In the seventeenth and eighteenth centuries it was customary, in mint reckonings of a very precise character, to use notional subdivisions of the grain called mites, droits, periods and blanks, each being alternately a twentieth or a twenty-fourth of the one above it. The earliest printed listing of them occurs in an appendix to James I's proclamation of his second coinage, dated 16 November 1604, for a supposed earlier one of 1601 is a mistaken inference from an eighteenth-century text. Their relationships are set out by Gerard Malynes in 1622 in his Consuetudo vel Lex Mercatoria, one of the best general handbooks of mercantile practice published in Europe during the seventeenth century:

'the Troy weight...(contains) twelue ounces, euerie ounce twentie penie weight, euerie penie weight twentie and foure grains, and euery grain twentie mites, euery mite twentie and foure droicts, euerie droict twentie periods, euerie period twentie and foure blanks'.

The ounce, pennyweight and grain in this schedule were real weights and their relationships to each other were traditional, but the fractions of the grain were both imaginary and novel. They can be set out in tabular form.

1 grain = 20 mites = 480 droits = 9600 periods = 230,400 blanks
1 mite = 24 " = 480 " = 11,520 "
1 droit = 20 " = 480 "
1 period = 24 "

We still use imaginary weights today. When the proclamation of 1604 gave the weight of the penny as 7 grains 14 mites 20 droits 2 periods 12 blanks, it was doing essentially the same thing as Schedule 1 of the Coinage Act of 1870 did in stating the weight of the sovereign as 123.27447 grains, for even though nineteenth-century balances could weigh much more accurately than their seventeenth-century counterparts, such tiny fractions can only be arrived at by long division. In King James's time the weighing of coins and precious metals was not normally taken beneath the troy grain (0.065 grams). This is shown by a 'Declaration of an order for the making of certain small cases for ballances and weights to weigh all manner of gold coins', itself reflecting the terms of a proclamation for establishing standard weights and measures of 16 December 1587. It was quite exceptional for a proclamation of 26 December 1632 on the distribution of standard weights by the Mint to provide for them going as low as a half-grain.

James Murray in 1896 started a brief correspondence on the notional fractions in Notes and Queries. They obviously represent an artificial
prolongation, to 'weights' below the grain, of the alternating 20/24 multiples in use just above it (1 ounce = 20 pennyweights, 1 pennyweight = 24 grains). Strange as they appear to us, they were, as he pointed out, not dissimilar to the decimal fractions that replaced them in the nineteenth century, for decimal fractions are only the sum of tenths, hundredths, thousandths, and so on. If the old Scottish Tron weight known as a 'drop' (1/16th of an ounce) can be equated with 37.588 troy grains, this means that it weighed 37 grains + 5/10ths of a grain + 8/100ths of a grain + 8/1000ths of a grain, while expressing it in the old measures as 37 grains 11 mites 18 droits 4 periods 19½ blanks meant that it weighed 37 grains + 11/20ths of a grain + 18/480ths of a grain, etc. Decimal fractions have the advantage of being easier to handle, though since the last figure may be only an approximation to the nearest integer they may be less correct. Although Murray's correspondence brought to light some early examples which he was able to use for the entries in the *Oxford English Dictionary,* it did nothing to account for the terms themselves.

These in fact arose out of the need to devise specific terms for fractions in a world that was not accustomed to expressing any but the simplest fractions (three-quarters, one-eighth) numerically. The normal practice was to employ entities whose relationships to each other were well known. People spoke, for example, of an inch of an acre, meaning one-twelfth of an acre (there were twelve inches in the foot), or expressed the fineness of sterling silver (925/1000) as 11 ounces 2 pennyweights, i.e. 11/12ths (there were twelve ounces to the Troy pound) plus 2/240ths (there were twenty pennyweights in the ounce and so 240 in the pound). But if fractions of the grain were to be devised that continued downwards its pattern of alternating twenty and twenty-four multiples, it would be necessary to find suitable terms for them. *Mite* was an obvious first candidate, since it was already used for anything very small. The others, I would suggest, were chosen half in jest, for as written down they could be thought of as entities of diminishing magnitude, *droit* as a vertical stroke, *period* as a full stop (still 'period' in the United States), and *blank* as nothing at all. Possibly, indeed, the terms were taken over from the vocabulary of type-setters or type-cutters, for the skills of die-sinkers and type-cutters have much in common, but we know little of printers' technical vocabulary in this country prior to 1683 and this can be no more than a surmise. Let us consider the terms in order.

*Mite.* This word, as the citations in the *OED,* s.v. *Mite*1,2 make plain, was Indo-Germanic in origin and applied in Middle English to anything very small in size (as an insect, 'mite') or value (e.g., the widow's 'mite', *minuta* in the Vulgate, of Mark xii.43), though in the latter sense it was influenced by the Flemish/Dutch word *mijt,* used for the smallest denomination of low quality billon struck in the Low Countries from the fourteenth century onwards and worth 1/24th of the Flemish *groot,* the equivalent of a 'penny' in the accounting system. This did in fact provide a notional fraction, 1/24th of a penny, unknown to the *OED* and sometimes used in mint accounts: Sir Martin Bowes, for example, stated the profit on the minting of silver between 1 June 1544 and 31 March 1545 as 8s.8½d. 5 mites, the sum in fact ending 8 17/24d.4 It has been asserted that 'mite' was used in the later middle ages with the meaning of a precise weight, but the texts cited to this effect will not stand up to examination. One, Ruding's statement that the remedy laid down in the mint indenture of 4 December 1343 for the striking of Edward III's gold coinage was 'a mite of a carat' is a simple mistake, for the *mytisme* he quotes is a misreading for *oytisme,* i.e. *huitième,* and the remedy is an eighth of a carat.5 The other, used in the *OED* (s.v. *Mite*2) as evidence for the application of the word to a precise weight as
early as 1390, is a verse in John Gower's *Confessio amantis* \((v.4412: 'that scarsly wolde it weie a myte')\), and in the context this means no more than 'something very small'. On the other hand, the evidence in favour of its computational use dating only from the sixteenth century is very strong, for no fraction, whether real or notional, is mentioned in any of the late medieval or early sixteenth-century treatises on weights and measures that have survived, and Robert Record in *The Grounde of Artes*, the most influential work on mathematics published in England in the sixteenth century, asserts firmly that no weight below the grain was in normal use. Its introduction presumably took place at the same time as the adoption of terms for the other fractions, and its common meaning of 'something very small' made it a natural choice.

*Droit*. This, if my suggestion is correct, would be French *droit* (from Lat. *directum*) in the sense of 'upright', as in such phrases 'se tenir droit', 'il est droit sur ses pieds', 'droit comme un I'. Although this sense is not recorded in English, there is nothing against the hypothesis of a borrowing from French, as occurred with *blank*. Whether it was also a typographical term, as were *period* and probably *blank*, we do not know, for there is no technical work in English on typography earlier than that of Moxon of 1683.

*Period*. This appears in the sense of 'full stop' in a religious poem published in 1609, and the way in which it is used shows that by that time it formed part of the common speech. It was indeed the normal term used in English up to the nineteenth century, when it came gradually to be replaced by the current 'full stop'. See *OED*, s.v. *Period* 11b.

*Blank*. This term was applied in English to the white circle in the centre of a target (*OED*, s.v. *Blank* 5b.2), and was thus something smaller than a surrounding black circle, but in its computational sense it is more likely to have been suggested by typography. The normal seventeenth-century English term for what Moxon in 1683 terms the 'white between words' was 'space', as it still is today, but *blank* may have been used earlier, as *blanc* is for such a space in French.

When and how did the use of these terms for fractions of the grain originate? The earliest printed reference to them that I have found is in the proclamation of 1604 already referred to. Their presence there apparently arose out of a wish to display the English system side by side with the Scottish one, which used twenty-fourths consistently and was borrowed from France. But there are earlier manuscript sources, rather confusedly cited in the *OED*, going back to the third quarter of the sixteenth century.

The two earliest both occur in the remarkable collection of sixteenth- and early seventeenth-century Mint documents and memoranda which are bound up together as Harleian MS 660 in the British Library. No.25 (fos. 76–85) in this, a 'Treatise or Discriptyone of things cheefly appertayning to the Mintage' is by William Humfrey, a London goldsmith and assayer to the Mint, and gives essentially the same breakdown of the grain as Malynes was to do (fo.81v: 'Every subtylle grayne (doth) containe 20 mytes...'). The work is undated but must have been written before 1579, when Humfrey died. The same definitions are given in another work (No.38, fos.107r–114r) in the same volume, a memorandum by Sir Francis Knollys prepared shortly after the completion of the Great Recoinage for submission to a royal commission on the exchanges consisting of the Lord Treasurer (William Paulet, Marquess of Winchester), Sir Francis Knollys, Sir Walter Mildmay, and Sir William Cordalle. It is entitled 'A Conferrence of the waightes of Bullyone and vallues of the syluere moneys of England, and the syluere moneys of
the Lowe Contreyes, with a Comparrysone of the Exchanges used to and free betweene the Burse of Anwarpe and Lumbardestreete in London', and is dated February 1564 of the seventh year of Elizabeth, i.e. February 1565. The substance of this lengthy and important document was printed in 1924 by Tawney and Power, and it has been widely quoted by subsequent scholars, but the list of fractions of the grain occurs in the preliminary section intended to establish the mint par of exchanges between English and Flemish currencies, and Tawney and Power omitted the detailed calculations of this section as being too technical in character. The pattern of fractions was thus at least well established by the 1560s, but how much further back it goes is difficult to say. It may have been devised because the repeated debasements of the mid-century had forced the Mint to indulge in minuter calculations than had been required in earlier times, though on the other hand precision, with debased coins, is a less important consideration.

How long did these fractions remain in use? It is hard to say, partly because of their unreality, partly because they virtually represented the 'house practice' of the Royal Mint and were little used outside it - Malynes had close relations with the Mint and the Royal Exchange, though his claim that his father was a moneyer seems to be fictitious so that they make only very occasional appearances in printed documents. A table largely coinciding with that of King James's proclamation was appended to the act of parliament of 17 July 1649 (cap.43) ordering the new coinage for the Commonwealth, and they are usually noted in the dictionaries and descriptive works that began to proliferate from the mid seventeenth century onwards - Thomas Blount's Glossographia, Phillips' New World of English Words, Morden's Geography Rectified, Bradley's Family Dictionary - although Samuel Johnson, with his more literary bias, ignored them all. As late as the nineteenth century some authors of handbooks on coinage or weights and measures still thought it incumbent on them to explain what they were, while admitting that in actual calculations they had long since been displaced by decimal fractions of the grain. There was, particularly in their later stages, considerable uncertainty as to how they should be spelled, period being often periot, peryoit or perrit, and droit being often rendered doit through confusion with the name of a Low Country copper coin (Dutch duit; English doit) familiar in this country from the sixteenth century onwards. By the eighteenth century they were, effectively, dead.

NOTES

2. OED, s.v. Droit, from a table headed 'Weights of Silver Coins 43 Eliz. 1601', in J.Millan, Coins, weights and measures Ancient and modern, of all nations. Reduced into English on above 100 tables (1747), p.7. Millan was giving the theoretical weights of the silver coins of his own day, and the reference is due to the fact that these still conformed to the standard introduced '43 Eliz, 1601'.
4. H(umphrey) D(ysson), A Booke Containing All Such Proclamations as Were Published During the Raigne of the late Queene Elizabeth (1618), p.258.


7. J.A.H.Murray, 'Subdivisions of the Troy Grain', *Notes and Queries* 8th ser. 10 (1896), 255, 278-79, 338-39, the second consisting of comments by the clerk of the Royal Mint.

8. *OED*, s.v. Blank (sb.10), Droit 2, Mite 2, Perit.

9. C.E.Challis, 'The Debasement of the Coinage, 1542-1551', *EcHR* 2nd ser. 20 (1967), Table on p.463, note. The value can be worked out on internal evidence. I am grateful to Dr Challis both for calling my attention to this use of the word, which I had missed, and for other information and much help generally in the final drafting of this paper.


18. C.E.Challis, 'Mint officials and moneyers of the Tudor period', *BNJ* 45 (1975), 62.


22. T. Blount, Glossographia (1656 etc.), s.v. Ounce.


24. R. Morden, Geography Rectified, or, A Description of the World (1680), p. 175.


26. E.g., J. Ede, A view of the gold and silver coins of all nations (1808), p. 64; P. Kelly, Metrology; or an exposition of weights and measures, chiefly those of Great Britain and France (1816), p. 85, and in his more famous and comprehensive work, The Universal Cambist, second edition (1835), I, 219.