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Front cover: Sirinos/Pyxoes, incuse stater c540-510BC (not to scale). See article "An incuse stater from the series 'Sirinos/Pyxoes' "

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The Value of Money: Coinage and Diocletian's Price Edict

Howard Posner

Abstract

Diocletian's price edict of 301 CE, the Edictum Diocletiani et Collegarum de Pretiis Rerum Venalium, listed maximum prices for over 1200 consumer items. The prices in the edict were expressed as denarii, although the denarius coin had not been commonly struck for many years. Most of the coins actually used to pay for the goods were the product of reforms by Diocletian in c. 294 CE. These were the gold aureus, silver argenteus, billon nummus, and two lighter copper coins. The earlier billon antoninianus also remained in mass circulation, although it was no longer struck. The value of these coins was not stated on them, and their purchasing power in price edict denarii could be varied by the state. Their relative values in late 301 CE when the edict was published are examined in this paper. Three criteria are used: the intrinsic bullion value of the coins, epigraphic evidence, and the internal pricing structure of the edict. Values of 4 denarii for the old antoninianus and the new copper radiate, 25 denarii for the nummus, 100 denarii for the argenteus, and 2000 denarii for the aureus are suggested. The last of these valuations is higher than any that have been previously considered for the aureus.

Keywords

[Diocletian] [price edict] [Roman coins] [argenteus] [nummus] [aureus] [denarius] [radiate] [laureate]

Diocletian's Price Edict of 301 CE was a sophisticated, innovative and doomed attempt to solve Rome's chronic inflation and currency problems.* He had already made

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significant reforms to the currency, taxation system and Civil Service.¹ The edict is an important source of micro-economic data from the late Roman period for historians and numismatists. It set maximum allowed sale prices for over 1200 items, from common foods to exotic animals. Many thousands of the coins used to pay for these goods still exist, but the values attributed to some of them have never been conclusively established. This article is a contribution to that debate. It suggests a value of 2000 *denarii* for the *aureus*, at least 500 *denarii* higher than is usually argued for, 100 for the *argenteus*, 25 for the 10 gram billon laureate *nummus*, 4 for the billon radiate *antoniniani* remaining in circulation and for the new copper radiates, and 1 or 2 for the new copper laureates. The arguments are based on forensic evidence from the coins concerning their intrinsic bullion value, epigraphic material, and the pricing structure of the edict.

Diocletian became Emperor in 284 CE, after half a century of political and economic chaos. The Emperor Aurelian had already made significant fiscal reforms a decade earlier, introducing an improved and standardised billon coin with a guaranteed 5% silver content weighing about four grams. The obverse always showed the Emperor wearing a radiate crown (traditionally the symbol for a double value coin), the reverse usually the mark XX.I or XXI (KA on coins using Greek).² This coin was used by Aurelian's successors and, initially, by Diocletian.³ The coin is called an *antoninianus* today. The contemporary name for it is unknown.

Aurelian's reforms did not prove successful in stabilising the currency, and early in his reign Diocletian increased the weight of the gold *aureus*, issuing it at sixty rather than seventy to the pound. In 293 CE he made more radical changes. He had just appointed Constantius and Galerius as his two junior Caesars, creating his four Emperor tetrarchy, and now he unified and standardised the coinage, introducing the two new major coins that would be used for the rest of his reign. The first was a billon coin struck at thirty-two to the Roman pound, weighing roughly ten grams. The obverse had an image of the Emperor wearing a laurel wreath, the reverse usually an image of Genius holding a *patera* and *cornucopiae*, with the legend *GENIO POPULI ROMANI*.⁴ The Roman name for the coin is unknown. It was called a *follis* in the modern literature until the 1980s, but the term preferred now is *nummus*, which means coin or disc.⁵ Diocletian also struck a nearly pure silver coin called an *argenteus* at ninety-six to the pound, weighing just over three grams. He also issued two other low denomination copper coins in smaller quantities, containing no silver. One weighed about 3 grams, with a radiate imperial

1 Williams 1997, 118-120.

2 Haklai-Rotenberg 2011, 16-18.

3 Williams 1997, 116-117; Hendy 1985, 455.

4 RIC volume VI *nummi* all have laureate obverses, indicating they are not double denominations, and most, but not all have the *Genio Populi* legend.

5 Abdy 2012, 586-588.

portrait, intended as a replacement for the old radiate billon antoninianus although millions of the old coins remained in circulation for many years. It could perhaps be called a *neoantoninianus*.⁶ The other, showing a laureate head, weighed about 1.3 grams.

The four new coins, along with his existing heavier *aureus* and the old radiate *antoninianus* gave Diocletian six denominations. His three lower value coins were the old *antoninianus*, still in mass circulation although no new ones were struck after 294 CE, and his new radiate and laureate copper fractional coins, which seem to have been struck in comparatively small quantities. Diocletian's three higher value coins, the core of his monetary system, were his new billon laureate *nummus*, his new silver *argenteus* and his heavier gold *aureus*.⁷

Diocletian's fiscal innovations had a political as well as an economic purpose. He rearranged the provincial taxation base into dioceses and took far greater control over the Imperial mints than previously. Roman coins issued from all mints in the Empire were now standardised and used to promote Diocletian's concept of both fiscal and political unity.

Each mint produced Diocletian's new coins with the same obverse portraits, the same reverse designs and legends, and the same mint marking system. They were also of the same or similar weight, size and metal composition. The coins were struck in the name of all four tetrarchs, regardless of whose control a particular mint was under, and these rules applied to all mints. The regional and individual fluctuations that had developed during the chaos of the late third century were no longer to be tolerated.⁸ The four tetrarchs were the limbs of a single organism running a universally applied political and economic system.

These were the coins issued to pay for the goods listed in the price edict, another attempt at standardisation throughout the Empire. The edict listed the maximum price allowed for over 1200 products, from 2 *denarii* for a *sextarius* of Egyptian beer to 150,000 *denarii* for a pound of dark purple silk.⁹ Capital punishment was mandated for those who ignored or evaded it. Carved in stone in the market places of the Eastern Empire, fragments of the edict still survive in over forty locations, and it is likely that more fragments will be found.

Everything in the price edict was tarified in *denarii*. The novel use of a permanently fixed price suggests the edict was using an artificial currency that could be regulated by

6 Callu 1969, 369.

7 Hendy 1985, 449-450.

8 Elliott 2014, 145-148.

9 Giacchero 1974, 140, 183.

altering the exchange rate with the real coinage to take account of inflation and other fiscal issues.¹⁰ This innovation enabled Diocletian to exercise greater control over the nominal value of his coins while appearing to keep prices stable, and he used it to re-value the *nummus* and *argenteus* in 301 CE, just before he published the Price Edict.¹¹ Coin values did not remain constant. Those suggested in this article, if accepted, are not valid beyond the year or two immediately following publication of the edict in late 301 CE.¹²

The prologue to the edict states that the prices are maximums, and less could be charged when costs were low. However in the Phrygia/Caria fragments there is no prologue, and a postscript was added by the local Governor, Fulvius Asticus. It mandated the edict prices as fixed and to be adhered to at all times.¹³

Diocletian's economic and military reforms enabled him to stabilise the Empire, but his price edict never really worked.¹⁴ One problem was that the maximum prices listed took no account of seasonality or locality. Within a decade the edict was universally discredited and no longer being used, if the Christian polemicists of the fourth century are to be believed.¹⁵ Their testimony should be treated with caution, as they hated Diocletian for his persecution of their co-religionists.

The prologue to the edict suggests that the primary target was probably compulsory purchases for the army. The later Byzantine author John Malalas claimed the edict was intended to protect traders from intimidation by the commissary but this is unlikely.¹⁶ Diocletian may have been unhappy with profiteering generally, but it is more likely that he took action to check the drain on his treasury when purchasing military supplies. The prologue to the edict complained that ‘... *the entire contributions of the whole world for maintaining the armies accrue to the detestable gains of plunderers* ...’.¹⁷ There is another indicator that the edict may not have been aimed at civilian retail trade. All the bulk

10 Abbreviations for *denarii* are used in the edict, and the term *denarii communes* has been used in some modern sources as the name of the price edict's artificial unit of currency. There are no ancient sources that use the term. It was used as early as 1919 by Mitchell but appears to be a comparatively recent invention, and I use the term *denarii* in this article. The *denarii communes* anomaly was pointed out to me by Professor John Melville-Jones in private correspondence.

11 Erim, Reynolds and Crawford 1971, 175-6. The inscription they publish appears to be part of an Imperial letter, ordering the *Fiscus* (treasury) to now accept *pecunia* (bronze or billon money) at *geminata potentia* (doubled value).

12 Corcoran 1996, 200-206.

13 Crawford 2002, 154.

14 Mitchell 1947, 3-4.

15 Williams 1997, 132; West 1951, 293.

16 Crawford 2002, p 154.

17 Giacchero 1974, 136. Prologue translation: Kent, 1920, 46.

grains and flours have prices listed, but not their end product, bread, sold as a cheap staple in almost every marketplace.¹⁸

The exact values of the coins used to pay for these products have remained elusive to numismatists and historians. An early attempt to estimate them was made by Jones. He suggested 25 *denarii* for the *nummus* and 5 for the billon radiate.¹⁹ His analysis was based on 4th century mosaics showing bags of coins marked at 12,500 *denarii*, and a papyrus recording a contemporary coin devaluation.²⁰ Sutherland suggested 5 *denarii* for the *nummus*, and West 4 *denarii* for the radiate.²¹ All these early estimates were made without knowledge of the fragments discovered in Aphrodisias in 1970 and Aezani in 1971. These contained new epigraphic evidence for the *argenteus* and *nummus* values and gave edict bullion prices for the precious metals. The text of the new fragments was published by Erim, Reynolds and Crawford in 1971.²² They reconsidered coin values in the light of the new information. Since then so have the historians and numismatologists Cope, Harl, Hendy and Corcoran. The billon radiate has been variously valued at 2 1/2, 4 and 5 *denarii*.²³ The *nummus* estimate ranges from 12 1/2 through 20 to 25 *denarii*,²⁴ and the *aureus* from 1000 to 1500 *denarii*.²⁵ Most scholars now agree that the *argenteus* was worth 100 *denarii*. There was a doubling of some coin values in September 301 CE, discussed in more detail below. This paper supports values for November/December 301 CE of 2 *denarii* for the new copper laureate coin, 4 *denarii* for the new copper radiate coin and also the old billon *antoninianus*, twenty five *denarii* for the *nummus*, 100 *denarii* for the *argenteus*, and 2000 *denarii* for the *aureus*. Three criteria are considered:

- 1) the intrinsic bullion value of the coins,
- 2) epigraphic evidence from the fragments discovered in 1970 and 1971, and
- 3) the internal pricing structure of the edict.

1) Bullion value.

Mints rarely strike coins that cost more to produce than their face value. The Aezani fragments discovered in 1970 give for the first time the edict bullion prices for silver

18 Matthews 2006, 204-208.

19 Jones 1959, 34-38.

20 Gentili 1956, plate 41. P. Ryl Gr. 4 607.

21 Sutherland 1961, 96; West 1951, 293.

22 Erim, Reynolds & Crawford, 1971, 177.

23 Harl 1996, 151 (2 ½ *denarii*); Cope 1977, 226 (4 *denarii*); Hendy 1985, pp 459-460 (4 *denarii*); Erim, Reynolds and Crawford 1971, 176-177 (5 *denarii*).

24 Harl 1985, 264 (12 ½ *denarii*); Cope 1977, 225-226 (20 *denarii*); Erim, Reynolds and Crawford 1971, 176-177 (20 *denarii*); Hendy 1985, 459 (25 *denarii*).

25 Corcoran 1996, 214-225 (1200 *denarii*); Harl 1985, 264 (1200 *denarii*); Cope 1977, 225 (1500 *denarii*).

(6000 *denarii* per pound) and gold (72,000 *denarii* per pound). This gives a ratio between silver and gold bullion of 12:1. Bullion prices for copper were also listed, in three different grades between 50 and 75 *denarii* per pound.²⁶ The term used for all copper grades in Latin was *aeramentum*, meaning copper or bronze. The Greek word used for the metal is *chalkos*, which has the same alternate meanings. Neither of these terms enable the type or source of copper or bronze to be identified.²⁷ Tin and lead are not priced separately in the Price Edict, and it is possible that some of the copper prices are for a bronze alloy.

Thirty-nine tetrarchic *nummi* were analysed in 1968 for their metal content by Cope.²⁸ The coins were destroyed by the gravimetric chemical analysis used, which involved reducing the alloy to a chemical slurry and measuring the elements precipitated from it. Cope's analysis showed a silver content between 1.265% and 3.84%, with an average of 2.9%. The balance was bronze, with a copper content between 81.29% and 96.8%. These percentages are broadly supported by later non-destructive surface analysis.²⁹ However, Butcher and Ponting have demonstrated that surface analysis should be treated with caution due to metal migration and oxidation, and this is particularly true for a debased billon coinage where the surface composition is deliberately different from the core.³⁰ Cope's sample showed a wide variation in the silver content of the coins, although it was always under 4%. The percentages, while broadly useful, should not be treated as exact figures. The coins were struck to appear silvered on the exterior and some surface metal may have been lost to wear or cleaning over time.

The edict bullion value in 301 CE of the silver in the *nummi* Cope analysed varied from 2.4 *denarii* to 7.2 *denarii* per coin, with an average of 5.5 *denarii*. The bullion value of the copper or bronze was between 1.45 and 2.23 *denarii* per coin, depending on the grade used. The total bullion value of each coin ranged from 3.85 *denarii* to 9.43 *denarii*, with an average 7.34 *denarii*. The *nummus* had to be tariffed above 8 *denarii* to be worth striking, and had to have a sufficiently high mark up above that for the variations in silver content not to seriously affect the relative profitability of the mint.

The pre-reform radiate weighed approximately 4 grams, and was a billon coin with a silver content of approximately 3%, giving a bullion value of roughly 2.3 *denarii* each. It could not have been tariffed at less than 3 *denarii*. The post-reform radiate was a copper coin with no silver content, weighing between 3 and 4 grams, and a bullion value of less than half a *denarius*. It could have been tariffed at 2 *denarii* or even as low as 1

26 Giacchero 1974, 206-208 (gold); 68 (silver); 168 (copper/bronze).

27 Doyle 1976, 96-97.

28 Cope, 1968, 132.

29 Walker 1978, Part 3.

30 Butcher & Ponting 1998, 310-315.

denarius, although a radiate obverse usually indicated a double denomination. The few small laureate fractional copper coins that were struck cost even less to strike, and were probably originally intended as single *denarius* coins.

The three and a half gram *argenteus* had a silver content of more than 90%, giving a bullion value between 54 and 58 *denarii*.³¹ The minimum tariff for the *argenteus* has to be more than 60 *denarii*. The *aureus* was a pure gold coin. Officially struck at 60 to the pound,³² most weighed between 5.3 and 5.5 grams, with a bullion value between 1160 and 1200 *denarii*.

The bullion prices also explain the relative rarity of surviving *argentei*. Using the coin values argued for in this article, a mint with 10 grams of silver bullion could strike 3 *argentei*, costing 170 *denarii* and worth 300 *denarii* (100 *denarii* per *argenteus*). Adding 320 grams of copper or bronze to the 10 grams of silver produces 33 *nummi* costing 235 *denarii* and now worth 825 *denarii* (25 *denarii* per *nummus*). The most economically sound use of silver by a mint was to strike *nummi*, not *argentei*.

The entry for gold bullion at 72000 *denarii* per pound in the edict describes it as being ‘*in regulis sive [in] solidis*’, bars or coins.³³ This line has bedevilled attempts to fix the value of the *aureus*, struck at 60 to the pound. It appears to set it at a fixed 1200 *denarii*, the bullion cost of the gold. Hendy suggests that the *aureus* was not a coin in the same way as the other denominations but a gold ingot of 1200 *denarii* fixed value. He could see no other way of accommodating the gold *solidis* bullion valuation in the edict.³⁴ A fixed 1200 *denarii* aureus creates many anomalies. It reduces the bullion silver:gold ratio of 12:1 to less than 7.5:1 when striking *aurei* and *argentei*. A mint striking an *aureus* at 1200 *denarii* will make a loss with each coin as there is no allowance for labour and production costs. A fixed *aureus* used in a monetary system with a floating *argenteus* and *nummus* would create two parallel currencies, only one of them responsive to market forces and capable of adjustment. Were there to be any future inflation, the *aureus* would become progressively devalued compared to the other denominations. The pricing structure of the edict discussed below does not support a 1200 *denarii* aureus as a practical coin. Almost none of the higher prices have been set with that number as a base or multiple.

31 Harl 1996, 149-150.

32 *Ibid*, 148.

33 Crawford and Reynolds 1979, 174. The Lauffer edition of the Price Edict has gold at 50000 per pound and no price for silver, but this is because Lauffer did not have access to the newly discovered Aezani fragments. The 50000 *denarii* gold price was based on a misreading of unclear lettering in the only fragment then available, from Elatense.

34 Hendy 1985, 450-4.

This paper argues that the Roman *aureus* is not the *solidis* the edict is referring to, and rejects the proposition that the *aureus* had a fixed 1200 denarii value. *Solidis* has as a first meaning in the Oxford Latin Dictionary ‘made of the same material throughout.’ This raises the possibility that *solidis* in the edict is not referring to a coin at all, but is another term for gold bullion. A difficulty with this interpretation is that in the single readable Greek fragment of the edict with this line, at Elatense, the term *holokottinois* is used. *Holokottinois*, like *Solidis*, later came to mean gold coins, although neither term was being used at this time to describe Roman *aureii*.³⁵ It appears that coins of some sort were meant. The Emperor Constantine later started using the term *solidus* for his Roman gold coinage, perhaps from as early as 309 CE, but in 301 the Roman gold coin was still an *aureus*, not a *solidus*.³⁶

Many of Rome’s trading partners also issued gold coins. It is possible that the gold *solidis* bullion price in the edict may not be referring to the Roman *aureus* but to other gold coins of all types from elsewhere. This would give a fixed exchange rate for foreign gold coins of unknown provenance but proven metal content, and leave the *aureus* as part of Diocletian’s integrated adjustable coinage.

Whatever *solidis* means in this line, Diocletian’s *aureus* had to be tariffed at a minimum of 1500 *denarii* to be worth striking as a coin, and had to have a floating value to be a working part of Diocletian’s new coinage. A 1200 *denarii* fixed price *aureus* should be rejected. This paper argues for a 2000 *denarii aureus*, higher than anyone has yet suggested. A 2000 *denarii aureus* keeps the 12:1 silver to gold bullion ratio intact. The nominal *denarii* value per gram for a 2000 *denarii aureus* is 370.37, and the bullion cost 218.8 *denarii*. The nominal *denarii* value per gram for the 100 *denarii argenteus* is 30.3 and the bullion cost 18.23 *denarii*. The gross mark up on both coins is 40%. A 2000 *denarii aureus* is also strongly supported by analysis of the internal pricing structure of the edict, discussed below.

2) Epigraphic evidence.

The fragments uncovered in Aphrodisias included a fiscal inscription contemporary with the price edict. Originally thought of be a part of the edict, analysis of the text and the stone it was carved on showed it to be a letter from a provincial governor concerning debt repayment after the base metal coinage (*pecunia*) had been doubled in value (*geminata potentia*). The fiscal inscription can be dated to August 301 CE by the names of the Consuls for that year in the inscription, and by the statement that it would come into effect on September 1st. It has a passage that reads

35 Professor Melville-Jones has pointed out in private correspondence that this line in the edict at Elatense appears to be the first occurrence of the Greek term *holokottinois*, and neither it nor *solidis* were otherwise used to describe Roman gold coins until well into Constantine’s reign, over 20 years later.

36 Abdy 2012, 590-591.

...[*nummus a*]rgenteus centum denariis ...³⁷

There is no known word in Latin apart from *argenteus* that ends *..rgenteus*, giving a reading of 'the argenteus (is worth) 100 denarii..' This is the first primary source naming Diocletian's silver coin as an *argenteus* and very persuasive evidence for a 100 *denarii* value. The fiscal edict also uses the term *bicharacta* for the name of another coin.³⁸ The word means 'double stamped', and the most likely candidate is the coin now called the *nummus*.³⁹

Another fragment of text exposed at Aphrodisias reads

'...ti quinqu[a]e denariorum potentia vige [at or ant]'⁴⁰

An obvious way to fill in the missing first letters is with *vigin..*, making the line read '*..viginti quinquae denariorum..*' and giving a meaning of '*...is/are to flourish at a value of 25 denarii*'. Erim, Reynolds and Crawford acknowledge this and the only candidate for a 25 *denarii* coin is the 10 gram *nummus*.⁴¹ However they reject this reading as there is no already known 25 *denarii* coin, and the value cannot be reconciled with the XX.I markings on some coins. They instead suggest '*sed ut nummi radia...*' for the missing letters. The line then reads 'but a radiate *nummus* is 5 *denarii*', tariffing the radiate copper coin at five *denarii*, rather than the laureate *nummus* at 25 *denarii*.⁴²

There is a lacuna of over 20 spaces immediately before the '*..ti quinquae..*' line, making either interpretation possible. Internal evidence from the price list discussed below strongly suggests that the radiate could not have been tariffed at 5 *denarii*, and supports a 25 *denarii nummus*.

The meaning of the XX.I mark has never been satisfactorily established. Suggestions have included 20 *sestertii* to 1 *antoninianus* or *nummus*, 20 *sestertii* to 5 *denarii*, and 20 parts copper to 1 part silver.⁴³ The mark dated back to Aurelian's reign. Diocletian's *nummi* did not usually carry the mark, but a few Eastern mints used it in around 300 CE for a few *nummi*.⁴⁴ A persuasively argued analysis by Hendy concluded that only the metal content interpretation would have enabled the mark to have been used over

37 Erim, Reynolds and Crawford 1971, 173.

38 Erim, Reynolds and Crawford 1971, 172.

39 Sperber 1991, 62-64; Sperber 1974, 134.

40 Erim, Reynolds and Crawford 1971, 173, line 7.

41 *Ibid*, 75.

42 *Ibid*, 176.

43 Sutherland 1961, 95 (20 *sestertii* to one *antoninianus*); Harl 1985, 267 (20 *sestertii* to 5 *denarii*); Bolin 1958, 302 (20 parts copper to 1 part silver).

44 Harl 1985, 266.

the reigns of Aurelian's successors.⁴⁵ The current silver content of surviving *nummi* is around 3%, but comparatively few coins have been properly analysed and silver may have migrated to the surface and been lost over time. A nominal 5% silver content for the *nummus* is quite possible. That interpretation negates Erim, Reynolds and Crawford's concerns about the XX.I mark precluding a 25 *denarii nummus* reading of '*...ti quinquae denariorum*' in the Aphrodisias fiscal edict. This article suggests that the occasional use of the mark on *nummi* is insufficient reason to discard the 25 *denarii* reading.

The fiscal edict appears to mandate that all new debts incurred after 1 September 301 CE were to be paid using existing currency, but at a doubled face value.⁴⁶ There were precedents for this sort of fiscal manipulation. A papyrus from a few years earlier found in Roman Egypt instructs an employee to buy up all the goods he can 'at any price' as the currency was about to be halved in face value, and another refers to the *nummi* at 12 ½ attic drachmas.⁴⁷ There are contemporary mosaics which show bags of 1000 coins, marked at 12500 *denarii*, which would value them at 12 1/2 *denarii* each.⁴⁸ They offer some limited support for the 25 *denarii* valuation for the re-tariffed *nummus* in the Aphrodisias fiscal edict, based on doubling an existing 12.5 *denarii* face value.

Twelve and a half *denarii* does not seem a rational or useful value for a coin. The use in the '*...ti quinqu[a]e denariorum potentia vigeo.*' line of the verb *vigeo*, 'to flourish and be strong', rather than *valeo*, 'to be worth', suggests the possibility that it was restating an existing 25 *denarii* value, not creating a new one.⁴⁹ The second half of the [*a*]rgenteus line is missing and it is not possible to say whether the 100 *denarii* value, too, is a new one or a restatement of an existing one. That could leave only the lower value new coins with doubled values, re-tariffed from 1 and 2 *denarii* to 2 and 4 respectively. This would have given the ordinary soldiers a boost in purchasing power, kept the radiate obverse as a double denomination, and possibly brought the new copper radiate into line with the existing Aurelianic radiate still in general circulation at 4 *denarii*.

3) Internal evidence from the pricing structure of the edict.

The first person to recognise a pattern in the prices listed in the edict was West. He noted in 1951 how many times goods were priced at four *denarii* (he called them *Denarii*

45 Hendy 1985, 454.

46 Erim, Reynolds and Crawford 1971, 175.

47 *P.Rhyl* 607; *P.Osl* 83.

48 Gentili 1956, 46 (Mosaic No 26).

49 The interpretation of the word *vigeo* in the fiscal inscription, and the consequent insight that it was possible that only the lower denomination coins were revalued was made by Professor Melville-Jones who kindly shared it with me in private correspondence, along with his new translations of *P.Rhyl* 607 and *P.Osl* 83.

Communis), and suggested the probability of a four *denarii* coin.⁵⁰ Since then many more fragments of the edict have been discovered, confirming West's observations. Cope's analysis of over 1200 prices found two thirds of all prices, and more than half of the items priced under thirty *denarii* divisible by four.⁵¹ Cope suggested the most likely coin values were 1 or 2 *denarii* for the copper radiate, 4 *denarii* for the billon radiate, 20 *denarii* for the *nummus*, 100 *denarii* for the *argenteus*, and 1500 *denarii* for the *aureus*. Unaware of the epigraphic evidence in the later fragments, he justified a 100 *denarii argenteus* on the grounds that there were over ninety products priced at 100 or 200 *denarii*. He justified a 20 *denarii nummus* on the basis of 111 price points at 20, 40, 60 or 80 *denarii*.⁵²

Cope's analysis used all the goods in the edict, including such occasional purchases as purple silk and leopards.⁵³ Lower denomination coin values are better assessed against more frequent purchases. Almost all levels of Roman urban society bought food from the *fora* on a near daily basis.⁵⁴ Below is a table of the prices of every food in the edict.

Table 1. Food and drink price points (in denarii) in the edict

PRICE	QTY	PRICE	QTY	PRICE	QTY	PRICE	QTY
2	2	12	16	40	7	125	1
4	70	16	16	50	6	150	5
6	9	20	11	60	8	200	7
8	13	24	9	80	3	250	2
10	5	30	12	100	17	300	1

Out of a total of 220 maximum prices 180 (88%) are divisible by 4. Thirty two percent of all foods are priced at 4 *denarii*, and often numbers of a product are grouped together so as to keep a 4 *denarii* price point (10 leeks, 20 small radishes, 4 eggs).⁵⁵ A 2 *denarii* coin would also fit the above model, but only 2 items are that price, no products are bundled together to create 2 *denarii* price points, and the billon radiate had a bullion value of more than 2 *denarii*.

Cope's argument for a 20 *denarii nummus* is less convincing when food prices are analysed. Fifty-four foods are priced in multiples of 20, but there are over 40 foods that cannot be purchased with only 4 *denarii* and 20 *denarii* coins—price points 6, 10, 30, 50, 125, 150 and 250. A 25 *denarii nummus* is much more practical. Thirty nine foods are

50 West 1951, 293.

51 Cope 1977, 8.

52 *Ibid.*, 12.

53 Giacchero 1974, 183, 210.

54 Holleran 2012, 159-193.

55 Giacchero 1974, 146.

priced in multiples of 25, and every product listed in the edict (apart from those priced at less than 4 *denarii*) can be paid for using a combination of 4 *denarii* and 25 *denarii* coins.

Seventeen foods are marked at 100 *denarii*, more than for any other price other than 4 *denarii*, and 90 other products in the edict are priced at 100 or 200 *denarii*. While the prologue envisaged the possibility of cheaper prices, the maxima appear to have been fixed where possible at easily divisible and usable round numbers. Quantities of goods are often listed as a group so as to keep the 100 *denarii* price point (100 oysters, 2 larger reeds)⁵⁶. There is little doubt that 100 *denarii* was a key price point, and that the *argenteus* was valued at that level.

Food prices are too low to be of much assistance in determining the value of the aureus. More evidence can be found in the higher priced products. Table 2 lists all goods priced at 1200 *denarii* or more.

Table 2. Price points of 1200 denarii or more in the price edict

Price	Qty	Price	Qty								
		2100	1	5000	17	10000	12	23000	2	46000	1
1200	7	2250	10	5250	1	11000	1	25000	4	48000	1
1250	14	2300	1	5500	2	12000	8	30000	3	50000	3
1300	1	2500	18	6000	11	12500	2	31000	1	55000	1
1400	1	2750	2	6500	3	13000	1	32000	3	60000	1
1500	16	3000	17	7000	9	15000	6	34000	1	72000	2
1600	2	3250	1	7500	6	16000	1	36000	4	75000	1
1750	10	3500	9	8000	9	19000	1	40000	2	100000	3
1800	1	4000	14	8500	1	20000	6	44000	1	125000	2
2000	17	4500	8	9000	4	22000	3	45000	1	135000	1
										150000	2

There are 294 products priced at or over 1200 *denarii* and a 1200 *denarii aureus* can only be used to pay for 39 of them (13.27%) without resort to other denominations. A 1500 *denarii aureus* fits sixty four products out of 271 (23.62%). A 2000 *denarii aureus* fits 109 products out of 242 (45.04%), almost twice the percentage of the other suggested values. If half *aurei* are added, the proportion rises to over 62% (compared to 25% and 28% for the 1200 and 1500 valuations). Applying the same criteria to the most expensive items in the edict, the evidence is even more persuasive. Over 70% of the 81 products marked at 10000 *denarii* or more can be purchased using just 2000 *denarii aurei*. If half *aurei* are included, 100% can be purchased without resort to other denominations

⁵⁶ Giacchero 1974, 144, 165.

(compared to 37% and 36% for the 1200 and 1500 valuations). However the half *aureus* was a comparatively rare coin, and its contribution should not be overrated.

This list also supports the argument for a 25 *denarii nummus*. There are 38 high priced products that do not end in a multiple of 100. All end in 50 (1250, 1750, 2250, 2750 and 5250), practical numbers if there is a 25 *denarii nummus*, but very inconvenient if it has a value of 15 or 20 *denarii*.

Conclusion.

Taking each coin in turn, the proposed valuation and supporting evidence is as follows:

1. *The pre-reform billon radiate*

Four *denarii*. The bullion value was around 2 *denarii*. There is persuasive evidence from the pricing structure of the edict that there had to be a common 4 *denarii* coin. The 10 gram *nummus* cannot be the 4 *denarii* coin as it cost twice that to strike, and the post-reform radiate had a minimal bullion value and was not struck in great quantities.

2. *The post-reform fractional copper laureate.*

One *denarius*. This is a comparatively rare coin. The bullion cost is minimal and it could have been tariffed at 1 or 2 *denarii*. The existence of a new radiate (double denomination) coin of similar intrinsic value makes it more likely that it was a 1 *denarius* coin. There is also the possibility that it was retariffed in mid-301 CE to 2 *denarii*.

3. *The post-reform copper radiate.*

Two *denarii*. The post-reform copper radiate had a bullion value of less than half a *denarii*. There had to be a need for a fractional coin of very low denomination, if only to give accurate change. The lists for cheaper priced articles in the edict generally avoid 1, 3 and 5 *denarii* price points, and there was a laureate coin of similar intrinsic value. This suggests a 2 *denarii* valuation for this coin, further supported by its radiate (double denomination) obverse portrait. There is also the possibility that it was retariffed in mid-301 CE to 4 *denarii*.

4. *The post-reform billon nummus.*

Twenty five *denarii*. The coin had an average bullion value of around 7 *denarii*, with a 2 *denarii* spread around that mean. The coin had to have a high enough mark up for the bullion difference not to seriously affect profitability. Epigraphic evidence supports a 25 *denarii* valuation. There are late third century illustrations of bags of 1000 *nummi* marked at 12.5 *denarii* each, and in mid-301 CE the *nummi* may have been doubled in face value. Internal pricing evidence from the edict suggests a value of 25 rather than 20 *denarii*, especially if a 4 *denarii* coin is accepted.

5. *The post-reform argenteus.*

One hundred *denarii*. The bullion value of the *argenteus* was more than 50 *denarii*. Epigraphic evidence both names the coin and gives it a 100 *denarii* value. The edict has more products priced at 100 *denarii* and 200 *denarii* than at any other price points.

6. *The gold aureus.*

Two thousand *denarii*. The bullion value was 1200 *denarii*. A fixed 1200 *denarii* value removes the aureus from the adjustable coinage system, and is unprofitable to strike. The internal pricing structure of the edict is more amenable to a 2000 *denarii aureus* than a 1200 or 1500 *denarii* one. A 2000 *denarii aureus* and a 100 *denarii argenteus* keep the silver to gold ratio at 12:1. The only persuasive argument in favour of a 1200 *denarii aureus* is the term *solidis*, an unusual word for this time, used in the gold bullion price line of the edict.

Coins in circulation 301 CE



Pre-reform billon antoninianus of Maximian. Tripolis mint 286-90 CE. RIC V Pt II 624 (Picture courtesy of CNG. Auction 84, lot 1421)



Post-reform billon *nummus* of Diocletian. Nicomedia mint 294-5 CE. RIC VI 27a (photo courtesy CNG. Auction 331 lot 332)



Laureate fractional copper coin of Diocletian. Rome mint 294-295 CE. RIC VI 48. (Courtesy of CNG. Auction 90, L1699).



Argenteus of Diocletian. Aquileia mint 300 CE. RIC VI 16a (Photo courtesy of CNG. Auction 93 lot 1237).



Aureus of Diocletian. Antioch mint 296 CE. RIC VI 22 (Courtesy of CNG. Auction 82, L1062).

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There is no single complete surviving copy of the edict. All the published texts are compilations of the various fragments. The first attempt to translate the edict into English was made by William Leake in 1826, the latest in 1940, by Elsa Graser. The prologue was translated by Roland Kent in the 1920s and some individual fragments have been translated more recently. The most comprehensive lists of fragments have been made by Siegfried Lauffer in 1971, with all the Latin and Greek text, and by Marta Giacchero in 1974, with the Latin and Greek texts updated to include the fragments discovered in 1970 and 1971, and the addition of a translation into Italian. This article uses the Giacchero text for edict products and prices wherever possible, as the Lauffer 1971 edition does not include all the 1970 and 1971 fragments which contain relevant silver, gold and copper prices. Some of the more recently discovered fragments are the subject of more detailed scholarship in articles dedicated to that fragment alone.

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