

PROVINCIAL COIN-WEIGHTS IN THE EIGHTEENTH CENTURY

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Introduction

IN 1745 T. Osborne, bookseller, offered for sale¹ a magnificent work in three volumes, Browne Willis's *Survey of Cathedrals*. Presumably the work had not sold well up to that time, since the price was reduced from £2. 15s. to two guineas. We can confidently assume that the bargain price attracted some buyers, but did they pay with two gold guineas? Or was the payment made with a number of silver coins? Or was it a motley assembly of small foreign gold pieces and some worn silver exchanged at the bullion rate?

The evidence of coin-scales and weights can throw light on such questions. A previous article² traced the development of the making of coin-weights in London, where the virtual monopoly of the Founders Company was being eroded by the middle of the eighteenth century. This article is concerned mainly with the trade outside London. The production of scales and weights was flourishing in Birmingham in the 1770s, where the making of coin-weights can be regarded as a precursor for the copper coinages that started many years later, around 1787. The involvement of such luminaries as Matthew Boulton, James Watt and John Whitehurst lends a wider historical interest to the story. Indeed, by combining the documentary and artefactual evidence it can be shown that coin-weights were being made at the Soho Manufactory, as well as many other Birmingham establishments.

Another sub-plot is the impact of the recoinage of gold in 1773–76. In theory this was intended to deter the circulation of light gold guineas, but in practice the circulation of Portugal gold was similarly restricted, although there is no reference to it in the official pronouncements. The obvious question arises: what are the implications for the economic dictum of Gresham's Law?

The circulating medium

One of the most significant aspects of the circulating medium in England in the middle of the eighteenth century was the predominance of Portuguese gold pieces. Important evidence is provided by trade labels in boxes of coin-scales and weights, many of which have survived (Pl. 8, 1). Most of these labels contain a list of coins – the moidore, the johannes, the guinea, and their parts – each with its equivalent in £sd, and its mass. (Details are given at the end of this section.) Surprisingly, this evidence was not always recognised by numismatists. An early volume of this *Journal* contained L.A. Lawrence's paper³ on coin-weights, the first devoted to the British series. Lawrence apparently based his paper on a small collection of weights (separated from their scales and boxes) and the documentary evidence collected by Ruding. On that basis, he assigned to Ireland all the coin-weights for Portuguese gold, probably because there are several official proclamations declaring the tariff for these coins in Ireland, but none for England. In 1766 the true situation was clearly stated by Snelling, when he noted that no foreign silver or gold coin was current in England, *except* for the gold of Portugal, 'which however passes only by courtesy, and not by law'.⁴

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¹ The advertisement immediately follows the index of Bishop Fleetwood's *Chronicon Preciosum* (London, 1745).

² N. Biggs, 'Coin-weights made by the Founders', *BNJ* 71 (2002), 111–18.

³ L.A. Lawrence, 'Coin Weights', *BNJ* 6 (1909), 287–303.

⁴ T. Snelling, *The Doctrine of Gold and Silver Computations* (London, 1766), p. 69.

The influx of Portuguese gold can be traced back to the first quarter of the eighteenth century: for example, it is recorded that the valuation of the *moidores* was already an issue in the West Country by 1714.⁵ The mechanism for the importation of these coins was the so-called Portugal Trade,⁶ powered initially by the different gold-silver ratios in England and Portugal. By 1742 the situation was serious. In that year, Peter Vallavine, vicar of Monkton in Kent, wrote that:

It may be said that the Portugal Coins are not the lawful Money of this Kingdom, and therefore we have no Business to concern ourselves about them. To this I answer, that these Coins are now become in great Measure the current Money of the Nation; and though we are not obliged to receive them by the Law of the Land, we are forced to it by Necessity; and in all manner of Trade and Business a Man must take them or go without his Money.⁷

We know that weights for checking the Portugal Coins were being made in London in the 1740s. In particular, there are some manufactured by John Kirk that are dated 1747. As well as his 'best' weights with finely engraved portraits (**Pl. 8, 2**), priced at 2s. 6d. for the set of ten, he also made a set of plainer types, priced at 1s. 6d.⁸

The traditional method of diminishing the coin was by clipping, and Vallavine had proposed a solution for this problem by use of edge-graining and other design features, not so different from the ancient long-cross. Unfortunately, although scales and weights provided an easy means of checking for illegally diminished coins, the complexity of the circulating medium provided other excellent opportunities for fraud. Clever forgers were able to produce coins with the correct mass, but lacking in fineness, and consequently with lower specific gravity than the true ones. These coins would pass the simple test of weighing, and could only be detected by more sophisticated means. Their profusion soon led to the development of various forms of hydrostatic coin-scales: by weighing in air and in water, both the mass and the density of a coin could be determined. In a book written by William Symons,⁹ published in 1756, all the data required for checking guineas and Portugal pieces by this method were given (**Pl. 8, 3**).

In fact, one of the earliest pieces of evidence for provincial concerns about counterfeit coins is a patent, taken out in 1753 by Jonathan Hulls and William Bradford of Chipping Campden, for a hydrostatic weighing device.¹⁰ Their instrument consisted of a ruled brass sheet, with a clip for a coin at one end, and a sliding counterweight whose position indicated the mass of the coin. This device was sold under the names of Bradford, Darby, and Hulls; the third man, Richard Darby, being another resident of Chipping Campden. Twenty years later 'Darbey's famous scale' was still being advertised for sale in Birmingham,¹¹ and advertisements for money-scales and weights around that time often mentioned 'slides', which were presumably variants of the Bradford-Darby-Hulls design.¹²

By the 1760s the art of diminishing good guineas by filing, and then using the filings, suitably alloyed, to make fake Portuguese pieces, was widespread. It had become, quite literally, a cottage industry in parts of Yorkshire.¹³ But Yorkshire was not the only source of this evil. In 1773 it was

⁵ A.R. Hall and L. Tilling (editors), *The Correspondence of Isaac Newton*, Vol. 6 (Cambridge: University Press, 1976). See items 1095, 1095a, 1098.

⁶ H.E.S. Fisher, *The Portugal Trade* (London: Methuen, 1971). For a more general account, including finds of Portuguese coins from the thirteenth century onwards, see: J.P.C. Kent, 'The circulation of Portuguese coins in Great Britain', *Actas Do III Congresso Nacional de Numismática*, (Lisbon 1985), pp. 389–405.

⁷ P. Vallavine, *Observations upon the Present Condition of the Current Coin of this Kingdom* (London, 1742), p. 37.

⁸ *Daily Advertiser*, No.5645, 13 February 1749.

⁹ W. Symons, *An Essay on Weighing of Coins* (London, 1756).

¹⁰ Jonathan Hulls and William Bradford, *A new machine or instrument for discovering and preventing frauds by counterfeit gold, which gives the weight and shows the alloy of that metal ...*, Patent specification No. 686, 12 December 1753. See also: M.A. Crawforth, 'Counterfeit Coin Detectors', *Equilibrium* (1980), 264–77; C. Whitfield, *A History of Chipping Campden* (Eton, Shakespeare Head Press, 1958) pp. 164–68. The latter reference also discusses Jonathan Hulls' more famous patent, the world's first for a steam-driven ship.

¹¹ *Aris's Birmingham Gazette* (henceforth denoted by *ABG*), 25 October 1773. The scales were offered for sale by Aris, the proprietor of the *Gazette*.

¹² A version of the Bradford-Darby-Hulls scale was made by Frost and Withnoll, rule-makers in Birmingham. A new type of slide, invented by Gimblett and Vale, watchmakers, was advertised in *ABG* on 20 September 1773.

¹³ H. Ling Roth, *The Yorkshire Coiners* (Halifax, 1906).

alleged that John Horner and Thomas Fairbank of Birmingham had been involved in such activities,¹⁴ and it is to Birmingham that we must now go.

After 1762, when the quarter guinea was minted, there were eleven coins for which weights were conventionally supplied. (Nowadays collectors refer to the weights as a 'long set'.) Some trade labels mention other coins, such as the rare five-moidore piece, but weights for these pieces are almost unknown. The mass stated in Table 1 is the one most frequently given, but there was no official standard for the Portugal pieces. In 1773 the rates for the guinea and its fractions were altered officially, as described later.

TABLE 1. Mass of British and Portuguese coins

<i>Name</i>	<i>Value</i>	<i>Customary Mass</i>
Double johannes	£3 12s.	18dwt 10gr
Johannes	36s.	9dwt 5gr
Moidore	27s.	6dwt 22gr
Guinea	21s.	5dwt 9gr
Half johannes	18s.	4dwt 14gr
Half moidore	13s. 6d.	3dwt 11gr
Half guinea	10s. 6d.	2dwt 16gr
Quarter johannes	9s.	2dwt 7gr
Quarter moidore	6s. 9d.	1dwt 17gr
Quarter guinea	5s. 3d.	1dwt 8gr
Eighth johannes	4s. 6d.	1dwt 3gr

Birmingham issuers of coin-weights – I

The growth of the metal-working trades in Birmingham and the West Midlands is well-documented.¹⁵ By 1700 there were many metal-workers operating in the region, and in the following decades a number of specialised trades began to emerge. In particular, it is likely that some blacksmiths began to specialise in the making of weighing beams. Their products were often referred to as 'stilliards', a term which may have covered equal-arm balance beams as well as the unequal-arm beams that we now call steelyards. The evidence suggests that the workshops of these stilliard-makers were concentrated in an area just to the south of the centre of Birmingham, around the street that became known as Digbeth.

It is necessary to begin the detailed analysis by debunking an oft-quoted claim that has no known basis in the historical record. For many years the scale-making firm of W. & T. Avery claimed to have been 'established in 1730'. This claim was based on the assertion that James Ford, a blacksmith, occupied the premises later known as 11 Digbeth, and that he was making stilliards there in 1730. Sadly, historians of the firm have concluded that the claim cannot be sustained,¹⁶ although it is known that the premises at 11 Digbeth were used for scale-making by 1770, and they came into Avery's possession around 1817.

There is more reliable information about one Robert French, of 28 Digbeth. In 1759 he signed an indenture¹⁷ to take an apprentice, Thomas Beach, and in 1774 he was selling money-scales and weights, examples of which are extant.¹⁸ The scales and weights are contained in a japanned metal box, and French's trade label is glued inside the lid. (It is rare for the label pasted inside these boxes to have survived, so it is quite possible that some of the many boxes that are now anonymous were in fact sold by French.) Robert French remains a shadowy figure, but more is known about his apprentice, Thomas Beach,¹⁹ because in 1782 he moved into the premises at 11 Digbeth, and it was his business that eventually came into the hands of William and Thomas Avery.

¹⁴ ABG, 22 March 1773.

¹⁵ M.J. Wise and B.L.C. Johnson, 'The changing regional pattern during the eighteenth century', *Birmingham and its Regional Setting* (Birmingham, British Association, 1950), pp. 161–86; M.B. Rowlands, *Masters and Men* (Manchester University Press, 1975).

¹⁶ L.H. Broadbent, *The Avery Business* (Birmingham, W.&T. Avery, 1949). See also Barbara M.D. Smith, *The Avery Weigh, a History of W. & T. Avery Ltd, 1730–1939*, unpublished thesis available in Birmingham Central Library.

¹⁷ Broadbent, as in n.16, p. 18.

¹⁸ ABG, 1 August 1774. A box of scales and weights with French's trade label is illustrated by Crawforth-Hitchins, as in n.19.

¹⁹ D.F. Crawforth-Hitchins, 'Thomas Beach', *Equilibrium* (1991–92), 1499–1513, 1539–48, 1572–80.

It is unfortunate that not until 1767 is there a directory²⁰ in which one might hope to find the names of other Birmingham scale-makers. However, it is quite possible that coin-scales and coin-weights were being made in Birmingham from 1760 onwards, if not earlier. One primary source of information is available, because several of the weights, mainly the double johannes (£3 12s.) denomination, are named, and some of them explicitly give Birmingham as the place of manufacture. Of course, the notion of the 'maker' of a weight requires careful interpretation, and we shall need to discuss the details of the techniques of production in due course.

But first, there is one name that provides a firm link with the London trade in coin-scales and weights. In 1740 Gibbs Owen, son of Howard Owen of Brackley, was apprenticed to Samuel Read, the leading scale-maker in London.²¹ He married Hannah Whitbourne in London on 9 November 1747, but for some reason he was not made free, and in 1754 he is recorded as working for William Brind, another scale-maker, as an 'un-free foreigner'. It is possible that his failure to achieve a satisfactory status caused him to leave London, for we know that he finished up in Birmingham, where the restraints on trade were few. Indeed, he may well have been the first specialist maker of coin-scales and coin-weights in Birmingham. Currently, the first known reference is in the directory of 1767, where he is described as a stilliard and scale beam maker working in Digbeth.²² But it is quite possible that he had been there for at least ten years before that.

During the time that Owen was in London there had been a long-running battle between the traditional scale-makers (led by Samuel Read) and John Kirk, engraver and medallist, whose stylish new weights threatened the established order.²³ Owen must have known about coin-weights, and quite possibly he was personally involved in the final stage of their production, adjusting them before they were sold by his master (Read) or his employer (Brind). Thus it is no surprise to find coin-weights for the double johannes bearing the words *Owen Birmingham*. In fact there are two different styles (Pl. 8, 4–5): both are loosely based on the design of the coin, and one in particular closely resembles the reverse design used by Kirk. The corresponding weights for the smaller coins display a variety of what might be called 'primitive' styles.

In addition to weights for the £3 12s. bearing his own name, it is possible that Owen produced similar weights for other people, both in Birmingham and elsewhere. Gibbs Owen was listed at 37 Digbeth in 1774, but he is presumed to have died soon afterwards, because in 1777 Hannah was running the business, and was described as a scale and beam maker. No advertisements for the family firm have yet been found.

At this point it is useful to recall the basic processes involved in the production of a coin-weight. First, the raw material (usually brass) was rolled into sheets of uniform thickness, and then blanks of approximately the right size were cut from these sheets. The blanks were then marked in some way to show the intended denomination of the weight. In many cases this was done by using individual punches to stamp figures and letters (Pl. 9, 6), but more ornate designs, such as those issued by Owen, must have been produced by striking with dies in a screw-press, the method used for coins and medals. Finally, the weight was adjusted by filing so that its mass was correct for its intended purpose.

Of course, some of these processes are similar to those involved in other trades, such as button-making, which was to become enormously important in the 1770s and 1780s. Thus it is no surprise to find that, in parallel with the hammer-men of Digbeth, a different breed of scale-maker and weight-maker had begun to emerge in Birmingham by 1770. The New Hall estate, just to the north of the centre, remained as open land until 1746, but it was built up rapidly thereafter. Many of the new residents were 'toymen', who made all manner of small items of brass and other metals, including buttons. Not only were these men capable of making coin-scales and weights, they also needed to use them in their commercial transactions.

²⁰ *Sketchley's Birmingham Wolverhampton and Walsall Directory*, 1767.

²¹ Information kindly supplied by D.F. Crawforth-Hitchins.

²² *Sketchley*, as in n.20.

²³ *Biggs*, as in n.2, p. 115.

A forerunner of this new breed was James Jackson, who was already established as a jeweller at his 'toyshop' in the High Street in 1750.²⁴ He is of interest to us because his name appears on the £3 12s. weight of a rather fancy set (Pl. 9, 7). He is also recorded as a maker of hydrostatic scales.²⁵ Although it is not certain that he was directly involved in making either weights or scales, there must be a strong presumption that the scales and weights that he sold were made somewhere in Birmingham. In 1773 Jackson was appointed as assay-master at the new Birmingham Assay Office, and we shall have more to say about him in that context later.

Another name seen on coin-weights is that of the Westwood brothers, about whom a great deal is known.²⁶ John Westwood (1744–92) and his brother Obadiah (1747 – c.1815) were born in Bilston. In the 1767 directory John was listed as an 'engraver and chaser', at the Bear and Ragged Staff in Bull Street, Birmingham, and he is known to have been responsible for a number of medals and tickets produced around that time. It seems that Obadiah was also in Birmingham by 1770, and it may be that he was responsible for the suggestion that the pair should enter the scale trade. The production of medals is not greatly different from the production of coin-weights, and his brother's expertise would have been useful. It is interesting to note the parallel with the situation in London twenty years earlier, where another engraver, John Kirk, had also challenged the scale-makers by producing coin-weights. In August 1773 the brothers were advertising in *Aris's Birmingham Gazette* (Pl. 9, 8) that scales and weights were sold at 37 New Hall Walk, and in the following year they were able to thank their customers for patronising their venture into the scale trade. Some of their scales and weights were sold in japanned metal boxes, with a trade label in the name of I. & O. Westwood that listed the usual eleven coins. The label says that they also made hydrostatic scales, but no example has yet been found. The japanned boxes were almost certainly made for them in the Wolverhampton and Bilston area, but an advertisement in September 1774 gives the very strong impression that scales and weights were being produced in the Westwoods' own Manufactory.²⁷

There are two types of £3 12s. weight with the words Westwood Birm^m, as well as an anonymous type that was obviously produced with the same punches (Pl. 9, 9–11). All the Westwood weights are fairly plain (rather surprisingly for an artistic maker), but nevertheless well made. Clearly this was only one of the Westwoods' many activities, which included the production of coffin furniture, but it must have been profitable, for they continued to put their name on coin-weights for many years thereafter.

Among the names that appear on weights there are several others that are mentioned in Sketchley's directory of 1767. For example, the Berry whose name appears on a £3 12s. weight (Pl. 9, 12) is almost certainly John Berry, a jeweller in New Hall Walk in 1767. In 1773 he advertised²⁸ that he 'Manufactures Scales and Weights of all sorts for Weighing Gold with Great Exactness'. Similarly, Basil Hunt is listed in Edmund Street in the 1767 directory, and later his address is given as Number 48. His name appears on a rare £3 12s. weight (Pl. 9, 13) that usually turns up in a very worn condition. William Tongue appears in the 1767 directory as a gun-lock maker in Snow Hill, but by 1777 he is described as a money-scale maker, at 43 Snow Hill. He stamped his name on two types of £3 12s. weight (Pl. 9, 14–15), one of which resembles the weights issued by Owen.

At this point we must pause to consider the time-span of the weights for Portuguese coins. In the years 1773–76 the government made a serious attempt to re-establish the guinea as the primary gold coin in circulation (the details will be discussed below). During that period a great amount of Portugal gold was withdrawn. However, some of the weights for Portuguese pieces appear to have been made after 1776. The firms mentioned above may have continued issuing weights for Portugal pieces into the 1780s but, more significantly, some of the weights bear names

²⁴ *ABG*, 23 July 1750, quoted in: D.F. Crawforth-Hitchins, 'James Jackson – Jeweller's Initiative', *Equilibrium* (1991), 1494–96. See also: B. and P. Withers, 'Hallmarks on Base Metal', *Equilibrium* (1991), 1471–79.

²⁵ T. Sheppard and J.F. Musham, *Money Scales and Weights* (London, Spink, 1976), pp. 55, 156.

²⁶ D.W. Dykes, 'John Gregory Hancock and the Westwood Brothers', *BNJ* 69 (1999), 173–86.

²⁷ *ABG*, 23 August 1773, 28 February 1774, 26 September 1774.

²⁸ *ABG*, 30 August 1773.

that do not appear in directories until 1777 or later. Of course, it could be argued that the reason is simply that the directories are incomplete. But there are reasons for thinking that some of these weights were made by firms that only came into existence after 1776, which would imply that the Portugal gold continued to circulate in significant quantities after that date.

A typical example is the firm of Anderton, Son and Calley. The £3 12s. weight with this name turns up quite frequently (Pl. 9, 16). In 1777 Isaac Anderton senior, toymaker, was living at 31 Weaman Street, his son Isaac Anderton junior, baker, was at 30 Weaman Street, and Joseph Calley, piercer was in Easy Hill. The earliest known reference to a firm with the name as it appears on the weight is in *Bailey's Western and Midland Directory* of 1783. It may also be significant that the weights in this firm's long set do not display the intended mass of the coin. In 1773 the traditional 'full' weight for a guinea, 5dwt 9gr, was officially altered, and in a rather complicated way, as we shall see. Any weights displaying the figures 5:9 must therefore have been made before that time, but weights on which no mass is stated (and many anonymous sets are of this type) could have been made subsequently.

Another fairly common long set that falls into this category has the initials CW (Pl. 9, 17). Although it might be suggested that these initials stand for 'correct weight' or something similar, there is reason to think that they indicate a maker, Callingwood Ward. He is known to have made folding coin-scales with these initials, and there are some rare knobbed coin-weights with the name C.WARD in full on the guinea, and CW on the half-guinea.²⁹ However, the records of Callingwood Ward in business extend only from 1785 to 1818, and the folding type of coin-scale that he made was almost certainly not invented until after 1780.

The firm of Whitworth and Yates (Pl. 9, 18) is notable for producing a long set in which there are two varieties of guinea weight, one giving the mass as 5*9, and one as 5*8. In 1774 the firm is listed as Yates and Whitworth, the style Whitworth and Yates not appearing until 1777.

A few other Birmingham issuers of weights for the Portugal pieces are recorded in the Withers Corpus.³⁰ The Harrison whose name appears on a 36s. weight (Pl. 9, 19), as well as on a later guinea weight (Pl. 9, 20), is almost certainly the James Harrison who announced his move from 21 Wood Street to 68 Park Street in 1774.³¹ There is more doubt about the £3 12s. weights with the name FORD (Pl. 9, 21). In 1769 Richard Ford was granted a patent, number 935, for an improved means of producing scale pans and other items by stamping.³² This Ford was certainly a maker of weighing machines, but the machines he advertised in 1772 were heavy duty machines for weighing in tons.³³ In 1777 Ford and Co. were listed as weighing machine makers, and Ford, Whitmore, and Brunton were listed at the same address, 27 Little Charles Street, described as 'Makers of Weighing Machines, Patent Scales, Clock, Watch and Jewellers Tools, Files, &c'. Thus it remains undecided whether it was this Ford, or another, who made the coin-weights.

Other names will doubtless turn up. A £3 12s. weight with the name of William Bromley was reported, but not illustrated, in an article³⁴ published in 1973. No example of this weight has yet become available for inspection. The name probably refers to a William Bromley who was listed as a jeweller at 53 Snowhill in 1777. Another type known only from a single example bears the name Z. Tompson (Pl. 9, 22).³⁵ A Zachariah Tompson was married to Rebecca Fosbrook in Birmingham in 1764, but not until 1785 do we find a man with that name listed in a directory, as a brass candlestick maker in Vauxhall Row. In 1818, C. & L. Tompson were in Duddeston Street, making many kinds of brassware and 'weights of all sorts'.

²⁹ M.A. Crawford, *Weighing Coins* (London, Cape Horn, 1979), pp.163-64; R. Stocks, 'Guinea Weights (Part 2)', *Equilibrium* (1982), 495-504.

³⁰ P. and B. Withers, *British Coin-Weights* (Llanfyllin, 1993).

³¹ *ABG*, 1 August 1774.

³² R.B. Prosser, *Birmingham Inventors and Inventions* (Birmingham, 1881, reprinted by S.R. Publishers, 1970), pp. 50, 134.

³³ *ABG*, 17 and 24 August 1772.

³⁴ E. Macdonald, '18th Century British Coin Weights for Portuguese Gold Coins', *Proceedings of the Eighth International Congress of Numismatics* (New York - Washington, 1973), pp. 601-603.

³⁵ Spink Coin Auction 18, 19 November 1981, Lot 782. Through the good offices of the auctioneers, a photograph has most kindly been supplied by the purchaser.

The legislation of 1773–76

The problems of the circulating medium could not escape the attention of the government indefinitely. In 1769 an Officer of the Excise was brutally murdered by the coiners,³⁶ which caused consternation in high places. In addition to bringing the murderers to justice, the authorities were finally convinced that something must be done about the root cause of the problem, the sorry state of the currency.

By his own account,³⁷ the architect of the reform was Charles Jenkinson, later the first Lord Liverpool. He believed that the problem stemmed from the lack of a mechanism for the continual withdrawal and recoinage of light guineas. The Mint was required to produce $44\frac{1}{2}$ guineas from each pound troy of standard gold, so that the average mass of a new guinea was just over 5 penny-weights and 9.4 grains. By the middle of the century the conventional mass at which a guinea would be accepted at its full value of 21s. was 5dwt 9gr, and this was stated on labels in scale boxes, and on the coin-weights themselves. But almost all guineas in circulation had been reduced below 5dwt 9gr, and were taken in trade with an allowance of 2d. per grain. For example, a guinea weighing 5dwt 5gr was light by four grains, the equivalent of eight pence, and so it was valued at 20s. 4d.

The central idea in Jenkinson's plan was the introduction of a 'least current weight' (specifically 5dwt 8gr) for gold coins. The idea was not completely new, but it is clear that on this occasion some thought had been given to the practical mechanisms that would be needed to ensure that it might have the desired effect. It was hoped that, by making it illegal to trade with guineas weighing less than the specified amount, lighter guineas could be withdrawn and be sent or sold to the Bank of England. From there they would go to the Mint for recoinage. Part of the loss on light guineas would have to be borne by the individuals who held them, but the nation would bear the cost of the procedures. In fact, as things turned out, the greatest beneficiaries were the officials of the Mint, who made inordinate profits out of the recoinage.³⁸

In addition to the problem of establishing a circulating medium that was stable in the long-term, there was also the short-term problem of how to introduce the new system. An abrupt change from a system in which guineas, however light, could be used as currency, to one in which only those guineas that were close to the full mint weight could be so used, would have a disastrous effect on trade. Thus it was that a programme of transition was introduced in the years 1773–76. There were three major phases.

July–August 1773

The Light Coin Act of 1773 (13 Geo. III c.71) gave every citizen the right to cut and deface a light guinea if offered to them, and required the officers of the Revenue to do so. This was clearly necessary, if light coin was to be withdrawn from circulation. On 23 July 1773 the Treasury issued an Order³⁹ instructing the Revenue officers as to the precise meaning of 'light'. It was clear that the immediate demonetisation of all guineas below 5dwt 8gr had been rejected and instead a phased withdrawal was proposed. Guineas dated before 1760 would not be withdrawn for the time being, provided they weighed at least 5dwt 3gr, those dated between 1760 and 1771 provided they weighed at least 5dwt 6gr, and those dated 1772 or after provided they weighed at least 5dwt 8gr. Proportional figures were specified for the half-guineas and quarter-guineas. All guineas below these weights were to be accepted by the Revenue, and withdrawn, until 22 September 1773, after which they would be refused. The withdrawn guineas soon began to arrive at the Mint, and recoinage is said to have commenced on 24 August 1773.

³⁶ Ling Roth, as in n.13.

³⁷ C. Jenkinson, *A Treatise on Coins of the Realm* (London, Effingham Wilson, 1880; first published 1805), pp. 3–5. For the view from the Bank of England, see Sir John Clapham, *The Bank of England* (Cambridge, 1944), vol. 1, p. 171. Although Clapham says that Jenkinson became Master of the Mint in 1775, it was his son, later the second Lord Liverpool, who was Master, 1799–1801.

³⁸ G.P. Dyer and P. Gaspar, 'Reform, the New Technology and Tower Hill, 1700–1966', in C. Challis (editor), *A New History of the Royal Mint* (Cambridge, University Press, 1992), pp. 441–44.

³⁹ *London Gazette*, 31 July 1773.

May–July 1774

The King's Speech to Parliament at the beginning of 1774 signalled the government's intention to carry forward its coinage reforms, and Parliament duly debated the issue early in May.⁴⁰ On 10 May 1774 the Recoinage Act (14 Geo. III c.70) was passed. It effectively sanctioned the programme that had already begun. The Act was followed on 24 June 1774 by a Proclamation that heralded the second phase. It stated that all guineas below 5dwt 6gr would be demonetised as from 15 July, although they would be accepted by the Revenue officers until 31 August. For the same period, a number of persons were authorised to exchange light guineas for good ones. Finally, it was announced that a further Proclamation demonetising all guineas below 5dwt 8gr would follow in due course. In summary, after 15 July 1774 the only guineas that could legally be used as currency were those weighing at least 5dwt 6gr and dated 1760–71, and those weighing at least 5dwt 8gr and dated 1772 onwards.

May–August 1776

The promised final Proclamation was not issued until 13 April 1776. All guineas below 5dwt 8gr were demonetised with effect from 1 May in that year, although they were accepted by the Revenue officers until 19 August.

Of course, the official pronouncements do not tell the whole story. For insight into what actually happened during this period of turmoil, we must turn to the documentary and artefactual evidence.

One of the major questions concerns the withdrawal of Portugal gold, rather than light guineas. Although the Portugal gold still formed a large part of the circulating medium, there is no mention of it in the Acts and Proclamations. It appears that the official thinking was that the promise of good guineas, and legal backing, would make holding Portugal gold a risky business. The alien pieces would thus be driven out, whatever 'Gresham's Law' might suggest. In fact, reading between the lines, it is clear that Portugal gold was indeed withdrawn in substantial quantities. The stock of foreign coin at the Bank of England increased from £86,000 to £705,000 between August 1773 and May 1775, and the amount of 'foreign gold in ingots' increased from £61,000 to £1,095,000 in the same period.⁴¹ These ingots must have been obtained by melting coins withdrawn from circulation, and presumably they were treated separately from ingots of English gold because of the possible difference in fineness.

Soon after the Treasury Order in 1773, tradesmen in many parts of the country began to advertise that they would accept, not only light guineas, but also Portugal gold, at various rates. For example, in August 1773 it was reported⁴² that the tradesmen 'in many commercial towns bordering upon Cambridgeshire' had agreed to do this, and in September the tradesmen of Boston in Lincolnshire did likewise.⁴³ Such offers were motivated partly by the desire to avoid loss of trade, and partly, no doubt, by the opportunity for profit. It is likely that many people were keen to dispose of their light guineas, given the increased risk of holding on to them, and they would therefore accept a discounted rate. A tradesman with a quantity of light guineas could then sell them to the Bank at the standard rate. The records of foreign gold at the Bank (quoted above) suggest that a similar process operated with regard to Portugal gold. But there were no official pronouncements, and the withdrawal was not systematic. Indeed, the evidence of the Birmingham coin-weights, as described above, suggests that the Portuguese pieces continued to circulate for a number of years after 1775.

Regulation of coin-weights

Since the idea of 'least current weight' was central to the programme of reform, it was clearly necessary to have some means of controlling the new weights that the public would need to check

⁴⁰ *London Chronicle*, 7–10 May 1774.

⁴¹ Clapham, as in n.37, p. 171.

⁴² *ABG*, 16 August 1773.

⁴³ *Leeds Mercury*, 14 September 1773, quoted in: Ling Roth, as in n.13, p. 70.

their coins. Because the critical value had been set at 5dwt 8gr, all the old weights denominated at 5dwt 9gr were unsuitable, although some could, and would, be altered without too much trouble (Pl. 9, 23). The mechanism of regulation was provided by an Act of 1774 (14 Geo III c.92). This allowed an annual salary of £250 for an officer who was to be provided with duplicates of the standard Mint weights, and use them to verify the coin weights used by the public. Approved weights were to be stamped with a distinctive mark. The officers of the Mint quickly provided the required standards, and on 15 November 1774 their first keeper, John Whitehurst, was appointed.⁴⁴

John Whitehurst (1713–88) was a native of Derby, whose early reputation was based on his ability to make extremely accurate clocks.⁴⁵ It is clear, however, that he was much more than a skilful artisan. By 1758 he was in correspondence with Matthew Boulton⁴⁶ about a pyrometer, and it is said⁴⁷ that he made an assay balance for Boulton in 1768. Several other scientific instruments signed by him are known, and it was probably his expertise in this field that led to his appointment as the 'Stamper of Money Weights', as the office became known.

Whitehurst was required by the Act to publish a description of his official mark in the *London Gazette*, 'three times at least' before 31 December 1774. This he did, choosing for his mark an imperial crown.⁴⁸ He advertised that his office would open on 22 January 1775, but there is some evidence (see below) that it opened early because the demand was so great. It appears that the demand did not abate, for later in 1775 an additional Act (15 Geo. III c.30) was passed, allowing Whitehurst to charge a fee for stamping weights, in order that he might employ more assistants.

Numerous examples of the coin-weights produced around this time have survived.⁴⁹ For example, there are many sets of weights relating to the double standard that was legally in force from 1774 to 1776. Typically, a set of this kind contains two weights for guineas, marked 5dwt 6gr and 5dwt 8gr, and two weights for half-guineas, marked 2dwt 14gr and 2dwt 16gr. Weights for quarter-guineas, marked 1dwt 7gr and 1dwt 8gr are sometimes included. Many types make explicit reference to the 1771/1772 borderline, with legends such as COINED BEFORE 1772, COINED SINCE 1771, GEO III UP TO 1 JAN 1772, and PRIOR TO 1772.

This profusion of material challenges us to discover who made it, when, and where. A few of the Birmingham issuers of long sets, such as the Westwoods, went on to issue weights for new standard guineas, but many of the new weights came from new sources, and most were anonymous. But there are some clues as to their origin, particularly in the countermarks that were used to validate the weights. As well as the imperial crown, the mark of John Whitehurst, several other marks were used for this purpose. Perhaps the most common is the ewer, the mark of the Founders Company. It will be recalled that the Founders had stamped coin weights with the ewer mark around the end of the seventeenth century, but this practice had fallen away by the time of George II.⁵⁰ Stirred into action by the news of recoinage, the Company authorised its Beadle to resume stamping coin weights on 9 November 1773, and when it was discovered in 1774 that there was to be an Act of Parliament, the Founders petitioned to have their traditional rights preserved, and a clause to that effect was inserted into the Act.⁵¹ Since Whitehurst was not ready to start work until January 1775, there was a period during which the Founders mark was only one available for validating coin-weights in London.

⁴⁴ G. Dyer, 'The Office of Stamper of Money Weights – I', *Libra* 5 (1966), 20–21.

⁴⁵ M. Craven, *John Whitehurst of Derby* (Ashbourne, Mayfield Books, 1996).

⁴⁶ *The Boulton and Watt Archive and the Matthew Boulton Papers from the Birmingham Central Library, Part 1: Lunar Society Correspondence* (Marlborough, Adam Matthew Publications, 1993), Reel 10B: John Whitehurst, Item 1. A great deal of interesting information on the activities of Boulton, Watt, Whitehurst, and their friends is in: J. Uglow, *The Lunar Men* (Faber and Faber, London, 2002).

⁴⁷ E.G.R. Taylor, *The Mathematical Practitioners of Hanoverian England* (Cambridge, University Press, 1966), p. 195.

⁴⁸ *London Gazette*, 17 December 1774.

⁴⁹ Withers, as in n.30, pp. 199–260.

⁵⁰ Biggs, as in n.2.

⁵¹ W.M. Williams, *Annals of the Worshipful Company of Founders* (London, 1867), p. 158. See also *Hansard*, 1772–74, p. 807.

Birmingham issuers of coin-weights – II

Another mark frequently found on coin-weights is an anchor, the mark of the Birmingham Assay Office.

Matthew Boulton has already figured briefly in our narrative, as a long-standing friend of John Whitehurst, the official Stamper of Money Weights. Towards the end of the eighteenth century he was to become one of the prime movers in the production of 'small change', and the origins of his interest in matters of coinage have recently been the subject of some debate among economists and economic historians.⁵² The evidence to be presented here suggests that he was already deeply involved in such matters by 1774, and that the production of coin-weights in Birmingham, particularly in the period 1774–76, can be regarded as a 'trial run' for the token coinage that began around 1787.

One of Boulton's many enterprises was the production of high-quality silverware, but he was frustrated by the need to take his products to the nearest assay office, in Chester, for hallmarking. With typical self-confidence he lobbied for the establishment of a new assay office, and his efforts resulted in an Act of 1773 (13 Geo. III c.52), which sanctioned the establishment of an office in Birmingham, as well as one in Sheffield, where the local silversmiths had joined in Boulton's campaign. The Act received Royal Assent in May 1773, and it is said that Boulton returned in triumph to Birmingham, to be greeted by the sound of church bells. When the Birmingham Assay Office opened later that year, its first Assay Master was James Jackson, already noted as a retailer of coin weights and hydrostatic balances. It must be concluded that, in the process of becoming one of the leading lights of the Birmingham jewellery trade, he had acquired some technical knowledge of assaying. He was also an associate of Matthew Boulton, whose technical interest in assaying is borne out by the acquisition of an assay balance made by John Whitehurst in 1768.

The purpose of a hallmark is to guarantee the fineness of precious metal, and so it is rather surprising to find that, on 9 November 1773 the Guardians authorised the assay master to stamp this mark on troy weights, as a verification mark.⁵³ Furthermore, on 21 July 1774 the Assay Office announced that it would be open for adjusting and sealing, not only troy weights, but also 'the particular weights now required for Gold Coin'. Of course, the Assay Office itself needed such weights, because it was incidentally a receiver of revenue, in the form of the duty payable on assayed goods. And so it was logical for the office to offer these coin-weights for sale, validating them with its anchor mark.⁵⁴ A few weeks later James Jackson offered a reward of twenty pounds for information leading to the conviction of anyone counterfeiting the anchor mark.⁵⁵

However, it is not at all clear that the Assay Office had the right to use its hallmark for this purpose, and indeed the practice did not go unquestioned. Soon after Jackson's warning about counterfeiting appeared in *Aris's Birmingham Gazette*, the same newspaper carried an advertisement from E. Cooper, at 22 High Street. In 1777 Elizabeth Cooper was listed at this address as a japanner. In September 1774 she was offering for sale, not only 'a great Variety of Japan Trays and Waiters', but also coin weights

assayed and marked at the only authorized Office for assaying and marking brass weights in London – THE ONLY OFFICE APPOINTED BY THE KING'S AUTHORITY for assaying and marking WEIGHTS. This Mark is the COFFEE-POT or kind of EWER.⁵⁶

As has already been noted, at this time John Whitehurst had not been appointed, so it was quite true that the Founders mark was the only one that had legal authority. It is possible that Cooper's weights were made in Birmingham, sent to London for stamping, and then sent back to be sold in Birmingham, but it also possible that she was trying to sell London-made weights in Birmingham.

⁵² T. Sargent and F. Velde, *The Big Problem of Small Change* (Princeton, University Press, 2002); G. Selgin, *How some Birmingham Button Makers Beat Gresham's Law* (forthcoming).

⁵³ Birmingham Assay Office, meeting of the Guardians, 9 November 1773; quoted in Withers, as in n.24.

⁵⁴ ABG, 25 July 1774.

⁵⁵ ABG, 29 August 1774.

⁵⁶ ABG, 5 September 1774.

COINS	Value	Weight	at 12 1/2 dwt
1 Portugal Piece	3 1/2	18 1/2	18 1/2
1/2 D ^o	1 10	9 1/2	9 1/2
1/4 D ^o	1 8	4 1/2	4 1/2
1/8 D ^o	9	2 7/8	2 7/8
1/16 D ^o	4 6	1 3/8	1 3/8
1 Moidore	1 7	6 22	6 22
1/2 D ^o	13 6	3 11	3 11
1/4 D ^o	6 9	1 17	1 17
1 Guinea	1 1	5 9	5 9
1/2 D ^o	10 6	2 16	2 16

At 12 1/2 dwt *17 1/2 dwt*

Scales & Weights.
For Gold Coins.
 English Portugal & Spanish.
 West India Silver Coins &c.
 Also a Curious Set of Scales
 and Weights for Diamonds.
 Made & Sold by JOHN KIRK,
 in St Paul's Church Yard.
LONDON.

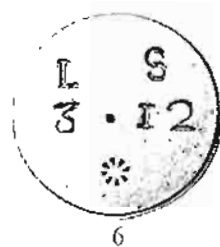
At 12 1/2 dwt *17 1/2 dwt*



A TABLE of the Static and Hydrostatic Weight of Gold Coins, with their Value and Difference.

Species.	Value.			Stat. wt		Hyd. wt		Difference
	l.	s.	d.	Pwt	Gr	Pwt	Gr	
1/16 of a Moidore	0	2	8 1/2	0	16 1/2	0	15 3/4	0 1
1/8 of ditto	0	3	4 1/2	0	20 3/4	0	19 3/4	0 1
1/4 of a Johannes	0	4	6	1	3 1/2	1	2 7/8	0 1 1/2
1/2 of a Moidore	0	6	9	1	17 1/2	1	15 5/8	0 2 1/2
1/4 of a Johannes	0	9	0	2	7 1/2	2	4 1/2	0 3
1/2 of a Guinea	0	10	6	2	16 1/2	2	13	0 3 1/2
1/4 of a Moidore	0	13	6	3	11 1/2	3	6 3/4	0 4 1/2
1/2 of a Johannes	0	18	0	4	14 1/2	4	8 3/4	0 5 1/2
1 Guinea	1	1	0	5	9	5	2 1/2	0 6 1/2
1 Moidore	1	7	0	6	22 1/2	6	13 1/2	0 8 1/2
1 Johannes	1	16	0	9	5	8	17 1/2	0 11 1/2
1 1/2 Guinea Piece	2	2	0	10	18	10	4 1/2	0 13 1/2
1 1/4 Moidore Pce	3	7	6	17	7 1/2	16	9 5/8	0 21 1/2
1 double Johannes	3	12	0	18	10	17	10 3/4	0 23 1/2
1 1/2 Guinea Pce	5	5	0	26	21	25	10 1/2	1 10 1/2
1 1/4 Moidore Pce	6	15	0	34	15 1/2	32	19 1/2	1 20





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For Weighing GOLD:
SCALES and SLIDES of all Sorts for Weighing
 GOLD COIN made by John and Obadiah Westwood. Seal
 and Copper-plate Engravers, Dye-Sinkers and Coffin-Furniture-
 Makers, No. 39, in New-bell-Walk, Birmingham, where may
 be had the above Articles Wholesale or Retail; as also a small
 new contrived Scale convenient for the Pocket, Weights un-
 derdressed, and Scale Pens, on the most reasonable Terms.

N B Likewise their new-invented Bordering for Rooms,
 Picture Frames, &c.



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GOLD COIN MONEY SCALES and **WEIGHTS**, of various Sorts, are manufactured in the compleatest Manner, at STREET and PRYCE'S Wholesale Warehouse, in Bridgewater, Somerset. They have at a great Expence and Trouble, procured from the Tower of London, Standard Weights of every Sort; and the Public may depend on the greatest Accuracy and Truth in their Scales and Weights.—They employ near 200 Hands, and compleat weekly Fourteen Hundred Sets; and are determined to sell as low, or lower than in London, Bristol, or Birmingham.

Statical and Hydrostatital Balances, by the King's Patent, Braziers, Foundry, Tin, and Ironmongery Goods. New-invented Bath Hobb Stoves, and with Ovens, of various Sorts and Patterns, with their proper Furniture, are finished in the compleatest Manner at their Manufactory.—Clock Dial Plates finished in a curious Manner, Engraving in general by the best Hands.—Clock Makers Brass and Steel Work, Tools and Materials of the best Sorts, &c. &c.



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Other Birmingham firms were happy to offer a choice. William Mountford was listed in Sketchley's 1767 directory as a brass candlestick maker in Catherine Street, and he appears to have built up a specialised business in money-scales and weights. His name is recorded as a maker and seller of the folding gold balances that became very popular in the 1780s.⁵⁷ On 29 August 1774 he advertised that he

makes and sells upon the very lowest Prices, Wholesale or Retail, Weights for weighing GOLD COIN, of a new pattern, explaining the weight of the coin now passing, adjusted and sealed at the Assay Office in Birmingham; at the Office in London; or adjusted by himself with an accurate Balance to the Mint Standard; all the sorts vary in price.⁵⁸

The Assay Office was not Boulton's only link with the recoinage. The Act of 1774 specifically authorised the appointment of persons 'to receive and exchange the said deficient Gold Coin', and Messrs Boulton and Fothergill were among those listed in the proclamation of 24 June. On 18 July 1774 they advertised⁵⁹ that their 'Gold Coin Office' at 2 Snow Hill would be open for this purpose until 31 August. Similar advertisements appeared regularly in the succeeding issues of *Aris's Gazette*, including notice of a branch office operating from the premises of William Jenkins in Wolverhampton. Significantly, they also offered to buy 'Portugal and all other unpassable Gold Coin at the best price'.

Part of a set of weights with the inscription GOLD COIN OFFICE appeared on the market some years ago (Pl. 9, 24), and these may well have been used in one of Boulton's offices.⁶⁰ But similar offices operated in other parts of the country: the proclamation of 24 June had authorised them in Carmarthen, Gloucester, Coventry, Lichfield, Shrewsbury, and York, and a subsequent order from the Treasury added Bridgnorth, Leicester, Bewdley, Evesham, Ludlow, Kidderminster, and Liverpool.⁶¹

Given this background, it is not surprising to find evidence that Boulton himself was involved in the production of money-weights. In May 1774 the genius of the steam-engine, James Watt, had arrived in Birmingham to work with Boulton. Watt had been trained as a mathematical instrument maker, and worked as such in Glasgow: he may indeed have made scales and weights, although none by him are known. At the start of 1775 Watt went to London, mainly with the intention of extending his patent for improvements to the steam engine. By that time, the Birmingham Assay Office had been verifying and stamping weights for many months, and maybe Watt's intention, when he called on Boulton's friend, John Whitehurst, was to pass on to him a few hints about setting up as the official Stamper of Money-Weights. Watt's subsequent letter to Boulton, dated 13 January 1775, is worth quoting in full.⁶²

By Mr Whitehurst's of last night to Mr Jackson you would hear of my being with him. I was ill with a headache which prevented me from writing myself and I am afraid you would not comprehend the meaning of his as he would write it his own way.

He is quite sick of the adjusting scheme and is, by my desire, endeavouring to persuade the Trade to buy their weights of you ready adjusted. He has two assistants and says he can get more. They have been working hitherto along with him in the Office, sometimes adjusting and sometimes examining, and the people, owners of the weights sitting among them waiting for them, papers of weights Pwts., Grains &c., lying scattered about and mixed together, which cannot fail to create a scene of confusion.

He has come very readily in to my proposals, which are that the two assistants shall examine your weights in a separate place and that he shall, himself only attend the Office for the Legal hours, and also that to avoid temptation, there shall be no files in the Office.

What is wanted from you is the prices you will sell your weights at unstamp't to the trade here and the price of stamp't weights. I have been stupid enough to forget what you said to me on these heads, it will also be proper that there be one or two places established in Town where they are to be sold in wholesale. Mr Matthews⁶³ and Mr Jackson's Br[other]⁶⁴ appear to me to be the proper people – there are many wholesale orders in Town that can be obtained as soon as you can supply them. You will therefore with all dispatch send up quantities to com-

⁵⁷ Crawford, as in n.29.

⁵⁸ ABG, 25 July 1774.

⁵⁹ ABG, 18 July 1774.

⁶⁰ Simmons Gallery, Mailbid Auction 18, 11 July 2000, lots 151–153.

⁶¹ ABG, 18 July 1774.

⁶² Boulton and Watt Archive, as in n.46, Reel 1: James Watt 1768–1780, Item 44.

plete setts and I shall do what I can to get them stamp't or sold unstamp't as may answer best. Your weights are both the most neat & most exact of any that have come to the Office only they complain that the 5 dwts are too large and not thick enough. The London weights are vile things and of all sizes, shapes & weights, few of them accurate enough to pass the Office without Mr Whitehurst's help. He says that he has stamp't about 1200 setts altogether so that there is not much harm done yett – Let us have complete setts next week if possible. In short he is so infected with pea-pevishness that without holding close to him he will do nothing.

The references to 'your weights' suggest that Boulton himself was making coin-weights. As we have already remarked, 'making' a coin-weight is not a single operation. It requires, among other things, the cutting of blanks, the use of a screw press to produce the design, and fine adjustment by filing. Some of these processes, and possibly all of them, could have been done at Boulton and Fothergill's Soho Manufactory, which had opened in 1762. This suggestion is confirmed by series of advertisements that appeared shortly after Watt's visit to Whitehurst.

On 16 January 1775 James Jackson announced that, as from 30 January he would sell money-weights stamped at the London Office 'lately opened'. At the same time Hewitt Clarkson, a clock- and watch-maker of Wolverhampton, claimed that he had obtained duplicate copies of the standard weights used in the new Office in London, and proposed to sell money-weights stamped at that Office. Additionally, he would sell weights adjusted by himself using an accurate balance made for the purpose. This claim was swiftly followed by a statement from John Whitehurst, saying that Clarkson did not have official duplicates of the standards, and had not yet sent a single weight to be verified.⁶⁵ A few weeks later the following advertisement appeared.

NEW WEIGHTS for GOLD COIN, of the SOHO Manufactory, proved and marked in the London Weight-Office, according to Act of Parliament, are sold by JAMES JACKSON, Assay Master in Birmingham.⁶⁶

Here is conclusive proof that the Soho Manufactory was making coin-weights in 1775. Hitherto, the main source of information on the origin of Boulton's interest in coinage has been a memoir written by James Watt many years later.⁶⁷ The memoir is somewhat vague about dates, but it clearly refers to Boulton's official appointment as an exchanger of old coin at the time of the recoinage. The memoir says that Boulton suggested that guineas should be produced with uniform dimensions (as well as weight and fineness). If the diameter and thickness could be standardised, counterfeits could be detected by using ordinary weights and a simple gauge, rather than by the troublesome hydrostatic method of weighing in air and water. Apparently it was not thought possible to achieve such uniformity of size with the technology available at that time; this had to await the application of steam power to the coining process. In passing, it ought to be noted that the idea of checking gold coin with scales, weights and a gauge was patented by Solomon Henry in 1774, and his balance and gauge were being advertised for sale in Birmingham in 1776.⁶⁸

In order to identify the Soho weights we must turn to the objects themselves, with particular regard to the types that are often stamped with an anchor. There are three main groups on which the anchor mark occurs very frequently, suggesting that they were both made and validated in Birmingham. Many of these weights also occur with other countermarks, but that is quite consistent with what has already been said.

1. [Withers 1954–1968] In this group, both obverse and reverse have a thin raised border, within which is a field with raised letters, numbers, or design. The border is expanded at the top to provide a raised area on which a verification mark can be stamped. There are several legends (Pl. 10, 25–29). Some of them are also stamped in the field with the name WEST-

⁶³ William Matthews was Boulton's agent in London.

⁶⁴ Mr Jackson's brother was John Jackson, watchmaker, of Bridgewater Square.

⁶⁵ *ABG*, 16 January 1775, 23 January 1775.

⁶⁶ *ABG*, 13 March 1775.

⁶⁷ Watt's 'Memorandum concerning Mr Boulton' (1809) is printed in: H.W. Dickinson, *Matthew Boulton* (Cambridge, University Press, 1937), pp. 203–208.

⁶⁸ Solomon Henry, *An instrument or machine for weighing the coin of this kingdom, and also for ascertaining whether the said coin is counterfeited, or has any base metal mixed therewith*. Patent specification No. 1080, 12 September 1774. Henry's scale and gauge were advertised in *ABG*, 15 April 1776.

WOOD (Pl. 10, 30), exactly as stated in an advertisement from the brothers in July 1774.⁶⁹ Very rarely, the name of LUTWYCHE, another die-sinker, appears.

2. [Withers 1889–1893] This group is characterised by the obverse, a laureate bust of George III similar to the ‘fourth head’ used on the coins. One of the reverses has the legend A GUINEA WT. / GRICE / 1775 in three curved lines (Pl. 10, 31). This is presumably the type advertised on 24 April 1775 by Joseph Grice of 43 Bull Street, Birmingham, where the mark of the imperial crown is mentioned explicitly.⁷⁰ In fact Grice had previously advertised money weights on 27 September 1773, and the fact that the ‘fourth head’ type is rather common suggests that he issued them for a number of years. The reverses are usually unnamed, and are frequently stamped with an anchor. One reverse is similar to the one described above, but it lacks the name, and usually occurs stamped with the anchor and the figures 5*8 (Pl. 10, 32). The most common reverse reads P.^{wt}. G^l. / 5:8 / GUINEA, or similarly but with the figures 5:6. These too are usually found with the anchor mark (Pl. 10, 33–34).
3. [Withers 2066–2073] This group is uniface, with a design similar to that on the commonest reverse of the previous group. A few of them are rectangular (Pl. 10, 35), but most are round (Pl. 10, 36). There is a parallel series of pennyweights (Pl. 10, 37), which appear to fit Watt’s description of weights that were considered by the London trade to be ‘too large and not thick enough’. So these are prime candidates for the weights that were made at the Soho Manufactory.

Other assay offices

Towns with assay offices were visited regularly by goldsmiths and silversmiths, and it was natural that scales and weights should be on sale in those places. The assay masters themselves needed weights and scales, for several reasons. They weighed the samples taken for assay in order that the fineness could be verified, and they weighed the silverware itself in order to assess the duty payable. Furthermore, the duty was part of the government’s revenue, and so they also weighed the coins offered in payment – and, at the time of the recoinage, defaced those that were light.

A parliamentary committee in 1772 found that several of the long-standing assay offices were defunct, the only ones operating effectively at that time being those in London, Exeter, Chester, and Newcastle.⁷¹ (Edinburgh was also operating but, as the enquiry was confined to England, it was not mentioned in the report.) Birmingham and Sheffield were added in 1773. The activities of the Birmingham Assay Office with regard to the verification of coin-weights have already been noted, and it is natural to ask whether similar activities were carried on at the other assay offices.

In London, gold and silver wares were assayed at the Goldsmiths Hall. In addition to its responsibility for assaying precious metal, the Goldsmiths Company had acquired, back in the fourteenth century, the right to verify and stamp weights in the troy system. But, by tradition rather than right, this was done by individual makers or goldsmiths, not by an officer of the Company.⁷² The marks used in London for this purpose were based on the standard mark, a lion passant, and this mark is frequently seen on pennyweights and grain weights. In addition, the Withers Corpus records over thirty varieties of the lion mark on coin-weights, many of them dating from the time of the recoinage.

Chester has already been mentioned, as the place where Birmingham silverware had to be taken until 1773. It is particularly interesting because one of the earliest surviving boxes of coin scales made outside London is a box in the Queen Anne style, with the trade label of a Chester maker,

⁶⁹ ABG, 18 July 1774.

⁷⁰ ABG, 24 April 1775.

⁷¹ House of Commons, *Report from the committee appointed to consider the manner of conducting the several assay offices ...* (London, 1773). A brief, but very informative account of the various assay offices, with examples of their work, is contained in: *Touching Gold and Silver, Catalogue of an Exhibition at Goldsmiths Hall* (London, 1978).

⁷² Contemporary references to the lion mark being used by individual weight-makers go back to 1677 at least: W. Badcock, *A Touchstone for Gold and Silver Wares* (London, 1677), p. 99.

Richard Brock (or Brocke).⁷³ Brock was born in Chester, the son of a pewterer, Phillip Brock. In 1681 he was sent to London to be apprenticed to a member of the Blacksmiths Company, the usual path for anyone wishing to enter the scale trade. He probably returned to Chester after gaining his freedom in 1688/9, and worked with his father, making scales as well as pewterware. Phillip Brock died in 1705, and Richard Brock died in 1730, but it appears that other members of the family carried on as pewterers and braziers: Thomas (d. 1755) and another Richard (d. 1759). It is known that the family made chandeliers, but there is, as yet, no firm evidence to show that they continued to produce coin-scales. However, a coin-scale made by another pewterer and brazier, David Napier of Chester, is known.⁷⁴ Furthermore, as we shall see, at least one pewterer and brazier was active as a scalemaker in the city at the time of the recoinage.

But first, we must return to the role of the assay office. At the time of the recoinage, the assay master for Chester, John Scasebrick (or Scarisbrick), became involved in a public debate about the weights required. On 31 August 1773 it was reported in a local newspaper that he was expecting the imminent arrival of standards from the Mint in London, which would enable him to adjust money-weights and scales. A month later weights adjusted by him were being offered for sale by a local brazier.⁷⁵ However, Scasebrick did not have the market in Chester to himself. On 12 October 1773 John Thomas, advertising as a pewterer, brazier, and scalemaker, was offering scales and weights for sale, adding that:

he most respectfully begs leave to inform the public that the weights have not been entrusted to the care of a second Person, but have been most exactly adjusted by himself; and to distinguish them from those sold by others, are all stamped with the initial Letters of his Name ...⁷⁶

Several weights stamped with John Thomas's initials, IT, are known. Most of them are part of a long set, with weights for both English and Portuguese gold, and it is quite possible that John Thomas was producing these weights before 1773 (Pl. 11, 38–39). Another type, also often stamped with the initials IT, has the monetary values in the form S20, S10, and S5. On the S20 weight the mass is given as 5dwt 3½gr (Pl. 11, 40). There is no convincing explanation for this figure, a point that was made by Scasebrick, who claimed that he could

produce the best Authority for making the Guinea Weight 5 Pennyweights 3 grains ... And all other Weights of 5 Pennyweights 3 grains and a half, rather more, of which sort there have been numbers sold by a Tradesman of this City, are an Imposition on the Public.⁷⁷

Scasebrick's own weights for guineas and fractions at the 5dwt 3gr standard are very plain, and appear to have been made locally (Pl. 11, 41–43). The guinea weight has the monetary value indicated by two crowned X's, and it is stamped with his initials, I.S., and a lion. On the example illustrated here, the figures '5 3' are written in ink on the reverse.

It appears that Scasebrick found a ready market for his coin-weights in Chester, despite the competition from John Thomas. Later in 1774 he advertised that he had been to London and had acquired a large quantity of weights for guineas, halves and quarters at the 5:8 and 5:6 standards.⁷⁸ This is confirmed by the occurrence of such weights stamped with I.S. and a lion, as on the earlier examples (Pl. 11, 44).

There were two other long-established assay offices, in Newcastle and Exeter. The names of the Newcastle silversmiths whose marks were registered at the office at the time of the recoinage are known, but no link with the scale and weight trade has been found. The same is true of the Exeter office, which did not have permanent premises, but operated from the workshop of the goldsmith who was currently appointed as assay master. However, a box of coin-scales made by an Exeter

⁷³ D. Crawford-Hitchins, 'Notes and Queries' *Equilibrium* (1996), 2253–56.

⁷⁴ See *Equilibrium* (1989), 1299.

⁷⁵ *Adam's Weekly Courant*, 31 August and 5 October 1773. These advertisements and the next three items are quoted in full in: Withers, as in n.30, p. 197.

⁷⁶ *Adam's Weekly Courant*, 12 October 1773.

⁷⁷ *Chester News*, 8 February 1774.

⁷⁸ *Chester News*, 30 August 1774.

man, Richard Tucker has been recorded,⁷⁹ and some guinea weights stamped with the initials RT in a heart-shaped outline can be attributed to this man (Pl. 11, 45). The label in the box said that he 'makes all sorts of Scale-Beams and Money Weights as by Act of Parliament', suggesting that the box dated from the time of the recoinage. It is sad that this box is one of the items lost in the Hull Museum disaster, but recently another example has turned up in the Royal Albert Museum, Exeter.⁸⁰ In a directory of 1791, Tucker is listed as the only scale maker in Exeter.⁸¹

On the other hand, there is clear evidence that the newly-established assay office in Sheffield did play a part in the recoinage. The man appointed as its first assay master was Daniel Bradbury, a London goldsmith. He made (or caused to be made) a coin-weight on which his name was displayed as part of the design, and which, following the Birmingham practice, was stamped with the hallmark of his office (Pl. 11, 46). Not a lot is known about Bradbury, and when he died in 1789 his estate was valued at only £50.

Rather more successful was Charles Proctor who, with his brother Luke, also issued coin-weights in Sheffield. The firm of Charles and Luke Proctor made small articles of steel and brass, such as lancets and ring dials, as well as hydrostatical coin balances.⁸² The balances were accompanied by a long set of weights, some of which bear the name of the firm (Pl. 11, 47), and some the date 1773 (Pl. 11, 48), which suggests that the Proctors were making weights and scales before the advent of the recoinage. They were also active as silversmiths, and their silver mark, C.L. above P, was one of the earliest to be registered at the assay office in Sheffield.⁸³ This mark has been recorded on a guinea weight of the uniface Birmingham style, but was hitherto unidentified (Pl. 11, 49). It seems that there were close links between the industrialists of Birmingham and Sheffield at this time, and this could be a fruitful area for further research. We know that the Proctors joined with a Birmingham man, Thomas Beilby, to set up the firm of Proctors and Beilby, opticians. As early as 1776 the firm was in contact with James Watt about 'rotary' steam engines, at which time Watt could only reply that he was working on the problem.⁸⁴ When they eventually installed their engine, in 1786, they were the first firm in Sheffield to do so.⁸⁵

Despite its omission from the parliamentary enquiry into Assay Offices, it is appropriate to include Edinburgh in this account. There are several long sets of weights that seem to have an Edinburgh provenance, for example a set with the words J. Gardner EDIN^R on the £3 12s. weight (Pl. 11, 50). This is believed to refer to John Gardner, a pewterer, recorded at West Bow in 1774, for whom a box of scales and weights is known.⁸⁶ (Confusingly, another John Gardner, of Glasgow, a former apprentice of James Watt, also made scales at this time.⁸⁷) Another long set has the name of John Milne, a brassfounder, stamped on the £3 12s. weight.⁸⁸

Edinburgh seems to have been affected by the recoinage in much the same way as the larger English towns. A note in the *Edinburgh Advertiser* in August 1773 complained that people who wished to dispose of small amounts of light gold had to accept a lower rate than the rich, who had larger quantities and could get the full bullion rate.⁸⁹ In the years 1774 to 1776, when guineas were current at two standards, the appropriate weights were sold by William Reid, opposite the City Guard.⁹⁰ But as yet, there is no evidence that the Edinburgh Assay Office played any part in these events.

⁷⁹ Sheppard and Musham, as in n.25, pp. 101–102.

⁸⁰ www.exeter.gov.uk/timetrail

⁸¹ *Universal British Directory*, 1790/1, Vol. 3.

⁸² Ring dials by the Proctors can be seen at the Museum of the History of Science, Oxford, www.mhs.ox.ac.uk/database, Inv. Nos. 33544, 46125, 48396. Their hydrostatic coin scale is depicted in *Equilibrium* (1980), 261.

⁸³ Edward Law, *Sheffield Silversmiths, Part I*, homepage.tinet.ie/~lawed.

⁸⁴ Watt to Proctors and Beilby, 8 November 1776.

⁸⁵ R.E. Leader, *Reminiscences of Old Sheffield: its streets and people* (Sheffield 1875).

⁸⁶ Information kindly supplied by Dr A.D. Morrison-Low.

⁸⁷ T.N. Clarke, A.D. Morrison-Low, and A.D.C. Simpson, *Brass and Glass* (Edinburgh, 1989) p. 164.

⁸⁸ Withers, as in n.30, p. 328.

⁸⁹ *Edinburgh Advertiser*, 10 August 1773.

⁹⁰ Withers, as in n.30, p. 329.

Coin-weights in the West of England

Of course, coin-scales and weights were made in a number of places that did not have an assay office, in the West of England for example. Very few of these objects have survived, but it is possible to get some idea of their extent by scanning the pages of the *Glocester* [sic] *Journal* for the period of the recoinage. In fact, the story that unfolded in the pages of *Aris's Birmingham Gazette* was repeated in Gloucester, but on a smaller scale. The linking thread was the Bristol brass industry which, it will be recalled, had flourished from the beginning of the eighteenth century.⁹¹

Not far away from Bristol is Bridgwater, where a brassfoundry operated from about 1743 onwards. In the *Glocester Journal* for 25 October 1773 the Bridgwater firm of Street and Pyke advertised for sale 'gold coin money scales and weights of various sorts' (Pl. 11, 51). The advertisement claimed that the firm was making 1400 sets a week, but nevertheless only a few scales and weights by Street and Pyke are known. Their name is recorded on coin-weights for guineas dated 1775 (Pl. 11, 52), and there is a small moidore balance stamped T. PYKE / B'WATER.⁹² In later years Thomas Pyke became quite famous for his decorative brass work, such as the chandelier in Exeter's Guildhall, and in 1786 he was in correspondence with Matthew Boulton about a position in the Cornish Metal Company.⁹³

Street and Pyke were not the only firm to advertise scales and weights in Gloucester during the period of the recoinage. In the autumn of 1773 the *Journal* carried several advertisements for money scales and weights, made and sold by the following people.

Robert Cowcher, cutler and toyman, Upper Northgate Street, Gloucester⁹⁴

Thomas Woodward, cutler and toymaker, Bridge Street, Bristol⁹⁵

William Deighton, brazier, Stroud⁹⁶

Charles Sommers, No. 1 Walbrook, London⁹⁷

Robert Cowcher must have been the man responsible for the rare £3 12s. weight (Pl. 11, 53), bearing the words R. COWCHER / GLOUCESTER. He was almost certainly a relative of the William Cowcher who was making brass pins in Westgate Street, Gloucester as early as 1743. Given the availability of Bristol brass, pinmaking had become the major industry in Gloucester, and in due course the Cowchers set up an office in London. Cowcher and Finch, pinmakers, were at 46 Cannon Street by 1789, and the firm continued under various names, eventually achieving international fame as Kirby Beard, whose Best Mixed Pins are mentioned in Dickens's *Dombey and Son*. From our point of view there is particular interest in the London firm, because the words 'Cowcher and Co. London' have been recorded on two different £3 12s. weights (Pl. 11, 54–55). These weights closely resemble some of those made in Birmingham, but we cannot say anything for certain about their origin.

Even less is known about the scales and weights that were made and sold by Woodward of Bristol and Deighton of Stroud. However, there is a long set of weights, some of which are stamped with the initials TW in a rectangle (Pl. 11, 56). These weights are distinctive because they have a raised rim, which might suggest a provincial variation on the standard pattern. Thus the possibility that TW stands for Thomas Woodward cannot be ruled out. The fourth person in our list, Charles Sommers of London, was a well-known maker of scales and weights.⁹⁸

The government's arrangements for the verification of coin-weights provided further opportunities for the entrepreneurs of Gloucester.⁹⁹ On 3 October 1774 Robert Cowcher advertised weights 'assayed and marked at the only authorised office ... in London', as well as 'Birmingham Weights

⁹¹ J. Day, *Bristol Brass* (Newton Abbot, David and Charles, 1973).

⁹² Withers, as in n.30, p. 247.

⁹³ Pyke to Boulton, 10 June 1786, quoted in Day, as in n.91, p. 130.

⁹⁴ *Glocester Journal* (henceforth denoted by *GJ*), 2, 23 August 1773, 13, 20 September 1773, 4, 11, 18, 25 October 1773, 1 November 1773.

⁹⁵ *GJ*, 13, 20 September 1773.

⁹⁶ *GJ*, 4, 11, 18, 25 October 1773, 1 November 1773.

⁹⁷ *GJ*, 25 October 1773.

⁹⁸ Withers, as in n.30, p. 189.

⁹⁹ *GJ*, 3, 10, 24 October 1774, 14 November 1774.

... marked with an anchor'. A week later George Washbourn, a clockmaker of Gloucester, announced that he too would sell the Birmingham weights. On 24 October James Jackson, writing with all the authority of the assay master in Birmingham, informed the citizens of Gloucester that Washbourn's Birmingham weights were indeed extremely accurate. On the other hand (he said) the claims of certain 'ungenerous Boasters', who offered weights 'assayed and marked at the only Office appointed by the King's authority', were plainly ridiculous, since there was as yet no such office. In response, Cowcher reworded his advertisement, to make it clear that his London weights were marked with the ewer of the Founders Company.

It is likely that the story that unfolded in the *Gloucester Journal* was repeated in other parts of the country. But few issuers of coin-weights emulated Robert Cowcher by putting their names on their weights. Indeed, almost all known coin-weights that bear names and date from the 1770s (excepting those from London) have been mentioned in this article. For the sake of completeness, mention must be made of a weight, known only from one example in a French Museum,¹⁰⁰ which was issued by Benton of Liverpool (Pl. 11, 57). The name may refer to Edward Benton, toymen, who was at 171 Dale Street in 1773. The general appearance of this weight suggests that it may have been made in Birmingham.

Conclusion

Local newspapers and directories are less coherent sources than official records and historical memoirs, but also less tendentious. Combined with detailed artefactual evidence, these sources can illuminate questions of currency. In this article, we have used that combination of evidence to show: that the circulation of Portuguese gold was reduced, but not eliminated by the recoinage of 1773–76; that the making of coin-weights by the hammermen and toymen of Birmingham was a precursor for the later production of token coins; that Matthew Boulton and his network of friends were already involved in currency matters in the 1770s; and that other provincial centres, as well as Birmingham, shared in the activity of the recoinage.

In more romantic vein, we have snatched a few glimpses of shadowy figures playing bit-parts in the drama of the 'industrial revolution': Gibbs and Hannah Owen, turning their backs on the preposterous conceits of the City of London, and taking themselves and their expertise to Birmingham; Widow Cooper, bravely challenging the shaky claims of the New Men of that town; and in Bridgwater, remote from the recognised centres of government and industry, Messrs Street and Pyke making vast numbers of coin-scales.

KEY TO THE PLATES

Most of the weights are fully described in the Withers *Corpus*, as in n.30, and only brief descriptions of them are given here.

Plate 8

1. Label dated Feb 26 1746/7, from a box of scales and weights sold by John Kirk.
2. Weight in copper for £3 12s., by John Kirk, dated 1747. W1526.
3. Table giving the static and hydrostatic mass of gold coins, from Symons, as in n.9.
4. £3 12s. weight by Owen. W1640.
5. £3 12s. weight by Owen. W1651.

Plate 9

6. £3 12s. weight with the denomination stamped incuse. W1840a
7. £3 12s. weight by James Jackson, Birmingham. W1755a.

¹⁰⁰ Aimé Pommier, *Poids Monétaires II: Poids pour monnaies non françaises* (Paris, 2001), No. 801.

8. Advertisement by John and Obadiah Westwood, *ABG*, 23 August 1773.
9. £3 12s. weight by Westwood, Birmingham. W1730a.
10. £3 12s. weight by Westwood, Birmingham. W1731a.
11. £3 12s. weight, anonymous, made using the same punches as the last. W1732a.
12. £3 12s. weight by Berry, Birmingham. W1750a.
13. £3 12s. weight by Basil Hunt, Birmingham. W1743a.
14. £3 12s. weight stamped W. Tongue. W1713a.
15. £3 12s. weight stamped W. Tongue. W1752a.
16. £3 12s. weight by Anderton, Son & Calley, Birmingham. W1741a.
17. £3 12s. weight by C W[ard]. W1708a.
18. 36s. weight by Whitworth and Yates, Birmingham. W1806b.
19. 36s. weight by Harrison. W1678b.
20. Guinea weight by Harrison. W1869D.
21. £3 12s. weight by Ford, Birmingham. W1701a.
22. £3 12s. weight by Tompson. *Not in Withers*. Obv: *L S* with small crown between, above 3 ~ { 12, 18 10 below, Z. TOMPSON in two lines. Rev: similar but BIR^M replaces the name.
23. Guinea weight (W1774d) with 5:9 altered to 5:8, stamped with anchor. W2031Am.
24. Guinea weight. *Not in Withers*. Obv: Stamped GOLD COIN OFFICE in two lines, raised within an incuse field. Rev: DWT GR above 5 6.

Plate 10

25. Weight for OLD GUIN^S, stamped with anchor. W1964E.
26. Weight for guineas COIN'D BEFORE 1772, stamped with anchor. W1961E.
27. Weight for guineas COIN'D SINCE 1771, stamped with anchor. W1962D.
28. Weight for GUINEA, stamped with anchor. W1966D.
29. Weight for guineas, stamped anchor. W1968D.
30. Weight for guineas COINED SINCE 1771, stamped WESTWOOD and anchor. W1954D.
31. Guinea weight, by Grice, 1775, stamped crown. W1889A.
32. Reverse of guinea weight, similar to no. 31 but not named, 1775, stamped anchor. W1890D.
33. Reverse of guinea weight, obverse similar to no. 31, stamped anchor. W1893D.
34. Reverse of guinea weight, obverse similar to no. 31, stamped anchor. W1893E.
35. Guinea weight, uniface, rectangular, stamped anchor. W2072D.
36. Guinea weight, uniface, round, stamped anchor. W2069Dc.
37. Five pennyweights, uniface rectangular, stamped crown. W2220a.
38. £3 12s. weight, 'rosette' in centre of obverse. W1728a.
39. 27s. weight with IT on obverse, 'rosette' and 42 stamped on reverse. W1728c.
40. 20s. weight with 'rosette' stamped on obverse. W2018N.
41. Weight for old guineas. *Not in Withers*. Stamped with two crowned X's (representing twenty shillings), IS and lion.
42. Weight for old half-guineas. *Not in Withers*. Stamped with one crowned X, IS and lion.
43. Weight for old quarter-guineas. *Not in Withers*. Stamped with 5, IS and lion.
44. Weight for new guineas, stamped IS and lion. W1998M.

Plate 11

45. Guinea weight stamped RT. W2141 type (this denomination not listed).
46. Guinea weight by Daniel Bradbury, Sheffield. W1868.
47. 18s. weight by C & L Proctor, Sheffield. W1787e.
48. Half guinea weight, dated 1773, reverse as previous type. W17878g.
49. Guinea weight, stamped C.L above P in a circle (Charles and Luke Proctor's silver mark). W2076D.
50. £3 12s. weight by John Gardner, Edinburgh. W2850.
51. Advertisement by Street and Pyke, Bridgwater. *GJ* 25 October 1773.

52. Guinea weight by Street and Pyke, 1775. W2111E.
53. £3 12s. weight by R. Cowcher, Gloucester. W1742a.
54. £3 12s. weight by Cowcher & Co., London. W1749a.
55. £3 12s. weight by Cowcher & Co., London. *Not in Withers*. Obv: Cowcher (in a curve), & Co, London (in a curve). Rev: large *L S* with looped letters, above 3:12.
56. 36s. weight with raised rim, stamped TW. W1841 type (this denomination not listed).
57. £3 12s. weight by Benton, Liverpool. *Not in Withers*. Obv: 18 10 / L S / 3 ● 12 in three lines, above BENTON in a straight line, and LIVERPOOL in a curve. Rev: similar.