 to 471, but he was unable to yield any control over minor Western capitals such as Arles, Milan and Ravenna. Here, Ricimer was firmly in charge over a vast number of independent, hired contingents and he was very keen to avoid any grand schemes and wars concocted by the imperial office in Constantinople.⁶² The function of the small cities defended by small groups of hired barbarians was also difficult to integrate within the large reform programme meant to deal exclusively with Rome. But as the dream of regaining the grain-producing African provinces waned, Anthemius withdrew into the very core of the city to seek refuge from Ricimer. It would seem that instead of improving matters for the denizens of Rome, Anthemius brought about the worst possible scenario imaginable: starvation followed by urban warfare. The mapping of this entangled distribution pattern allows for a number of conclusions.

First, it becomes obvious that there was something very wrong with the cash flow from the Roman mint during the late reign of Anthemius. Second, the people on the periphery in Belgium and Scandinavia who did stock up on Anthemius' solidus coinage of the types struck in Milan and Ravenna not found in the Vestal hoard, were able to do so not because of Anthemius, but in spite of him. Someone else must have paid them, and this situation was in all likelihood detrimental to the wellbeing of Anthemius himself. It is no far-fetched guess that the people who buried the San Mamiliano hoard were

⁶¹ Fischer *et al.* 2011, 196–197, tables 1–2.

⁶² MacGeorge 2002.

somehow involved in the sack of Rome and perhaps also in the death of Anthemius. The city of Rome came under direct siege by Ricimer in the spring and summer of AD 472. At this point, people were starving in Rome.⁶³ Ricimer's troops eventually gained access to the inner city. Within days, the emperor was dead. Anthemius is said to have fled his palace, but he was later caught and executed. It is not known whether he received a proper burial.

This leads us to the burial of the Vestal hoard in the summer of AD 472. It is an irrefutable fact that inside the rest-room of the Casa delle Vestali, a sack of solidi was hidden in the drainage sewer underneath the floor. It is equally undeniable that Anthemius' Roman coinage was literally shoved down the drain, getting stuck in the decrepit infrastructure of the eternal city for centuries to come. Anthemius' reign was not completely futile because it left us with a very important piece of evidence related to what the fall of the Roman Empire was like.

SVANTE FISCHER
Department of Archaeology and Ancient History
Uppsala University
Box 626
SE-751 26 Uppsala
svante.fischer@arkeologi.uu.se

Abbreviations

Burgess *RIC X* = R.W. Burgess' website: 'Towards a revision and new edition of *RIC X: The Western gold, 425–476*', <http://aix1.uottawa.ca/~rburgess/>

CIL VI = *Corpus Inscriptionum Latinarum. Inscriptiones urbis Romae Latinae*. Collegerunt G. Henzen, I.B. De Rossi, E. Bormann, Chr. Huelsen, M. Bang, Berlin, 1876–.

Bibliography

Anderson, W.B., trans. 1936–1965. *Sidonius. Poems and letters*, 2 vols., Cambridge, MA.

Arcangeli, L., G. Barbieri, M.A. Turchetti Pitigliano 2012. *Il tesoro ritrovato. Sovana: la sezione archeologica nella Chiesa di San Mamiliano*, Grosseto.

Arslan, E.A. 2009. 'L'oro rifiutato: confini e dogane nell'alto medioevo', in *Valori e disvalori simbolici delle monete. I Trenta denari di Giuda* (Monete, 3), ed. L. Travaini, Roma, 119–144.

Arslan, E.A. 2007. 'Il gruzzolo di monete d'oro', in *Il tesoro svelato. Storie dimenticate e rinvenimenti straordinari riscrivono la storia di Noli antica. Guida all'esposizione, Noli, 7 luglio–7 ottobre 2007*, ed. A. Frondoni, Genova, 57–62.

Augenti, A. 1996. *Il Palatino nell'Medioevo. Archeologia e topografia (secoli VI–XIII)*, Roma.

Augenti, A. 1999. 'Il potere e la memoria. Il Palatino tra IV e VIII secolo', *MÉFRM* 111, 197–207.

Bagnall, R.S., A.D.E. Cameron, S.R. Schwartz, K.A. Worp 1987. *Consuls of the Later Roman empire (CLRE)*, Atlanta.

Barbieri, G. 2005 (pr. 2006). 'Sorano (GR). Frazione Sovana: ritrovamento di un tesoretto monetario tardo-antico nella chiesa di San Mamiliano', *Notiziario della Soprintendenza per i Beni Archeologici della Toscana* 1, Firenze, 316–317.

Biró Sey, K. 1976. 'A Szikáncsi V. századi solidus lelet', *Nu-mizmatikai közlöny* 74/75, 7–19.

Bland, R. & X. Loriot 2010. *Roman and Early Byzantine gold coins found in Britain and Ireland with an appendix of new finds from Gaul* (Royal Numismatic Society Special Publication, 46), London.

⁶³ Stathakopolous 2004.

- Bolin, S. 1926. *Fynden av romerska mynt i det fria Germanien*, Lund.
- Boni, G. 1900. *Aedes Vestae*, Roma.
- Brambilla, C. 1870. *Altre annotazioni numismatiche*, Pavia.
- Callu, J.-P. & J.N. Barrandon 1987. 'Note sur les sous gaulois au Ve s. de notre ère', in *Studi per Laura Breglia II. Numismatica Romana, medioevale e moderna* (Bollettino di numismatica, suppl. 4), 197–204.
- Cantarelli, L. 1896. *Annali d'Italia, dalla morte di Valentini-ano III alla deposizione di Romolo Augustolo (anni 455–476)*, Roma.
- Carandini, A. 2004. *Palatino, Velia e Sacra Via. Paesaggi urbani attraverso il tempo* (Workshop di archeologia classica. Quaderni, 1), Roma.
- Carettoni, G. 1985. 'Casa delle Vestali (Atrium Vestae). Note topografiche', *Bollettino di numismatica* 4, 45–46.
- Chiaravalle, M. 1994. *Il ripostiglio di Monasterolo Brembio (Milano), 1929* (RMIDoc), Milano.
- Ciołek, R. 2001. *Katalog znalezisk monet rzymskich na Pomorzu* (Światowit Supplement Series A: Antiquity, 6), Warsaw.
- Ciołek, R. 2007. *Die Fundmünzen der Römischen Zeit in Polen, Pommern* (Collection Moneta, 67), Wetteren.
- Ciołek, R. 2009. 'Der Zufluss von Solidi in die südlichen Ostseegebiete', in *Woloszyn 2009*, 217–231.
- Cook, G.M., trans. 1942. *The life of Saint Epiphanius by Ennodius*, Washington.
- Dalton, O.M., trans. 1915. *The Letters of Sidonius*, 2 vols., Oxford.
- Dennison, W. 1918. *A gold treasure of the Late Roman period*, New York.
- Derks, T. 2006. 'Hoofdstad van de laatste keizers. Keizerlijke residenties in laat-klassiek Rome', *Tijdschrift voor Mediterrane Archeologie* 35, 38–43.
- Droberjar, E. 2008. 'Thüringische und langobardische Funde und Befunde in Böhmen. Zum Problem der späten Phasen der Völkerwanderungszeit', in *Kulturwandel in Mitteleuropa. Langobarden – Awaren – Slawen. Akten der Internationalen Tagung in Bonn vom 25. bis 28. Februar 2008* (Kolloquien zur Vor- und Frühgeschichte, 11), eds. J. Bemmann & M. Schmauder, Bonn, 229–248.
- Ellminger, F. et al. 2000. 'Wandel von Landschaft und Siedlungsweise im Bodenseeraum', *Denkmalpflege in Baden-Württemberg* 29:1, 11–20.
- Fagerlie, J.M. 1967. *Late Roman and Byzantine solidi found in Sweden and Denmark* (Numismatic notes and monographs, 157), New York.
- Filippi, D. 2001. 'La Casa delle Vestali', in *Roma dall'antichità al medioevo. Archeologia e Storia nel Museo Nazionale Romano Crypta Balbi*, eds. M.S. Arena et al., Roma, 196–201.
- Fischer, S. 2008. 'The Udovice solidus pendants: late 5th century evidence of South Scandinavian mercenaries in the Balkans', *Fornvännen* 103, 81–88.
- Fischer, S., N.L. Wicker & H. Victor, eds. 2009. *Climate and coinage. Social crisis and political conflict. 2nd International LEO Conference (LEO II), Uppsala University, November 5th–6th 2009*, Uppsala.
- Fischer, S. 2011. 'Forskningsprojektet LEO – en presentation', in *Makt, kult och plats: Två seminarier arrangerade av Stockholms läns museum under 2009 och 2010*, eds. P. Bratt & R. Grönwall, Stockholm.
- Fischer, S., H. Lejdegård & H. Victor 2010. 'The fall and decline of the Roman urban mind', in *The urban mind: Cultural and environmental dynamics* (Studies in Global Archaeology, 15), eds. P. Sinclair, G. Nordquist, F. Herschend & C. Isendahl, Uppsala, 277–294.
- Fischer, S. & H. Victor 2011. 'New horizons for Helgö', in *Excavations on Helgö 18. Conclusions and new aspects*, eds. B. Arrhenius & U. O'Meadhra, Stockholm, 79–92.
- Fischer, S., F. López Sánchez & H. Victor 2011. 'The 5th century hoard of Theodosian solidi from Stora Brunneby, Öland, Sweden. A result from the LEO project', *Fornvännen* 106, 189–204.
- Fischer, S., J. Soulat & H. Victor 2009. 'Two papers on chamber graves', in *Glaube, Kult und Herrschaft. Phänomene des Religiösen im 1. Jahrtausend n. Chr. in Mittel- und Nordeuropa. Akten des 59. Internationalen Sachsensymposiums und der Grundprobleme der frühgeschichtlichen Entwicklung im Mitteldonaunraum*, eds. U. von Freedon, H. Friesinger & E. Wamers, Bonn, 185–202.
- Frye, D. 1992. 'Aegidius, Childeric, Odovacer and Paul', *Nottingham Medieval Studies* 36, 1–14.

- Gasperetti, M. 2012. 'Un museo per il tesoro del Conte di Montecristo', *Corriere della Sera*, 21 July 2012.
- Gillett, A. 2001. 'Rome, Ravenna and the last western emperors', *PBSR* 69, 131–167.
- Grierson, P. & M. Mays 1992. *Catalogue of Late Roman coins in the Dumbarton Oaks Collection and in the Whittemore Collection. From Arcadius and Honorius to the accession of Anastasius*, Washington.
- Guest, P. 2008. 'Roman gold and Hun kings: the use and hoarding of solidi in the late fourth and fifth centuries', in *Roman coins outside the Empire. Ways and phases, contexts and functions* (Collection Moneta, 82), eds. A. Bursche et al., Wetteren, 295–307.
- Günther, R. 1982. 'Apollinaris Sidonius. Eine Untersuchung seiner drei Kaiserpanegyriken', in *Romanitas–Christianitas. Untersuchungen zur Geschichte und Literatur der römischen Kaiserzeit. Johannes Straub zum 70. Geburtstag am 18. Oktober 1982 gewidmet*, ed. G. Wirth, Berlin, 654–660.
- Herschend, F. 1980. *Myntat och omyntat guld: två studier i öländska guldfynd*, Uppsala.
- Herschend, F. 1983. 'Solidusvikt', *Numismatiska meddelanden* 34, Stockholm, 49–74.
- Herschend, F. 1991a. 'A case-study in metrology. The Szikáncs hoard', *Tor. Tidskrift för nordisk fornkunskap* 23, 85–104.
- Herschend, F. 1991b. 'Om öländsk metallekonomi i första hälften av första årtusendet e.Kr.', in *Samfundsorganisation og regional variation. Norden i Romersk Jernalder og Folkevandringstid*, eds. C. Fabeck & J. Ringtved, Aarhus, 33–46.
- Hildebrand, H. 1882. 'Solidus-importen till Sverige under den tidigare järnåldern', in H. Hildebrand, *Från äldre tider: kulturvetenskapliga och historiska studier*, Stockholm.
- Horsnæs, H. 2001. 'Et halssmykke fra Bornholm', *Nordisk numismatisk unions medlemsblad* 5, 95–98.
- Horsnæs, H. 2002. 'New gold hoards from Bornholm with rare types of Valentinian III *solidi*', *Revue numismatique* 158: 6, 131–138.
- Horsnæs, H. 2009. 'Late Roman and Byzantine coins found in Denmark', in Wołoszyn 2009, 1–40.
- Horsnæs, H. 2013. *Crossing boundaries. An analysis of Roman coins in Danish contexts 2. Finds from Bornholm* (Publications of the National Museum Studies in Archaeology & History), København.
- Iluk, J. 2007. *Aspects économiques et politiques de la circulation de l'or au bas-empire* (Moneta, 64), Wetteren.
- Hodgkin, T. 1892. *Italy and her invaders*, vol. 2, Oxford.
- Hossner, K. 1900. *Die letzten Kaiser des römischen Abendlandes: Anthemius, Olybrius, Glycerius, Julius Nepos und Romulus Augustulus*, Bielitz.
- Kent, J.P.C. 1994. *RIC X. The divided Empire and the fall of the Western parts 395–491 A.D.*, London.
- Kolníková, E. 1968. 'Nález neskororímských solidov v Bíni, okres Nové Zámky', *Numismatický sborník* 10, 5–50.
- Kolníková, E. & K. Pieta 2009. 'Spätromische und völkerwanderungszeitliche Münzhorte und andere Münzfunde im nördlichen Karpatenbecken', in Wołoszyn 2009, 117–132.
- Kraus, F.F. 1928. *Die Münzen Odovacars und des Ostgotenreiches in Italien*, Halle an der Saale.
- Kromann, A. 1983–1984. 'Recent Roman coin finds from Denmark. Supplement to Breitenstein and Billing', *Nordisk Numismatisk Årsskrift*, 59–122.
- Kyhberg, O. 1986. 'Late Roman and Byzantine solidi. An archaeological analysis of coins and hoards, in *Excavations at Helgö X. Coins, iron and gold*, ed. A. Lundström & H. Clarke, Stockholm.
- Kunisz, A. 1973. *Katalog skarbow monet rzymskich odkrytych na ziemiach polskich* (Materiały do prehistorii ziem polskich, 5), Warsaw.
- Lacam, G. 1986. *Ricimer, Léon et Anthemius: le monnayage de Ricimer*, Nice.
- Lafaurie, J. 1958. 'Le trésor de Chécy (Loiret)', in *Trésors monétaires et plaques-boucles de la Gaule romaine. Bavai, Montbouy, Chécy* (Gallia. Suppl., 16), 273–334.
- Loyen, A. 1942. *Recherches historiques sur les panégyriques de Sidoine Apollinaire*, Paris.
- MacGeorge, P. 2002. *Late Roman warlords*, Oxford.
- Manganaro, G. 1958–1959. 'Il "Contorniato" Erculeo di Anthemio', *AIIN* 5–6, 73–77.
- Martindale, J.R., ed. 1980. *The prosopography of the Later Roman Empire II. A.D. 395–527*, Cambridge.

- Mathisen, R.W. 1991. 'Leo, Anthemius, Zeno, and extraordinary senatorial status in the late fifth century,' *Byzantinische Forschungen* 17, 191–222.
- Mirnik, I. 1981. *Coin hoards in Yugoslavia* (BAR-IS, 95), Oxford.
- Mosser, S.M. 1935. *A bibliography of Byzantine coin hoards* (= *Numismatic notes and monographs* 67), New York.
- Panvini Rosati, F. 1985. 'Osservazioni sulla circolazione in Italia nel V secolo d.C. di monete d'oro romane,' *Bollettino di Numismatica* 4, 7–14.
- Prohászka, P. 2009. 'Ost- und weströmische Goldmünzen des 5. Jahrhunderts im Karpatenbecken,' in Wołoszyn 2009, 83–116.
- Reinert, F. 2008. *Moselgold: der römische Schatz von Machtum: ein kaiserliches Geschenk*, Luxembourg.
- Sivan, H.S. 1989. 'Sidonius Apollinaris, Theodoric II, and Gothic-Roman politics from Avitus to Anthemius,' *Hermes* 117, 85–94.
- Stathakopoulos, D.Ch. 2004. *Famine and pestilence in the Late Roman and Early Byzantine empire: A systematic survey of subsistence crises and epidemics* (Birmingham Byzantine and Ottoman Studies, 9), Birmingham.
- Tomei, M.A. 1998. *The Palatine*, Roma.
- Trivero Rivera, A. 2011. 'Antemio: l'ultimo tentativo per salvare l'Impero d'Occidente,' *Rivista di Monete antiche* 56, 11–26.
- Ulrich-Bansa, O. 1949. *Moneta Mediolanensis (352–498)*, Venezia.
- Ungaro, L. 1985. 'Il ripostiglio della Casa delle Vestali, Roma 1899,' *Bollettino di numismatica* 4, 47–160.
- Van Deman, E.B. 1909. *The Atrium Vestae*, Roma.
- Vassili, L. 1937. 'Note di storia imperiale: I. L'imperatore Anicio Olibrio; II. Motivi dinastici nella nomina imperiale di Antemio,' *Rivista di Filologia e di Istruzione Classica* 65, 160–168.
- Viertler, H. 2002. *Geschichte der Grundherrschaft Velden 1. Archäologisch und geschichtlich bedeutsame Funde im Gebiet der Großgemeinde Velden am Wörther See, Velden am Wörthersee*.
- Werner, J. 1949. 'Zu den auf Öland och Gotland gefundenen byzantinischen Goldmünzen,' *Forvännan* 1949:4–5, 257–286.
- Westermarck, U. 1980. 'Fynd av äldre romerska guldmynt i Kungl. Myntkabinettets samling,' *Nordisk numismatisk unions medlemsblad*, 99–104.
- Westermarck, U. 1983. 'Solidi found in Sweden and Denmark after 1967,' *Numismatiska meddelanden* 33, 29–40.
- Wołoszyn, M., ed. 2009. *Byzantine coins in Central Europe between the 5th and 10th century. Proceedings from the Conference Organised by Polish Academy of Arts and Sciences and Institute of Archeology University of Rzeszów under the Patronage of Union Académique International (Programme no. 57 Moravia Magna), Kraków, 23–26 IV 2007*, Kraków.

