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Overlooked Evidence for Grain Prices in Antioch, A.D. 333

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In his *Chronographia*, written A.D. 813–15, Theophanes has the following entry on a famine in Antioch in the year A.D. 333:

> μελλούσης τῆς ἑβδόμης ἰνδικτιῶνος ἐπιλαμβάνεσθαι, λιμὸς ἐγένετο ἐν τῇ ἀνατολῇ ἐπικρατήσας σφοδρότερον, ὥστε κώμας κατὰ τὸ αὐτὸ ἐν ὄχλῳ πολλῷ συναγομένας ἐπὶ τῆς χώρας Ἀντιοχέων καὶ τῆς Κύρου ἐπέρχεσθαι κατ᾽ ἀλλήλων καὶ ἁρπάζειν μὲν ὡς ἐν νυκτὶ ταῖς ἐφόδοις, ἔσχατον δὲ ἐν ἡμέρᾳ ἐπεισιέναι εἰς τοὺς σιτοβολῶνας καὶ ἐν ταῖς ἀποθήκαις καὶ πάντα πραιδεύοντας ἁρπάζειν καὶ ἀναχωρεῖν, γενέσθαι δὲ τὸν μόδιον τοῦ σίτου υ᾽ ἀργυρίων. ὁ δὲ μέγας Κωνσταντῖνος σιτομέτριον ταῖς ἐκκλησίαις κατὰ πόλιν ἐχαρίσατο εἰς διατροφὴν διηνεκῶς χήραις καὶ ξενοδοχείοις πένησί τε καὶ τοῖς κληρικοῖς. ἡ δὲ ἐν Ἀντιοχείᾳ ἐκκλησία ἐλάμβανε σίτου μοδίους τρισμυρίους ἑξακισχιλίους. (29. 13–23 [ed. de Boor])

> Just before the start of the seventh indiction, there was a famine in the East of such extreme severity that the people of the villages came together at the same time in a great multitude in the territory of the Antiochenes and of Cyrrhus and assaulted one another; that by night they used violence to steal [food?] and finally by day they attacked the granaries and storehouses, and looted and stole everything before retreating; and that a *modius* of wheat cost 400 *arguria*. Constantine the Great graciously gave a grain ration to the churches in each city for the continual sustenance of widows, hospices, the poor, and clerics. The church in Antioch received 36,000 *modii* of grain.

Theophanes dates this famine just before the seventh indiction, which would indicate the summer of 333, thus confirming the associated regnal year, '28 Constantine'.[1] Jerome, copying the same source used by Theophanes, a continuation of Eusebius of Caesarea's *Chronici canones* that was written in Greek in Antioch in 350, also mentions this famine in his own chronicle, but preserves some additional details apparently omitted by Theophanes: 'Pestilentia et fame innumerabilis multitudo in Syria Ciliciaque perit' (233[e]; dated to 333 as well).[2] To the best of my knowledge no one has ever noticed the price of grain that is preserved in this account. It is the purpose of this short paper to establish what this price actually is and to put it into the context of other near-contemporary famine prices.

At a price of 400 *arguria* per *modius*, an *argurion* cannot be a gold *solidus* or a silver *siliqua* (which were struck at 96 to the pound and were rare in this period), since this would render values of 400 *solidi* per *modius* and 16.7 *solidi* per *modius* (assuming twenty-four *siliquae* to the *solidus*) at a time when normal prices ranged between ten and forty *modii* per *solidus*.[3] The only possible coin left, therefore, is

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[1] Carolus de Boor (ed.), *Theophanis Chronographia*, 1 (Leipzig, 1883; repr. Hildesheim, 1963). See also Cyril Mango and Roger Scott with Geoffrey Greatrex, *The Chronicle of Theophanes Confessor. Byzantine and Near Eastern History, AD 284–813* (Oxford, 1997), pp. 49–50. As can be seen, the authors and I exchanged manuscripts before our respective works were completed. Theophanes follows Eusebius in assigning '1 Constantine' to 306, thus '28 Constantine' is 333.

[2] Rudolf Helm (ed.), *Die Chronik des Hieronymus. Hieronymi Chronicon*[3] (Eusebius Werke 7; Die Griechischen christlichen Schriftsteller der ersten Jahrhunderte; Berlin, 1984 [1956]). For a discussion of this famine, see Glanville Downey, *A History of Antioch in Syria from Seleucus to the Arab Conquest* (Princeton, 1961), pp. 336–7, 353–4. For the common source of Theophanes and Jerome, see my forthcoming book on this source (from which this paper is derived), tentatively entitled, *The* Continuatio Antiochiensis Eusebii: *A Chronicle of Antioch and the Roman Near East in the Reigns of Constantine and Constantius II, AD 325–350* (Historia Einzelschriften).

[3] A. H. M. Jones, *The Later Roman Empire, 284–602. A Social, Economic, and Administrative Survey* (Oxford, 1964; repr. 1986), pp. 445–6 and 1185–6n87; A. H. M. Jones, Inflation under the Roman Empire, in P. A. Brunt (ed.), *The Roman Economy. Studies in Ancient Economic and Administrative History* (Oxford, 1974), pp. 206–7; Daniel Sperber, *Roman*

the small bronze coin of the period, the so-called 'follis', but generally referred to at the time as a 'nummus', struck at about twelve carats (*c*. 2.48 g) with 1.1% silver and the legend GLORIA EXERCITVS with two standards.[4] If in 333 there were approximately 100 *denarii* to the *nummus* and there were approximately 8,281,500 *denarii* (5,521 talents) or more to the pound of gold,[5] the price of wheat during this famine in Antioch was approximately 40,000 *denarii* per *modius* or around three *modii* per *solidus*. I shall assume that this is a *modius castrensis* of twenty-two to twenty-four *sextarii*.

In Egypt, where grain prices were naturally much lower than in Antioch, in 335, 338, and *c*. 338–341, the price was fourteen, twenty-four, and twenty-six talents per *artaba*, that is, roughly 6,300, 10,800, and 11,700 *denarii* per *modius* (*PLond* VI 1914, *POxy* I 85, *SPP* XX 81=*SB* XIV 11593).[6] The first example is still within the period of the 1.1% silver nummus noted above, and thus would render an approximate value of 18.3 *modii* per *solidus*. In the case of *SPP* XX 81 and *POxy* LIV 3773 (*c*.340) we have roughly contemporary prices for both gold and wheat and so we can calculate exactly the number of *modii* per *solidus*. For the former we know that *solidi* sold for 183.3 talents or 275,000 *denarii* each, so we can calculate that the wheat was selling for 23.5 *modii* per *solidus*. In the latter the price for a *solidus* fluctuates over eighteen months between 233$^{1/3}$ and 243$^{1/3}$ talents (350,000 and 360,000 *denarii*) and the price of wheat fluctuates between forty and fifty talents (60,000 and 75,000 *denarii*) per *artaba*. The highest price in any given month is therefore 15.6 *modii* per *solidus* (Phamenoth = 25 Feb. – 26 March) and the lowest is 20.3 *modii* per *solidus* (Thoth = 29 Aug. – 27 Sept.).[7] From these examples above, we thus have a high of around 15.5 and a low of 23.5 *modii* per *solidus* in Egypt in the decade following 333. Bagnall estimates that the average price of wheat in the fourth century was about eight *artabas* per *solidus*, or around 26.7 *modii* per *solidus*.[8] The famine price we have from Antioch in 333 is thus between five and eight and a half times higher than the normal Egyptian prices of a slightly later period.

Palestine, 200–400. Money and Prices (Ramat-Gan, Israel, 1974), pp. 31–3; and Roger S. Bagnall, *Currency and Inflation in Fourth Century Egypt* (*BASP* Suppl., 5; Atlanta, 1985), p. 6. See also below for some other prices from Egypt.

[4] See Bagnall (cit. n. 3), pp. 12–15, 37; Patrick M. Bruun, *Roman Imperial Coinage*, 7 (London, 1966), pp. 8–13, and 693 (Antioch, nos. 85–90); and R. A. G. Carson, P. V. Hill, and J. P. C. Kent, *Late Roman Bronze Coinage, A.D. 324–498* (London, 1978), p. 30, nos. 1356–8, 1361–62 (issues of Antioch).

[5] Bagnall (cit. n. 3), pp. 34, 37, 44–5, based on the bullion value of the coins themselves. There are 1,500 *denarii* to the talent; see Bagnall (cit. n. 3), pp. 16–17. The *denarius*, once the standard silver coin of the Empire, had by 333 long since ceased to exist as an actual coin and was merely a standard unit of account. There are no immediately contemporary prices for gold from the papyri (see Bagnall [cit. n. 3], pp. 37 and 61). Bagnall believes that the inflation of this period was caused solely by government devaluation of the coinage (pp. 53–4, and Roger S. Bagnall, *Egypt in Late Antiquity* [Princeton, 1993], pp. 330–1) and I have followed him in my calculations, but I cannot help but feel that there was further underlying inflation that the government was trying to keep up with or offset, a practice that simply made the overall inflation worse. On this, see Christopher Howgego, *Ancient History from Coins* (London, 1995), pp. 121–35. I believe that in 333 each *solidus* would have been worth more than the theoretical 115,021 *denarii* I have used in my calculations above. This would have the effect of lowering the price of wheat in question. However, for evidence of periods of stability between the government's devaluations, a fact that supports Bagnall's thesis, see Roger S. Bagnall, Fourth-Century Prices: New Evidence and Further Thoughts, *ZPE* 76 (1989), pp. 72–3.

[6] For *SPP* XX 81, see now P. J. Sijpesteijn and K. A. Worp, Fourth Century Accounts from the Hermopolite Nome, *ZPE* 22 (1976), 101–5; for the date, see Jones, Inflation . . . (cit. n. 3), p. 212; Roger S. Bagnall and P. J. Sijpesteijn, Currency in the Fourth Century and the Date of *CPR* V. 26, *ZPE* 24 (1977), 123–4; Bagnall (cit. n. 3), p. 64; and *POxy* LVI (1989), no. 3874, p. 176n32. There are unfortunately no prices closer to 333. Where I have translated Egyptian *artabas* into Roman *modii* I have used the equation of 1 *artaba* = 3.33 *modii xystoi*, the 'shaved' or 'flat' *modius castrensis* of twenty-two *sextarii* or 1.375 regular Italic *modii* of 16 *sextarii* each; on which, see R. P. Duncan-Jones, The Choenix, the Artaba and the Modius, *ZPE* 21 (1976), 44–6, 48–9; idem, The Size of the Modius Castrensis, *ZPE* 21 (1976), 54–7; and idem, Variation in Egyptian Grain Measure, *Chiron* 9 (1979), 370–71, nos. 61–74.

[7] *POxy* LIV (1987), no. 3773, p. 208, omitting doubtful readings.

[8] Bagnall (cit. n. 3), p. 6.

The two uncontroversial famine prices we have from the later fourth century, ten and 16²/₃ *modii* per *solidus*,[9] are from Carthage and Egypt, both central grain-producing areas of the empire, where prices, even in times of shortage, were bound to be lower than those in a densely populated city like Antioch, which could only produce just enough grain for itself locally and where grain prices could therefore always be controlled and manipulated to the advantage of the seller (on which, see below). In times of shortage, extra supplies could only be imported from great distances, thus serving to increase prices again. These prices are between three and five times lower than the famine price in Antioch that I have calculated above.

We also have the comments of Julian concerning the famine in Antioch in 362, where he seems to indicate that prices were normally much higher than the African and Egyptian prices noted above: he gives a price range of five, ten, and fifteen *modii* per *solidus*.[10] Julian says that people would have been content with a price of scarcely five per *solidus* given the famine and the harsh winter; ten is what grain had previously been selling for; and fifteen is what he sold his imported grain for, a figure that he implies was a reasonable summer price. The price of five *modii* per *solidus* is not far from the figure of three I have calculated above.

From the Πάτρια Κωνσταντινουπόλεως we have a reference to a famine in Constantinople in the time of Anastasius that was so severe that grain sold for one *modius* per *solidus*.[11]

From the *Chronicle* of Ps-Joshua the Stylite, preserved in the *Chronicle* of Zuqnin or Ps-Dionysius of Tel-Mahre, we have famine prices from Edessa between the years 500 and 505 (811, 812, 813, and 816 of the Seleucid era).[12] Edessa is about 300 km NE of Antioch, accessible by a northern road that passes through Zeugma/Apamea and by a southern road that passes through Hierapolis. Joshua tells us that in 495 (806 Sel.) the normal price of grain was thirty *modii* per *solidus* (187.28–9). This appears to be extremely cheap in light of the Egyptian prices quoted above, but this fact and the figure in *cab* noted below suggest that these figures are cited in Italic *modii* of sixteen *sextarii* not the *modii xystoi* of twenty-two *sextarii* used in the Egyptian prices above. Conversion renders an equivalent value of 21.8 *modii* per *solidus*, which is in line with the Egyptian prices cited above. Throughout most of the famine the price remained at about four Italic *modii* per *solidus* (195.14–16; 196.5–6, 200.9–10, 227.10–11), though in February (Shebat) of 501 (812 Sel.) it rose to thirteen *cab* per *solidus* or three and a quarter *modii* per *solidus* (199.10), and after the harvests of the years 501, 502, and 505 (812, 813, and 816 Sel.) it dropped to five, twelve, and six *modii* per *solidus* respectively (199.29–30, 200.33–5, 227.12–13). Converting the units of three and a quarter, four, five, six, and twelve Italic *modii* to *modii castrenses* produces values of 2.4, 2.9, 3.6, 4.4, and 8.7 *modii*. Such prices fit in exactly with the Antiochene price I am suggesting for 333.

The problem of high prices in Antioch is probably a result of a number of factors. The first is one of economies of scale, which would naturally result in higher prices in Antioch. Antioch's hinterland could

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[9] Ammianus 28.1.18 and *Life of St Pachomius* 33–4 (J. Bousquet and F. Nau [eds. and trans.], *Histoire de Saint Pacôme*, PO 4 [1907], pp. 456 and 458).

[10] *Misopogon* 369B–C. On which, see Jones, Inflation . . . (cit. n. 3), pp. 206–7; Paul Petit, *Libanius et la vie municipale à Antioche au IVᵉ siècle après J.-C.* (Paris, 1955), pp. 109–18; and John Matthews, *The Roman Empire of Ammianus* (London, 1989), pp. 409–12 and 541n18, who takes Julian's 'metron' as being the equivalent of two *modii* in order to convert the price of fifteen *metra* per *argurion* to thirty *modii* per *solidus* (a North African summer price attested by Ammianus, 28.1.18). On the other hand, Kenneth Harl (*Coinage in the Roman Economy, 300 B.C. to A.D. 700* [Baltimore, 1996], pp. 316–7) claims that this 'metron' is the equivalent of the Syrian *cab*, of which there were four to the Italic *modius*, i.e. one eighth of Matthews' unit. As can be seen from the text under discussion, written in Antioch only seventeen years after the famine, when the emperor brings in grain, it is measured in imperial *modii*, not local units.

[11] Πάτρια Κωνσταντινουπόλεως III.84, in Theodor Preger (ed.), *Scriptores originum Constantinopolitanarum*, 2 (Leipzig, 1907; repr. New York, 1975), pp. 245–6.

[12] References are to the Latin translation of J.-B. Chabot in *Chronicon Pseudo-Dionysianum uulgo dictum*, CSCO 121: SS series 3, tomus 1, versio (Louvain, 1949). On this famine, see Hervé Leclainche, Crises économiques à Édesse (494–506) d'après la chronique du pseudo Josué le Stylite, *Pallas* 27 (1980), 89–100.

probably produce just enough for self-sufficiency when the weather was good, but any fluctuations could have had disastrous results: the famine of 362 was the result of a lack of rain after the sowing at the beginning of winter,[13] and similar causes probably underlie the famine of 333 (Jerome indicates that the problems were very widespread, which suggests that the weather was a cause). The second factor is that grain prices could easily be controlled and manipulated to the advantage of the seller, thus exaggerating the natural market forces that would tend to drive prices up during a shortage or as a result of fear of a shortage, and this seems to have happened in Antioch in 362. Sellers could divert produce to export markets where prices were higher and leave the city to fend for itself, or simply just hoard the grain and allow the prices to rise naturally. That Antioch was a densely populated city increased the control such dealers had over prices. Antioch's increasing population in the fourth century seems to have put a great strain on its grain-producing hinterland. Antioch was subject to increasingly frequent famines as the fourth century progressed, the most well-known being those of 354–5, 362–3, 382–3, and 384–5, and there may have been shortages as well in 375, 386, 388–9, and 392. The final factor is Antioch's position as a military centre for the eastern frontier and the growing presence of imperial troops in the city. This would have increased consumption by troops in the city and perhaps by those closer to the frontier who were supplied from Antioch, and would have exacerbated the natural tendencies to manipulate the prices.[14] Although the Orontes was navigable, in both 333 and 362 the emperor had to intervene and bring grain in from some distance. This gives the impression that Antioch was rather isolated or limited with regard to its ability to gain access to other supplies of grain. Presumably when its crops failed those of neighbouring areas had failed as well and grain had to be imported from abroad. A realization of such circumstances would have driven up the prices even further.

In view of the above evidence for prices, the shortage of 333 must have been extremely severe indeed, which no doubt explains why it was recorded in such detail by the Antiochene chronicler over fifteen years later.[15]

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[13] See Julian, *Misopogon* 369A and Downey (cit. n. 2), p. 21.

[14] On these problems, see Julian, *Misopogon* 368C–369A, and 369C–370A; Downey (cit. n. 2), pp. 324 and 353–4; Matthews (cit. n. 10), p. 540n6; and on the food supply of Antioch in general, Petit (cit. n. 10), pp. 105–22; J. H. W. G. Liebeschuetz, *Antioch. City and Imperial Administration in the Later Roman Empire* (Oxford, 1972), pp. 96–8, 126–32 (neither of which mentions the passage under discussion); and the works cited by them. For the situation in the 340s, see the *Expositio totius mundi et gentium* 36. 15–18: 'Constantinopolis enim Thraciae ab ea [Aegypto] quam plurime pascitur; similiter et orientales partes, maxime propter exercitum imperatoris et bellum Persarum.'