Pegolotti

One April day in the year 1317 Francesco Balducci Pegolotti, an official of the great Florentine banking house, the Company of the Bardi, arrived in the London office of his firm to begin a four-year spell as manager of its English operations. For the previous two years he had held a similar post in Flanders and Brabant. After his tour of duty in London was over he spent several years in Cyprus, where he took a keen interest in trade with China, before returning to Florence for the culmination of his career, which ended with the Company’s bankruptcy in 1347.

During his long working life Pegolotti assembled much detailed information on the different systems he encountered for weighing and measuring commodities. As a banker for international commerce, he needed to understand the systems used in his host country. He also had to know how they related to those of other cities and states with which his host country would trade. In no respect was this knowledge more important, or required with greater precision, than in the weights used for precious metals.

Although Pegolotti finished his manuscript in about 1340, it clearly embodies notes compiled over many years. It has survived in the form of a single copy, completed in Florence in 1472, which is stated to have been transcribed from a copy of a copy of the original, a degree of copying that has to be borne in mind when other evidence appears to contradict one of his observations. The copy was discovered in the eighteenth century and a modern text was published in 1936 by the Mediaeval Academy of America.¹

Pegolotti recorded much information about Britain. For example, he listed the number of sacks of wool produced by each abbey and convent in a particular year (unfortunately unspecified) and the price obtained for it in Flanders, which was clearly the destination of much if not most of the export trade. He also described various systems used in London for weighing commodities. However, our concern is with what he had to say about gold and silver.

It is the year 1320 or thereabouts and it is no surprise to find Pegolotti writing that all English coins are of silver and are called sterlings. He says they are eleven ounces fine, and are of three kinds. There are sterling pennies, of which twenty shillings make the pound weight of the Tower mint and thirteen shillings and four pence (in other words, 160 pence) are reckoned to the mark; there are also half and quarter sterling pence. No other money, whether of gold or silver or base metal, can be spent or be current in England.² Pegolotti is not quite exact, for it is known from English mint documents on the Edwardian recoinages that the fineness was intended to be 11 oz. ¹/₄ dwt and that 243 pence were struck to the Tower pound, the extra three pence accruing to the merchant who brought the bullion. But Pegolotti is right when he says that, in London, silver bullion is bought and sold by Tower weight (though mint documents show that the transactions were in pounds rather than marks); he goes on to say that no-one, neither citizen nor foreigner, can exchange bullion except the master of the mint — a statement that again is borne out by a surviving mint document.³

Note: This article has been many years in gestation and is substantially the paper read to the British Numismatic Society in March 2004. Since then the writer has become aware of two recently published works (Simpson and Connor 2004; Connor and Simpson 2004) that cover some of the same ground (for example, in using Pegolotti) more extensively.

¹ Evans 1936.
² Evans 1936, 255.
³ Johnson 1936, 57–8.
Pegolotti states that the mark of the Tower of London contains eight ounces, of twenty sterlings to the ounce, thus 160 sterlings to the Tower mark. Here the term 'sterling' is being used as a unit of weight, which will be described here as a sterlingweight (swt), to distinguish it from any other pennyweight. English mint documents state that it contains twenty-four grains,¹ that is to say, of the Tower scale, as distinct from the 22½ troy grains by which it has come to be known, or the thirty-two grains of wheat taken from the middle of the ear, frequently found in other sources. On the metric scale it is 1.458 grams.

Some international relationships with north-western Europe

Relationships given by Pegolotti between the weights used for precious metals in the major cities of north-western Europe, bearing in mind that twenty-first-century precision cannot be expected in the fourteenth century, point to the sterlingweight having had a unifying role. Writing about London, he equates the Tower mark with the heavy mark of Cologne.⁵ For Flanders, he reports that Bruges has a mark of gold, of eight gold ounces, which weighs eight ounces and eight sterlings by the weight of the Tower of London – in other words 168 sterlingweights, or twenty-one sterlingweights to the gold ounce.⁶ He gives the same relationship for Antwerp, so it can be concluded that he aligns Antwerp's mark with those of the Tower and Cologne.⁷ He equates the Bruges mark of gold with the Paris mark (which also contains eight ounces but is not specific to gold),⁸ so he evidently regards the Paris ounce, like the Bruges gold ounce, as equivalent to twenty-one sterlingweights. A much later source that is well-nigh impeccable seems to confirm that he is right to do so. In 1742 the Royal Society of London and the Royal Academy of Sciences in Paris exchanged standard weights and measures, and the Paris sixteen-ounce weight was found to weigh 7,560 troy grains.⁹ This works out at 472½ troy grains to the ounce, or exactly twenty-one sterlingweights of 22½ grains. The correspondence is remarkable and unlikely to be fortuitous, notwithstanding the lapse of time.

As to silver, Pegolotti says that it is weighed in Bruges and the rest of Flanders by a lighter mark of six Bruges ounces, which differ from gold ounces, and that twenty-one Bruges silver marks weigh the same as sixteen gold marks.¹⁰ Now since a gold mark amounts to 168 sterlingweights, it follows that a Bruges silver mark should weigh 168 × 16 ÷ 21 = 128 swt, so that a Bruges ounce of one-sixth of a mark would amount to 21½ sterlingweights, about 1.5% heavier than the gold ounce and equivalent to 480 troy grains. This means that, if Pegolotti is right, the Bruges ounce is effectively the same as the English troy ounce. The Belgian scholar Joseph Ghysssens wondered whether this was a coincidence, or did one ounce give rise to the other? He felt that he could not reach a conclusion because of lack of agreement among scholars on the antiquity of troy weight in England.¹¹

The vexed question of troy weight

The first mention of troy in an English statute is in 1414,¹² although in minting indentures the troy pound does not replace the Tower pound until 1526, with one exception to do with the ecclesiastical mint of Durham in 1495.¹³ The question is whether troy weight was actually involved in the coinage at a much earlier date than this. In his definitive and detailed survey of weights and measures, published for the Science Museum in 1987, R.D. Connor argued for its

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¹ Johnson 1956, 67.
⁵ Evans 1936, 255.
⁶ Evans 1936, 245.
⁷ Evans 1936, 244.
⁸ Evans 1936, 237.
⁹ Connor 1987, 244.
¹⁰ Evans 1936, 237.
¹¹ Ghysssens 1986, 67, and Brand 1994, 73.
¹² Connor 1987, 125.
¹³ Chaffin 1992, 718; also 220–2 for a discussion of confusion between Tower and troy in acts relating to Ireland between 1460 and 1483.
antiquity and claimed that it was the weight used at the Exchequer in assaying and blanching payments brought in by sheriffs.\textsuperscript{14}

A full description of the operation of the Exchequer in the last years of Henry II's Cross-and-Crosslets coinage has survived in the form of a dialogue between a master and his disciple – the \textit{Dialogus de scaccario} – written by Richard fitz Nigel, then the treasurer of the Exchequer.\textsuperscript{15} He explains how the assay was conducted. He says that forty-four shillings of the sheriff's money, which had been put in a purse, were mixed together, after which as many pence as were needed to balance a pound weight were removed from the mixture. These were then counted to ensure that they did not amount to more than six pence in excess of twenty shillings, for if they did they would be rejected as not being of acceptable weight. Provided they passed this test, a pound of exactly twenty shillings was then put in a cup and the remaining twenty-four shillings were put back in the purse.\textsuperscript{16} The coins in the cup were then melted till the silver was thoroughly refined, and the resulting ingot was weighed against the same pound weight as before. Pence were added from the purse to balance the weight, and the pound was said to have lost that number of pence in the fire. The melter would also receive two pence. If for some reason the test was deemed a failure, it would be repeated using the coins still in the purse (which would obviously amount to less than twenty-four shillings, depending on how many were weighed in the balance at the end of the first test), though this time the melter would receive nothing. The result would be that if the test-ingot was, say, twelve pence short, the sheriff would only be credited with £95 "blanched" for each £100 paid in by tale.\textsuperscript{17} It will be apparent from this description that the shortage could be due partly to the refining and partly to the coins themselves not being of full weight.

Since the \textit{Dialogus} specifically states that if it took more than 246 pence to balance the Exchequer's pound the coins would be rejected as not being of acceptable weight, it follows that the number of Cross-and-Crosslets pence struck from such a pound should not have exceeded 246. That condition could not have been met if the Exchequer pound was the troy pound. However, if it was the same as the subsequent Tower pound, the average weight at which pence of that issue were struck ought to have been no less than 5,400 + 246 = 21.95 troy grains (1.422 g). Now we are told that 5,127 pence in the Tealby, Lincolnshire (1807) hoard weighed 19 lb 6 oz 5 dwt troy, thus averaging 21.93 grains (1.421 g), and that 142 pence in the Ampthill, Bedfordshire (1836) find weighed 6 oz 10 dwt 8½ gr, so averaging 22.03 gr (1.427 g).\textsuperscript{18} Given the close correspondence and accepting that hoarded coins, even when not corroded, may have leached a small amount of alloy during their sojourn in the ground, the account in the \textit{Dialogus} is consistent with the Exchequer pound used in the assay being the same as the Tower pound and the minting standard of Cross-and-Crosslets being perhaps two or three pence fewer than 246 to that pound.\textsuperscript{19}

In contending that the pound of the Exchequer was always troy, Connor recognised that at least 256 pence of full weight would be needed to balance it. These, he said, or up to six more if necessary, would be taken from the forty-four shillings emptied from the purse and the rest (except the two pence for the melter) would be put back in it.\textsuperscript{20} Not only is the \textit{Dialogus} quite specific that the pound must be balanced by no more than 246 pence, but also that exactly twenty shillings were taken for the assay and the remaining twenty-four shillings put back. Also, our former President, the late Dr John Brand, demonstrated that the weights recorded in 1231 for purses of 240 pence to be used in the assay were measured against the standard weight of that number of pence.\textsuperscript{21} If this was not the same as the Tower pound it must have been very close to it. It cannot have been the troy pound.

Nevertheless, and also in the mid-1980s, Dr Pamela Nightingale argued that Henry II, coming from Anjou, would have wanted his English revenues to serve his continental ambitions and would therefore have purchased bullion for his new Cross-and-Crosslets coinage in 1158 by the

\textsuperscript{14} Connor 1987, 121-3.
\textsuperscript{15} Hughes, Crump and Johnson 1902. For English translation, \textit{EHD} II, 490–569.
\textsuperscript{16} \textit{EHD} II, 496 and 513.
\textsuperscript{17} \textit{EHD} II, 514.
\textsuperscript{18} Allen 2005, 228, n.8.
\textsuperscript{19} See below, p. 238.
\textsuperscript{20} Connor 1987, 112.
type of troy weight used in those dominions, namely 252 sterlingweights to a twelve-ounce pound. He would give for each such pound of sterling fineness brought to his mints a Tower pound of sterling pennies, thereby earning himself a profit of one shilling, out of which he would, of course, have to pay minting costs. However, it is at least debatable whether the exchanging of bullion for new coins came under royal control before 1180. Brand argued that ‘the office of exchanger was long established in Normandy, but seems not to have been known in England before 1180’. In his definitive catalogue for the British Museum of the Cross-and-Crosslets issue, Derek Allen contended that in 1158 Henry I’s charter de moneta falsa et cambiatoribus was still operative, under which the moneys were ‘in exclusive possession of the right of exchanging, a service different and distinct from that of minting, for which a separate charge was made’, but that with the Short Cross recollision of 1180 ‘the function of exchanging ... became a royal one’. On this view, Henry would have had no opportunity to introduce troy weight into the purchase of bullion before 1180. On the other hand, Nightingale has argued compellingly for the reduction in the number of mints and moneyers in 1158 being ‘part of an over-all plan to extend royal authority over the mints’. Yet if this had involved the king in the exchange of bullion it is improbable that he would have introduced a practice of purchasing by continental troy weight. Had he done so, it would surely not have been abandoned by the time of the Edwardian recollision a century later, when surviving mint documents are quite clear that bullion was bought and exchanged for coin by Tower weight, with a deduction for minting charges, seignorage and any actual or perceived difference in fineness.

The cases made respectively by Nightingale and by Connor for the use of one or other form of troy weight in Henry II’s reign for the purchase of bullion or the assay of payments at the Exchequer are not tenable given the documentary evidence to the contrary, and Connor has recently recognised this in an important joint paper with A.D.C. Simpson. As already mentioned, the earliest recorded mention of troy weight in an English Statute is in 1414, while in Scotland troy weight was introduced on the French model and is first specified in an Act of Parliament of 1393 for a new coinage of gold and silver by Robert III’s master moneyer, Bonage of Florence. Nightingale is on firmer ground when she states that Henry II ‘profited from his English subjects by means of surcharges and deductions at the exchequer for “blanched farms”’. However, so did his Norman predecessors.

Medieval terminology and the farthings of 1279

It is as well at this point to recognise that medieval terminology can sometimes confuse the modern mind. One example is the use of shillings and pence as counting units so as to obviate the need for lengthy Roman numerals. When Pegolotti discusses English coins he says that in a Tower pound there are twenty shillings of sterling pence by number, and thirteen shillings and four pence by number in a mark. However, in the case of half sterlings a Tower pound contains forty shillings by number, with twenty-six shillings and eight pence in a mark. What he means by forty shillings is $40 \times 12 = 480$ coins, and by twenty-six shillings and eight pence he means 320.

The same convention is found in mint documents dealing with the first farthings of the Edwardian recollision, and has been a source of difficulty for numismatists. A document from 1279 on the form of the new money tells us that initially farthings were to be made only at London, and although four of them would contain almost as much silver as one sterling, the difference reflecting

22 Nightingale 1985, 205.
24 Allen 1951, lxxxii.
25 Allen 1951, xciii.
26 Nightingale 1982, 49.
27 Johnson 1936, 68–9 and 95.
29 Cochran-Patrick 1876, 1, 12–3.
30 Nightingale 1985, 205.
31 Evans 1936, 255.
the higher cost of minting, they would contain more alloy than a sterling because otherwise they would be too weak and small. Therefore farthings would weigh 65s. 8d. to the pound, meaning 788 coins and producing an average weight of 6.85 grains (0.44 g). William de Turnemire's indenture of December 1279, which extended the production of farthings to other mints, makes clear that it would actually take eighty-three shillings by number, namely 996, to contain a pound of sterling silver (compared with 243 sterlings), so the silver in four farthings would have been 2.4% less than in one sterling although their weight would have been 23% greater. It would have been grossly unfair to exchange silver bullion for farthings by weight, so the exchange would have been by number after deductions for seignorage and a specially high minting charge.

When seeking to interpret a metrological relationship involving monetary units it is therefore necessary to understand what kind of units they are. Does the relationship define a market weight? Does it instead refer to a mint weight and the number of coins that are to be struck from it, or perhaps a silver weight and the number of minted pence at which it is valued? Could it simply be the expected weight of the number of coins in an accounting unit (such as a tale sum of 20s. or 13s. 4d.), or even the accounting unit itself with no reference to its weight? There is plenty of scope for confusion here.

Minting charges

In the exchange of bullion for current coin, charges are made for minting, seignorage and any difference in fineness between the bullion and coinage metal by withholding a proportion either of the weight of the bullion taken in, or of the weight or number of coins minted from it. Further elements in the transaction are the incremental number of coins that will be struck from a unit weight of coinage metal (for example, any excess over 240 pence, in the case of a pound of metal), the purpose of that increment, and who will receive it.

In Edwardian times, with the coinage under royal control, bullion was exchanged for weight for current pence after first allowing for seignorage, mintage and any departure from sterling fineness. For a pound of foreign silver of that fineness the result was a deduction that varied from seventeen pennyweights in 1279–80 and 14½ pennyweights from 1281 to 1289, to 11½ pennyweights from 1290 through and beyond Pegolotti's time. Larger deductions were made when exchanging obsolete English coins.

Edwardian pence were usually struck at 243 to the Tower pound, with the increment of three pence going to the merchant bringing the bullion. Taking the conventional troy weight of 5,400 grains (349.9 g) for the Tower pound, the pence of that coinage should have averaged 22.22 gr (1.440 g), about 1.5% more than the 21.9 grains brought out for the Mayfield hoard by Marion Archibald's analysis — a discrepancy that she thinks may indicate an immediate culling of coins of profitably heavy weight. In 1259 we are told that 242 Long Cross pennies were minted from a Tower pound, so yielding an expected weight of 22.31 gr (1.446 g), about 1% above the 22.1 grain average weight of 1,000 die-duplicates of the Bury mint in the 1669 Colchester hoard but corresponding closely with the average weight of a number of random samples of London coins. No earlier specification of minting standards is available, though Dr Martin Allen has suggested that in the preceding Short Cross coinage as many as 246 pence may have been minted from a pound. We have seen from the Dialogus that pence of the Cross-and-Crosslets coinage of Henry II would not be regarded as of acceptable weight if it took more than 246 to weigh a pound, and

32 Johnson 1956, 56: E est a saver ke il serrunt de peys de seysante cink souz e wit douers a la livere. G.C. Brooke correctly recorded the resulting weight as 6.85 grains (Brooke 1932, 116).
33 Note that Challis 1992, 709 follows Johnson 1956, 61, in interpreting quolibet libra continentem quatient viginti Londrenses et tres solidos libra numero as that a pound weight should contain four score lundreis (when four score shillings of them was undoubtedly meant) and three shillings over by tale.
34 Johnson 1936, 94–5.
35 Mayhew 1992, 134. Table 3.
36 Archibald 1971, 155, but correcting 29.1 to 21.9. (Note that in the table of weights of English pence on p. 157, the number of coins in Fox class Xd, die numbers 2/2, should be 97 and the total number correspondingly increased from 348 to 353).
38 Allen 2005.
that this is backed up by hoard evidence.\textsuperscript{39} Looking back to Henry I Type xv, the weight distribution of the coins in BMC has a median of 21.6 grains, or 250 to the pound, which may have been adversely affected by a tail of coins of light weight.\textsuperscript{40} Nevertheless the standard must be lighter than for Cross-and-Crosslets.

At the time of the Domesday survey it was lighter still. The Paxs coinage, which is generally thought to be William I's last issue or William II's first, although Professor Metcalf would place it slightly earlier,\textsuperscript{41} is best known to us from the Beauworth (Hampshire) hoard of 1833. The coins from that hoard are in an excellent state of preservation and the weight distribution is tight, those in BMC having very close median and mean weights of 21.2 and 21.15 grains respectively.\textsuperscript{42} These are equivalent to just under and just over 255 pence to the Tower pound.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
Grains & No. of coins & Grains & No. of coins & Grains & No. of coins \\
\hline
23.3 & 1 & 21.5 & 38 & 20.1 & 4 \\
23.2 & 1 & 21.4 & 54 & 20.0 & 4 \\
22.7 & 2 & 21.3 & 53 & 19.9 & 2 \\
22.6 & 3 & 21.2 & 66 & 19.8 & 3 \\
22.5 & 1 & 21.1 & 59 & 19.7 & 2 \\
22.4 & 1 & 21.0 & 58 & 19.6 & 2 \\
22.3 & 5 & 20.9 & 32 & 19.5 & 1 \\
22.2 & 6 & 20.8 & 32 & 19.4 & 1 \\
22.1 & 7 & 20.7 & 29 & 19.2 & 1 \\
22.0 & 8 & 20.6 & 20 & 18.7 & 1 \\
21.9 & 17 & 20.5 & 15 & 18.6 & 3 \\
21.8 & 17 & 20.4 & 13 & 17.9 & 1 \\
21.7 & 26 & 20.3 & 7 & 17.8 & 1 \\
21.6 & 37 & 20.2 & 7 & 15.6 & 1 \\
\hline
132 & & 483 & & 26 & \\
\hline
\end{tabular}
\caption{Weights (in troy grains) of 641 Paxs pence in BMC}
\end{table}

\textit{m} = median \quad \textit{q} = \text{quartile} \quad \textit{d} = \text{highest/lowest decile}

Source: The individual grain weights recorded in BMC. The total for the 641 coins is 13,555 grains, giving a mean weight of 21.15 grains (1.371 g).

At this time, when moneyers were responsible for exchanging bullion, charges may not have been made by deduction from the weight of bullion but by minting significantly more pence to the pound of coinage bullion and withholding all or part of the increment, namely the excess over 240 to the pound weight. Such a method appears to have been used in France by Charlemagne's predecessor Pippin, who ordained that as much as twenty-two shillings could be struck from a pound weight, the moneyer retaining one and the remaining twenty-one being given to his lord.\textsuperscript{43} A similar procedure might account for the lighter weight at which Norman pence were evidently minted, which raises the question of whether any evidence to this effect might be gleaned from Domesday Book.

The meaning of Domesday renders ‘de xx in ora’

It is clear from the Pipe Rolls, the earliest of which dates from 1130, that in the mid-twelfth century it was the practice for the king's lands in a shire to be 'farmed' by the sheriff in return for a set annual

\textsuperscript{39} See above, p. 229.
\textsuperscript{40} Brooke 1916, I, cliii. The median lies in the range 21-21.9 gr and its precise position was determined by extracting from volume if the exact weights of the coins in that range, which are recorded to 0.1 gr.
\textsuperscript{41} Metcalf 1998, 188.
\textsuperscript{42} Based on Brooke 1916, II. It is legitimate to calculate the mean to two places of decimals given the size of the sample, although the median (the weight of the middle coin) is best left as recorded, namely to one decimal place. Fewer than 7% of the coins differ from the median by more than 1.0 gr.
\textsuperscript{43} Prou 1896, xxix, n. 3.
payment which had to be satisfied in coins blanched by an assay at the Exchequer in London, such as has already been described.44 Disbursements made by the sheriff on behalf of the king were deductible from the sum due but, for consistency, if made at face value they also had to be blanched at the Exchequer, in this case by a reduction of twelve pence in the pound, or 5%.45 Half of this may be to compensate for the coins in circulation averaging close to 246 to the pound, for Richard fitz Nigel expressed the opinion that six pence was as much as ought to be lost in the fire,46 and Brand has shown that in 1230–1 the recorded loss from combustion alone is usually seven pence.47

In the records of the Domesday Inquest of 1086 we are not told about sheriffs’ dealings with the Exchequer. Instead, the estates of every landholder within a given county are itemised, the tenant of each is named, the land’s potential described, the past ownership or tenancies from the time of King Edward outlined, and the annual dues collectable now and in the past are set out. Although small items are frequently stated in marks and in some parts of the country in oras, significant payments are generally expressed in pounds, shillings and pence. On royal estates they are often described as payable in some special way, such as in blanched pence (albas, blancas or candidas) or by weight (ad pondus or ad pensum), or even burnt and weighed (arsas et pensatas). It is hard to imagine that manorial payments to the sheriff could have been subjected to the kind of assay described nearly a century later in the Dialogus, and it is likely that he collected them with well-understood surcharges, though it is not obvious how much these were.

For a numismatist the most intriguing requirements are some forty-five specifications for payments to be made in pence which are twenty to the ora (de denariis qui sunt xxd in ora, to give it its fullest Latin description). This form of payment is scattered through Domesday Book, not in the Danelaw counties, as one might expect from the ora’s Scandinavian origin, but in the heartlands of Wessex and southern Mercia, and in only three instances does it relate to manors not held by the king himself.48 As an accounting unit in England the ora seems always to have comprised sixteen pence, as it clearly does in eastern and northern counties in Domesday when not referring to royal estates. So what does payment from royal estates ‘in pence which are twenty to the ora’ actually mean?

It is undoubtedly a payment by number of coins and not by weight, as the entry for the City of Worcester makes clear:

‘From the County [the Sheriff] pays 17 pounds ad pensu~. He pays a further 10 pounds denarior~ de xx in ora or a Norwegian hawk, and a further 100s to the Queen ad numeru~ and 20s. de xx~ in ora for a packhorse. These 17 pounds ad pensu~ and 16 pounds ad numeru~ are from the pleas of the County and from the Hundreds ...’ 49

Payment at twenty to the ora seems to be a specific form of blanching, and may even be a description of the normal mechanism of blanching at this time, for, although we sometimes find expressions such as blancas de xx in ora,50 no estate makes payments at twenty to the ora as well as in blanched coin.51 Although sums payable at face value and others payable at twenty to the ora are added together in the Worcester entry to distinguish them from payments by weight, there must be a difference between them, for otherwise we surely would not be told that at Dover:

‘... the reeve pays 54 pounds, that is 24 pounds to the king de denar~ qui sunt xxv in ora and 30 pounds to the Earl ad numeru~.’ 52

The apparent absurdity of the king receiving less than the earl is one reason why Dr Sally Harvey argued forty years ago that de xx in ora meant ‘payable in pence with a surcharge of 25%’ — in other words, for every sixteen pence due, twenty would have to be paid.53 She supported her

44 See above, p. 229.
45 EHD II, 567.
46 EHD II, 514.
48 Kent 5.1 (f.68a) and 6.1 (f.114a). Surrey 16.1 (f.34b). References are to the Phillimore edition.
49 Worcestershire C2 (f.172a). Here, and in subsequent quotations from DB, I have adapted the English translation to include the Latin payment terminology in the interests of clarity.
50 Hampshire 1W.4 (f.39e).
51 Harvey 1967, 224.
52 Kent D7 (f.1a).
53 Harvey 1967, 223.
hypothesis by pointing to the numerous examples in Domesday of payments to the king that are multiples of twenty pence. Her interpretation was widely accepted and was adopted in my Presidential Address to this Society in 1969.\textsuperscript{54} It makes sense as a response to a 20% reduction in the pennyweight, which the introduction of the sterlingweight may have involved,\textsuperscript{55} but its weakness is that we would not really expect to find an accounting ora used in the heartland of England to qualify payments expressed in pounds and shillings. On the other hand it was laid down in the law code known as IV Æthelred that every pound weight in his markets was to contain fifteen oras,\textsuperscript{56} and we can infer that the ora was still in use nationally in 1086 as a unit of weight for silver, for ounces of silver are never referred to as such in Domesday, although ounces are used for gold. Then about twenty years ago Dr Nightingale, taking ora and ounce as synonymous, dismissed Harvey’s hypothesis of a 25% surcharge in favour of “payment at face value in new pence minted at 20 to the ounce”.\textsuperscript{57} However, it is difficult to see the point of specifying new pence just for a few payments due to the king and it makes no sense for Dover. Significantly Brand, in an important but unfortunately unpublished paper, pointed out that in 1086 pence were not minted at twenty to the ounce – if the same as the Tower ounce – but at about twenty-one. He thought that payment in pence at twenty to the ora implied payment with a surcharge to make up the difference between the weight of the minted penny and the pennyweight – by which he meant the sterlingweight.\textsuperscript{58}

Now we have already seen that the distribution of the weights of pence of the Paxs issue from the Beauworth hoard, buried within a year or two of the Survey, is very tight, with median and mean weights of 21.2 and 21.15 troy grains respectively.\textsuperscript{59} William the Conqueror had stabilised the weight of the penny some years before 1086, so that, even if the Paxs type was his successor’s first rather than his own last issue, it is likely that the average weight of coins current at the time of the Domesday survey would have been much the same. Ignoring the possibility of weight loss in the ground, we need to add about 6% to 21.2 grains to bring it up to the sterling pennyweight of 22.5 grains, if that was a relevant measure.

Evidence for a surcharge of similar magnitude can actually be seen in the Domesday renders for the king’s manors in one county, Somerset. Brand remarked that no one seemed to have noticed that those renders which were payable de xx in ora were multiples of the curious sum of £1 Is. 2\textsuperscript{d.}, whereas in other counties they were usually in whole pounds (see Table 2).\textsuperscript{60} From the way these sums are expressed it is clear that they have been stated after applying a surcharge of 1s. 2\textsuperscript{d.} in the pound, or 14\textsuperscript{\frac{1}{2}}pence, to what were otherwise round sums. Brand did not propose an explanation for a surcharge at this level, but it is noteworthy that 14\textsuperscript{\frac{1}{2}}pence represents an addition of 6.04% to a pound of 240 pence – in other words it would on average enable the payment to be made up to 240 sterling pennyweights. If it could be assumed that the same surcharge, made explicit for Somerset, was an implicit addition to the round sums specified in other counties when payments were due de xx in ora, it might also signify that 254\textsuperscript{\frac{1}{2}}pence were required to be struck from a Tower pound of coinage metal so that 14\textsuperscript{\frac{1}{2}}of them could be retained by the moneyers for minting costs, including their contribution towards the king’s revenue from the borough. Much later, in the 1280s, the deduction from a pound of foreign sterling bullion to cover mintage and seignorage happens to have been 14\textsuperscript{\frac{1}{2}}sterling pennyweights, a coincidence which may or may not have any relevance.\textsuperscript{61} The odd halfpenny comes from a minting charge of 5\textsuperscript{\frac{1}{2}}d. which seems to have been fairly stable.

\textsuperscript{54} Lyon 1969, 210.
\textsuperscript{55} See below, p. 237.
\textsuperscript{56} Robertson 1925, 78-9, as discussed in Lyon 1969, 214.
\textsuperscript{57} Nightingale 1983.
\textsuperscript{58} J.D. Brand, ‘The evidence of Domesday Book and after for money weight and fineness’ (unpublished). The paper does not refer to Nightingale 1983 and must therefore have been written earlier; Brand died in 1990 without updating it. Curiously, Domesday Book makes a single reference to a payment de xx in ora in the time of King Edward, and perhaps we are entitled to think that it may be a scribal error. It states that the city of Leicester paid the king each year £30 ad numerum de xx in ora. If it is not an error it can only relate to the last years of Edward’s reign, when pence were always minted lighter than 22\textsuperscript{\frac{1}{2}}troy grains.
\textsuperscript{59} See above, p. 232.
\textsuperscript{60} Brand, unpublished, see n. 58.
\textsuperscript{61} See above, p. 231.
SILVER WEIGHT AND MINTED WEIGHT

TABLE 2. Domesday Book renders from royal manors in Somerset, surcharged for payment de xx in ora.

Most payments de xx in ora, as well as that from Milborne Port which is (mistakenly?) said to be de albo argento, are multiples of £1 1s. 2d. (i.e. £1 060417). They are derived from a liability in King Edward's time (TRE) for the provision of 'one night's farm' (i.e. food for the king and his court) from one manor or a group of manors. This had now been commuted for a money payment of £100, surcharged by 14d. in the £, making £106 0s. 10d. The manors concerned were not hidated for tax.

(i) Where one night's farm was paid TRE by two manors together

<table>
<thead>
<tr>
<th>Amount specified</th>
<th>From...</th>
</tr>
</thead>
<tbody>
<tr>
<td>£53 0s. 5d.</td>
<td>FROME</td>
</tr>
<tr>
<td>£53 0s. 5d.</td>
<td>BRUTON</td>
</tr>
<tr>
<td>£79 10s. 7d.</td>
<td>SOMERTON (with Langport)</td>
</tr>
<tr>
<td>£21 0s. 2d.</td>
<td>CHEDDAR (with Axbridge)</td>
</tr>
</tbody>
</table>

(This could be £20 surcharged at 1s., making £21, with 24d. added in error instead of 20 x 2d. But we would have expected £26 10s. 10d. = 25 x £1 1s. 2d.)

(ii) Where one night's farm was paid TRE by three manors together

<table>
<thead>
<tr>
<th>Amount specified</th>
<th>From...</th>
</tr>
</thead>
<tbody>
<tr>
<td>£42 8s. 4d.</td>
<td>NORTH PETHERTON</td>
</tr>
<tr>
<td>£42 100d.</td>
<td>SOUTH PETHERTON</td>
</tr>
<tr>
<td>£21 50d.</td>
<td>CURRY (Rivel)</td>
</tr>
</tbody>
</table>

(iii) Where one night's farm was paid TRE by three manors in one DB entry

<table>
<thead>
<tr>
<th>Amount specified</th>
<th>From...</th>
</tr>
</thead>
<tbody>
<tr>
<td>£100 116s. 16d.</td>
<td>WILLITON, CANNINGTON and CARHAMPTON</td>
</tr>
</tbody>
</table>

(iv) Where three-quarters of one night's farm was paid TRE

<table>
<thead>
<tr>
<th>Amount specified</th>
<th>From...</th>
</tr>
</thead>
<tbody>
<tr>
<td>£80 less 9s. 5d.</td>
<td>MILBORNE PORT (with Ilchester)</td>
</tr>
<tr>
<td>(i.e. £79 10s. 7d.)</td>
<td></td>
</tr>
</tbody>
</table>

(v) Where nothing is stated TRE

<table>
<thead>
<tr>
<th>Amount specified</th>
<th>From...</th>
</tr>
</thead>
<tbody>
<tr>
<td>£21 0s. 2d.</td>
<td>BEDMINSTER</td>
</tr>
</tbody>
</table>

(See the comments on Cheddar. Round 1909, 111-12, doubted that Bedminster was originally combined with Milborne Port for payment of one night's farm because they are at opposite ends of the county.)

The Somerset manors that paid dues de xx in ora were those that had never been hidated for tax, but in King Edward's time had contributed all or part of one night's farm. Before the Conquest the commutation into money of this requirement for a day's provisions for the king and his court seems to have been £80, but had been increased to £100 by William and then, apparently, surcharged for payment de xx in ora. In contrast, another group of royal manors which had been assessed for tax purposes were required to pay their dues in white or pure silver, de albo argento (Table 3). In their case the sums specified are multiples of £1 3s., which implies a surcharge of 3s., or 15%. It seems possible that this is what was regarded as necessary to ensure that the king received a pennyweight of pure silver for every penny nominally due. It would imply that £1 3s. of money would yield £1 1s. 2d. of pure silver. If so, William would be expecting payment as though his coins, when melted and refined, would yield 92.2% of their weight in what was regarded as pure silver. Now that is effectively the purity implied two centuries later by a mint document which says that the new Edwardian pence should contain 18½ dwt of alloy in a pound of coinage metal - that is to say 92.3% fine. However, it is well known that pre-Edwardian documents such as the Dialogus de Scaccario say that the alloy added to refined silver should be no more than six pence although analysis shows it was much higher, and it has been suggested that the meaning must be six pence of alloy above what at that time was a practical limit of refinement. The Domesday surcharge de albo argento seems to imply that such a limit was understood and allowed for.

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62 Poole 1912, 29.
63 Johnson 1956, 68. 73.
64 Muirhead and Walker 1977, 133-4.
TABLE 3. Domesday Book renders from royal manors in Somerset, surcharged for payment de albo argento.

Most payments de albo argento, aside from Milborne (see Table 2), are multiples of £1 3s., and the manors concerned were hidated for tax. Thus:

- **CREWKERNE**
  - £46 0s. Od. specified = 40 × £1 3s.
- **CONGRESBURY**
  - £28 15s. 0d. specified = 25 × £1 3s.
- **BROMPTON**
  - £27 12s. 1d. specified = 24 × £1 3s. + 1d.
- **CLEEVE**
  - £23 0s. 0d. specified = 20 × £1 3s.
- **NORTH CURRY**
  - £23 0s. 0d. specified = 20 × £1 3s.
- **CAMEL**
  - £23 0s. 0d. specified = 20 × £1 3s.
- **HENSTRIDGE**
  - £11 10s. 0d. specified = 10 × £1 3s.
- **DULVERTON**
  - £9 4s. 0d. specified = 8 × £1 3s.
- **CREECH**
  - £4 12s. 0d. specified = 4 × £1 3s.
- **LANGFORD**
  - £ .. 12s. 0d. specified (for £4 12s. 0d.?)
- **NETTLECOMBE**
  - £2 6s. 0d. specified = 2 × £1 3s.
- **CAPTION**
  - £19 0s. 12d. specified.
  - (Does not fit, but £19 11s. 0d. = 17 × £1 3s.)
- **COKER**
  - £12 14s. 0d. specified.
  - (Does not fit, but £12 13s. 0d. = 11 × £1 3s.)
- **HARDINGTON**
  - £10 10s. 0d. specified.
  - (Does not fit, but £11 10s. 0d. = 10 × £1 3s.)
- **WINSFORD**
  - £11 10s. 0d. specified.
  - (Does not fit, but £11 10s. 0d. = 10 × £1 3s.)

To recapitulate, Domesday Book shows the ora to have been in common use as a unit of weight for silver, though not for gold, as late as 1086. We recall the ora referred to in the law code known as IV Æthelred, which laid down that market weights were to be in accordance with the weight at which the king’s money was received, and were to be stamped to show that fifteen oras made a pound. Nothing new is said in the laws of Cnut about weights and measures\(^5\) and there is nothing later to indicate that a change was made. It therefore seems probable that Æthelred’s ora was inherited by both conquerors, Cnut and William, and that its weight, previously divided into sixteen heavy pennyweights, was redivided after the Conquest into twenty sterlingweights. On this hypothesis the pennyweight of Æthelred’s time would have equalled \(1\frac{1}{4}\) sterlingweights, equivalent to thirty Tower grains, forty wheat grains, or \(28\frac{1}{2}\) Troy grains. If minting charges were no less than we appear to find in Somerset in 1086, and if, as then, they were taken by minting more than 240 pence from a pound of metal, the maximum minted weight of a late Anglo-Saxon penny would have been about \(26\frac{1}{2}\) Troy grains, or 1.72 g. This corresponds very closely with the standard reached on a number of occasions in the eighty years after Edgar’s reform of the coinage c.973 – the latest just fourteen or fifteen years before the Norman Conquest – and seems to validate the hypothesis.\(^6\) At some stage before 1086 the heavy pennyweight must have been replaced by the sterling pennyweight, but that event was recent enough for it to be necessary sometimes to spell out that a blanched payment involved a surcharge to make up the difference between the assumed weight of a minted penny and a sterling pennyweight – not, fortunately for the payer, the old heavy pennyweight.

Domesday Book, therefore, does appear to provide evidence that payment specified in pence at twenty to the ora did not normally involve a surcharge anything like as high as 25%. And yet this may not always be the whole story, for even with a \(14\frac{1}{2}\) pence surcharge the king’s twenty-four pounds at Dover would have been less than the earl’s thirty pounds. We cannot imagine William

\(^5\) Cnut 9 simply re-ensacts VI Æthelred 32.2, requiring weights and measures to be corrected with all diligence and an end put to all unjust practices; see Robertson 1925, 101, 179.

\(^6\) For example there are strong peaks at Winchester for Æthelred in the ranges 1.65–1.69 g (Crux) and 1.70–1.74 g (Long Cross and the initial phase of Last Small Cross). The next and last occasion when a weight of this magnitude was achieved was for Edward the Confessor in the heavy Expanding Cross issue of c.1052, with a peak in the range 1.65–1.69 g for all mints combined. This followed a period of more than thirty years when pence were never minted to a standard greater than 1.15–1.19 g. See Petersson 1990, especially pp. 344 and 347.
being content with that, and nor apparently was he, for Dr Harvey pointed out that the corresponding account in a text based upon an earlier stage of the Domesday inquiries (the Excerpta of St Augustine’s of Canterbury) describes the same payment to the king as twenty-four pounds de xx denariis in ora cum incensione et pensa. If payments expressed to be payable by weight (ad pensum, ad pondus or ad peis) or burnt and weighed (ad arsuram et pensum, or pensatas et arsuras) were related to a traditional pound weight of fifteen oras, that pound would now amount to 300 sterlingweights instead of 240 heavy pennyweights. The king’s take of twenty-four pounds at Dover would then be translated into as many sterlingweights as the number of pence contained in the earl’s thirty pounds by tale and, if surcharged at the Somerset rate, would have a value 6.04% greater than the latter’s share, and 32.5% greater than £24 in face value. A similar method of payment may be what is meant when Norwich pays seventy pounds by the king’s weight (pensum regis).

The Anglo-Saxon Chronicle accuses William of taking from his people ‘by weight and with great injustice’, which surely implies something more than blanching de xx in ora or de albo argento. Evidence that payment in white silver does not mean burnt and weighed is provided by Brill in Buckinghamshire, which paid thirty-eight pounds de albo argento and, for the forest, twelve pounds arsas et pensatas. Another illustration of the cost of making a payment burnt and weighed is provided by Bosham, the king’s only manor in Sussex, which paid fifty pounds ad arsuram et pensum that was said to be worth sixty-five pounds. If this means that an addition of 30% to the face value could be the surcharge in lieu of burning and weighing, in other words six shillings on a pound of 240 pennies, it may be that the 32.5% just suggested for Dover is a little too high.

We have seen that in Domesday Book the mark of silver is used as a unit of account which is quite evidently 13s. 4d., or 160 contemporary pence, just as it is in the surviving Pipe Roll of Henry I, and that by the time of Henry II the suffix ‘of silver’ has been dropped. But if we think of a mark of silver as originally a weight of eight oras, and the oras as sixteen heavy pennyweights, the silver mark would have contained 128 heavy pennyweights and the silver and mercantile pound of fifteen oras would have contained 240. It was probably the introduction of the sterling pennyweight that caused the tariff of the mark of silver to be raised to 160 pence, from which one would expect 300 minted pence to be equated with a pound of silver of fifteen oras, although the pound of silver is not specifically mentioned as a counting unit in Domesday Book. A pound of account in Domesday Book means 240 pence, as it always had done, and a payment de albo argento appears to be surcharged so as to yield 240 sterling pennyweights of pure silver, not fifteen oras of silver weight. But a payment ad pensum or arsas et pensatas would, it seems, be judged against the silver pound rather than a mint pound now reduced to twelve of the same oras or ounces.

Blanching ‘ad scalam’

If de denariis qui sunt xx in ora is in fact spelling out the purpose of blanching a payment to the king – namely enabling him to receive the stated sum in pennyweights that are twenty to the oras or ounce, not in pence minted at a lighter weight – a surcharge of 14½d on a tale pound, as seems to have been imposed on certain Somerset manors at the time of the Domesday Inquest, makes sense in the context of the weight of Paxs pence. Indeed, without the benefit of this interpretation, Dr Harvey pointed out that an extra fourteen pence would be needed to make up a pound weight. The term de xx in ora is not recorded subsequently but instead we find some payments qualified as ad scalam. Brand noted that this expression is used in the Dialogus to denote an addition of six pence to each pound by number. He also drew attention to a number of documents pertaining to

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57 Harvey 1967, 224.  
58 Norfolk I.61 (f.117b).  
59 EHD II, 164.  
60 Bucks I.6 (f.143c).  
61 Sussex I.1 (f.16b).  
62 Harvey 1967, 221.
the church of Holy Trinity, London in the twelfth century concerning an annual grant, blanched, from the farm of the city of Exeter. A writ of Henry I refers to it as granted *ad scalam* and in the Pipe Roll of 1130 it is satisfied by a payment of £25 12s 6d. by number – again an increase of 6d on a tale pound.\(^{73}\)

The additional six pence may have been introduced at a time when pence were (or were supposed to be) minted at 246 to the pound, or perhaps slightly fewer if part of the increase was intended to compensate for gradual deterioration of the currency. However, when the Short Cross coinage was introduced in 1180 the authorities in Exeter claimed that they should no longer be liable for the 12s. 6d. excess, but the case was ruled against them on the ground that they were liable for it regardless of the quality of the coin.\(^{74}\) The decision could perhaps confirm that Short Cross coins were intended to be minted at 246 to the pound, as Dr Allen has recently suggested.\(^{75}\) However, the increase would certainly not have been justified from 1247, the new Long Cross coins being nearly of full weight, but despite this it continued to be paid until the dissolution of the priory in 1532.\(^{76}\)

**Pounds, marks and oras in late Anglo-Saxon England**

It has been argued above that King William’s pound of silver of fifteen oras would have been a weight he inherited from Anglo-Saxon England as prescribed in the law code known as IV *Æthelred*. Sixteen heavy pennyweights would have comprised an ora and 128 a mark. The *Anglo-Saxon Chronicle* gives us information which may demonstrate that in the period of Danish rule payments were made to the crews of the retained Danish ships in marks of 128 pennyweights. Professor James Campbell has drawn attention to the significance of the annals which record *inter alia* that in 1040, in the reign of Harthacnut, sixty-two (Danish) ships were to be paid for at eight marks to each rowlock, and that in the following year an army-tax of 21,099 pounds was paid, and later 11,048 pounds were paid for thirty-two ships.\(^{77}\) As Campbell says, the precision of these payments carries credibility. Now if sixty-two ships were paid 21,099 pounds, the average is 340.3 pounds a ship, while for thirty-two ships which cost 11,048 pounds the average is 345.25.

Professor Campbell makes the point that ‘if, as is probable, the ships’ companies each consisted of eighty oarsmen paid at eight marks [a year] and a steersman paid at twelve marks, then the annual cost of one ship was 652 marks.\(^{78}\) Those three sums per ship are broadly comparable when converted into oras at fifteen to the pound and eight to the mark, thus 5,100–5,200 oras.

The Swedish scholar Professor Brita Malmer has pointed out that in Scandinavia it was only the weight of silver that mattered,\(^{79}\) so the annals are almost certainly referring to money paid by weight, not tale. There are two obvious possibilities that would satisfy the necessary relationship of fifteen to eight between pound and mark: either the ora contained sixteen pennyweights, the mark 128 and the pound 240, or the ora amounted to twenty pennyweights, the mark 160 and the pound 300. The second was certainly the situation after William introduced the sterling penny, but the first is more relevant to Anglo-Saxon England, involving, as it does, a heavy pennyweight. It is probable, therefore, that the annals are referring to pounds of 240 heavy pennyweights and marks of 128.

It has to be admitted, though, that the minted penny regularly fell well short of a heavy pennyweight of the order of \(\frac{3}{4}\) sterlingweights, and drastically so throughout the thirty-five years before 1051 or 1052. A Danish ship receiving 5,200 oras of silver weight in 1040 would, if paid in current pennies, have received about 140,000 pence at a rate of approximately twenty-seven to the ora.\(^{80}\) Such light minting led Dr Nightingale to propose that Cnut must have introduced new

\(^{73}\) Brand, unpublished, see n. 58.

\(^{74}\) Harvey 1967, 227, citing J.H. Round.

\(^{75}\) Allen 2005.

\(^{76}\) Brand, unpublished, see n. 58.

\(^{77}\) *Anglo-Saxon Chronicle*, MS E; see *EHD* 1, 234–5.

\(^{78}\) Campbell 2000, 225–7.

\(^{79}\) Malmer 1974, 6.

\(^{80}\) Petersson 1990, 347, Table 1, shows that the average weight of minted pence at this time was between 16.1 and 17.2 grains (1.05–1.12 g).
standard weights, with an ora becoming worth twenty-four pence, but against this proposition it can be argued that the system of physical weights, for which there is no documentary evidence of change, is being confused with the undoubtedly variable weight of the number of coins that constituted a particular accounting unit. If an ora of coinage silver was equal to or commensurate with the later Tower ounce, the number of pence struck from it in Cnut’s time was seldom less than twenty-four except at the inception of the Quatrefoil issue, and sometimes reached thirty-two or even more (as, for example, in Somerset at the end of the same issue). Cnut was intensifying a practice that had been developed by his predecessor and had reached a previous peak during the highly disturbed years of the Last Small Cross issue, and it is fair to assume that it reflected a shortage of silver for internal currency, not least as a result of successive payments of tribute to the Viking crews. Progressive reductions in the weight of the minted penny in the later Middle Ages had no effect on the weight of the Tower pound, nor on the number of pence in an accounting pound, so why should it be assumed that the minting by Cnut of light pence would have been associated with new bullion or market weights, or that the composition of the ora as an accounting unit would have had to change?

The only change of which we can be sure is that the introduction of the sterling penny led to the mark of silver becoming synonymous with 160 minted pence and accepted as an accounting unit for that sum, and likewise the mark of gold as £6, or nine marks of silver. The reason for this seemingly low ratio of value between the metals may be that the mark was introduced into England with the Viking invasions of the ninth century and is first recorded, in the shape of half-marks of gold, in King Alfred’s treaty of the 880s with the king of the East Anglian Danes, Guthrum. The Scandinavian gold mark would have weighed about 210 grams, compared with an eleventh-century English silver mark of 233 grams. If the former was still in use for gold, a ratio of 9:1 between the two marks would reflect a true ratio of 10:1 between equal weights of the two metals.

Did troy weight come to England from Flanders?

Before the close of the twelfth century the suffix ‘of silver’ was dropped from accounting terminology and 160 pence became known simply as a mark. The memory of an Anglo-Scandinavian mark of eight oras of sixteen pence had apparently faded by then, but might it not have been the origin of the Bruges silver mark, first noted in 1132, which contained six ounces and weighed the same as 128 English sterlingweights. Its ounce weighed just one-third of a sterlingweight more than a Flemish gold ounce. Why would the Flemings have introduced a mark of this strange composition, apparently at least half a century after the English mark had been re-divided into 160 sterling pennyweights, unless the figure of 128 had had some historical significance for them? Could the Bruges gold mark of eight ounces have been replaced for silver by this smaller mark of six slightly heavier ounces as a consequence of the reduction in the English pennyweight? And was this how the ounce came into being that was eventually replicated in English troy?

It may also be asked why the mercantile pound of Bruges contained the curious number of fourteen of the same ounces, as Pegolotti informs us. Multiplying 14 by 21½ gives a Bruges pound of 298 ¼ sterlingweights, which is suspiciously close to 300, or fifteen Tower ounces. The pound weight introduced at the Scottish mint in the time of David I, and long known as King

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81 Nightingale 1984, 241-3.
82 Lyon 1971, 104.
83 This is apparent from entries in the Pipe Roll of 31 Henry I – see EHD II, 572-5 for the account of Gloucestershire.
84 Br0ndsted 1960, 181, citing Nordic gold hoards of the time of the migrations, containing rings which are multiples of a gold ore weighing about 26.4 g.
85 See above, p. 228.
86 If Althelred’s ora was the same as that in Domesday Book and was equated with the later Cologne and Tower ounces, 128 Althelred pennyweights would have weighed a mark of eight of these ounces, William having subdivided the orae into 20 sterlingweights. 128 of the latter would amount to 6.4 ounces. A conversion into six slightly heavier ounces would have made sense.
87 Evans 1936, 237.
David's Pound, contained fifteen ounces and 300 sterlings.\textsuperscript{89} It is hard to escape the conclusion that both Bruges and Edinburgh had been influenced by an English pound of 300 sterlingweights, derived in turn from Æthelred's pound of fifteen oras which he required to be used in every market and by which his money was to be received.\textsuperscript{90}

Ghyssens thought the correspondence between the Flemish silver and mercantile ounce and the English troy ounce could have been a deliberate alignment of the Flemish ounce with the English system, but felt he could not reach a conclusion because of lack of agreement by scholars on the antiquity of English troy weight.\textsuperscript{91} If instead the Flemish ounce was a by-product of the reduction of the English pennyweight, with the pound of fourteen ounces enabling a close link to be maintained with the English mercantile pound, it may be that in due course troy weight came to England from Flanders and that that is why it has a continental name.

Pegolotti never mentions troy in an English context, though he says that the goldsmiths of London have a mark 5$\frac{1}{2}$ sterlings heavier than the Tower mark, and use it for buying and selling silver vessels and other objects that are not being converted into bullion.\textsuperscript{92} Now 5$\frac{1}{2}$ sterlings is a precise number, not to be dismissed lightly given Pegolotti's credentials, but it happens to produce a result exactly half-way between Tower and troy weight and has been dismissed by Connor as an error of calculation because, he says, the goldsmiths' mark must have been troy.\textsuperscript{93} A statute of 1363 appears to equate the goldsmiths' pound some years later than Pegolotti with two Paris marks,\textsuperscript{94} thereby implying that a goldsmith's mark would have been equal to a Paris mark and therefore eight sterlingsweights heavier than the Tower mark, but troy as such is not mentioned.

There can be little doubt that what we know as troy weight was not employed in any way in the English coinage in Pegolotti's time, and it probably never had been.\textsuperscript{95}

REFERENCES


EHD I: see Whitelock 1955.

EHD II: see Douglas and Greenaway 1953.


\textsuperscript{89} Burns 1887, 1, 4.

\textsuperscript{90} See above, p. 226, and n. 56.

\textsuperscript{91} Ghyssens 1986, 67.

\textsuperscript{92} Evans 1936, 255.

\textsuperscript{93} Connor 1987, 123.

\textsuperscript{94} Rading 1840, I, 231, quoting Statute 37Ell, Cap. 7, Edition 1577.

\textsuperscript{95} Philip Grierson demonstrated that the shillings of the early Kentish laws, which contained twenty sceattas, must have been the small gold coins that numismatists have long called thrymsas. Since these weigh in the region of 20 tray grams, Professor Grierson proposed the equation of the gold sceatt with one each grain (Grierson 1961). However, because of mining charges it is possible that the shilling of the laws was slightly heavier than the minted coin. There are indications that at a later date a sceatt was regarded as a silver weight equivalent to one-forth of an ounce, which (without making assumptions as to the exact weight of that ounce) would very likely have been between 10 and 12 grains and therefore of similar intrinsic value to the Kentish gold sceatt (Lyon 1969, 217).
Silver Weight and Minted Weight


