



II. Remarks and suggestions, for improving the British Coin, and the keeping of money accounts, preparatory to the entire introduction of decimal money

Mr. John Farey Sen.

To cite this article: Mr. John Farey Sen. (1817) II. Remarks and suggestions, for improving the British Coin, and the keeping of money accounts, preparatory to the entire introduction of decimal money, Philosophical Magazine Series 1, 49:225, 16-23, DOI: [10.1080/14786441708637825](https://doi.org/10.1080/14786441708637825)

To link to this article: <http://dx.doi.org/10.1080/14786441708637825>



Published online: 27 Jul 2009.



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Having determined the direction of the lines without variation, it is necessary to fix the other limits of the phenomena, that is, to trace the series of places where *the variation is greatest*. In this we find lines quite as irregular, which interpose themselves between the former. The greatest of all the variations that have been observed in the southern hemisphere, was by Captain Cook in latitude $60^{\circ} 49'$, and in $93^{\circ} 45'$ of west longitude, reckoned from the meridian of Paris; it was $43^{\circ} 45'$. The greatest of all those that have been observed in the northern hemisphere was also by Captain Cook, in $70^{\circ} 19'$ of latitude, and $161^{\circ} 1'$ of east longitude; it was $36^{\circ} 19'$ east.

[To be continued.]

II. *Remarks and Suggestions, for improving the British COIN, and the keeping of Money Accounts, preparatory to the entire Introduction of Decimal Money.* By Mr. JOHN FAREY Sen.

To Mr. Tilloch.

SIR, — THE great importance of simplifying our Coins, and money transactions and Accounts, by assimilating all of these with the *decimal* notation of our arithmetic, will I trust plead my excuse, for transcribing and sending for insertion in your work, two Letters and a Paper of suggestions, which, during the parliamentary discussions last summer, as to a new coinage, I addressed to a member of His Majesty's Privy Council, to whom science and the useful arts, are under no ordinary obligations.

I have nothing further to add, except to inform the purchasers of the two former volumes of my Derbyshire Report, herein referred to, that I am utterly unacquainted with the reasons which, since June last, have delayed the appointment of a Publisher and the sale of the 3d and concluding volume, and unable to say, when they may complete their sets of the work, of

Sir,

Your obedient humble servant,

Howland-street, Jan. 1, 1817.

JOHN FAREY Sen.

“ 37, Howland-street, Fitzroy-square, June 14, 1816.

“ SIR, — The subject of our national Money appears to me a matter of such *very great importance*, that although at this time

the figure. Now this will always be the case when the number of divisions of the circle is *even*; but it will be otherwise when the number of them is *odd*. It is therefore extremely probable, that there are on the surface of the earth an even number of lines of no variation, as Humboldt has remarked,

exceedingly

exceedingly engaged, in preparing to leave town, I have taken the liberty of drawing up a Paper of suggestions, and inclosing two copies to you, for explaining the very simple, easy and useful improvement that might be made, in our *small Money system*; Units, Tens, Hundreds, Thousands, Millions, &c. of *Pounds*, requiring no change whatever, *nor should any whatever be attempted, as to them.*

“ I shall feel most particularly obliged if you would hand or inclose these Papers, to such of His Majesty’s Ministers as they most concern, and render the public as well as me, all the service you can, towards accomplishing this object, which I feel confident, will meet ready and general approbation.—I particularly hope, that the *English Names* of Pound, Tenth, Hundredth, and Thousandth may be adopted for the Coins, without *Latin* or other foreign prefixes to the word *Pound*; because, when new Measures and Weights are introduced, *they should have foreign prefixes* (and I hope those used in France) as they *must have double or compound Names*, to distinguish the four various classes; viz. Measures of *length, of surface, of solidity, and Weight*; yet for our Money, if English Names are used, they need not, *in common use at least*, be compound, or have Pound added, but Tenth, may always mean 2s. Hundredth, the $\frac{1}{100}$ th of this, and Thousandth, the new substitute for Farthing.

“ I hope it will not be too late, *in part at least* of the intended issue of new *Shillings* and *Sixpences*, to put on them the inscriptions, 5 *Hundredths*, and 25 *Thousandths*, respectively; as this would be of *very considerable use*, and could do no possible harm. “ I am,” &c.

“ *Mr. Farey’s Suggestions, as to the issue of Decimal Money.*

“ Mr. Farey senior (of 37, Howland-street, Fitzroy-square) in a Report to the Board of Agriculture on *Derbyshire*, the 3rd volume of which is now just printed, and will, as he expects, be published *in a few days*, has entered into the subject of *Measures, Weights, and Money*, with somewhat different, and as he hopes considerably more *practicable views*, than many others have done.—In pp. 465 and 466 (printed off in March last) his observations as to *Money*, are as follows; viz.”

‘ Lastly; as to MONEY, we fortunately now use in Accounts, only the four denominations, *Pounds, Shillings, Pence, and Farthings*; amongst these, the *Pound Sterling* is so much more generally and importantly used, than either of the other three denominations, that no hesitation can take place, in proposing this as *the unit of Money*, or circulating medium of value; and fortunately, *Two Shillings* is the exact $\frac{1}{100}$ th of this unit, as follows; viz.

‘ $\frac{1}{10000}$, $\frac{1}{1000}$, $\frac{1}{100}$ (Two Shillings), 1 (Pound, Sterling), 10, 100, 1000, 10,000, 100,000 (Plum), 1,000,000 (Million, Sterling), &c.

‘ One hundredth of a Pound ($\frac{1}{100}$ th of two Shillings, or of 48 half-pence), is so near to 5 half-pence, and $\frac{1}{10}$ th of these last being a Farthing, no serious inconvenience or injustice could follow, on the enacting of the above decimal divisions of the Pound, by appropriate names, and issuing Coin corresponding thereto, to permit, for one or two years, a Farthing to pass (*in change only*), for $\frac{1}{1000}$ dth of a Pound, and 5 half-pence (or $2\frac{1}{2}$ d of the present coin), instead of the $\frac{1}{100}$ dth of a Pound, before the present Copper Money need wholly be called in; and so, without any harm, Sixpences, Shillings, Eighteenpences, Half-Crowns, and Three-Shilling Pieces, might, for a time at least, continue to circulate with the new Decimal Coin, as the $2\frac{1}{2}$ -100dths, 5-100dths, $7\frac{1}{2}$ -100dths, $1\frac{1}{4}$ -10ths, and $1\frac{1}{2}$ -10ths, respectively, of the Pound Sterling.

‘ This reformation of our Money, and enabling all Accounts to be kept *in one column*, instead of three, just as the Pounds are at present, and rendering unnecessary, ‘Reduction of Money,’ now so formidable a rule to Youths, in our Elementary Books of Arithmetic, and so troublesome in business, is indeed so easy to be accomplished, that it were extremely desirable Government would take it up, separately from, and previously to, reforming the Measures and Weights, on similar principles.’

“ And in the concluding Chapter, p. 681, Note, now printing off (14th June), after some remarks in favour of proposing and adopting *decimal scales, and these only*, whenever Weights, Measures and Monies shall *be attempted to be altered*, from their present denominations, his remarks are as follows; viz.”

‘ The call now (June 1816) so strongly expressed, for a Coinage of *Pound Pieces* of Gold, instead of Guineas (which once prevailed amongst us) comes most opportunely, for the adoption abovementioned; and I would beg earnestly to press on the attention of His Majesty’s Ministers, the propriety and the great advantages which will result, from accompanying the issue of these new *Pound-pieces*, by moderate numbers of *Tenth-pieces, Hundredth-pieces, and Thousandth-pieces*, of a Pound, for circulation, *along with the present (or new) Silver and Copper Coins*, as recommended in p. 465, until the Public are fully habituated to their relations, and see by use, the utility of a *decimal scale of Money*, agreeing with that of our numeration and arithmetic, as ere long, I hope, it will also do, with all our Weights and Measures.’

“ The present and new Coins would then stand related as follows: viz.

GOLD.

												Decimal Account.			
GOLD.	{	Guinea	=	$1\frac{1}{20}$	Pound	=	$10\frac{1}{2}$	Tenths	=	105	Hundredths	=	1050	Thousandths	1.050
		(Twenty Shillings)	=	1	Pound	=	10	Tenths	=	100	Hundredths	=	1000	Thousandths	1.000
		Half-Guinea	=	$\frac{1}{4}$	Pound	=	$5\frac{1}{4}$	Tenths	=	$52\frac{1}{2}$	Hundredths	=	525	Thousandths	.525
		Seven Shillings	=	$\frac{7}{20}$	Pound	=	$3\frac{1}{2}$	Tenths	=	35	Hundredths	=	350	Thousandths	.350
SILVER.	{	Crown	=	$\frac{1}{4}$	Pound	=	$2\frac{1}{2}$	Tenths	=	25	Hundredths	=	250	Thousandths	.250
		Three Shillings	=	$\frac{3}{20}$	Pound	=	$1\frac{1}{2}$	Tenth	=	15	Hundredths	=	150	Thousandths	.150
		(Two Shillings)	=	$\frac{1}{10}$	Pound	=	1	TENTH	=	10	Hundredths	=	100	Thousandths	.100
		Eighteen-pence	=	$\frac{3}{20}$	Pound	=	$\frac{3}{4}$	Tenth	=	$7\frac{1}{2}$	Hundredths	=	75	Thousandths	.075
		Shilling	=	$\frac{1}{20}$	Pound	=	$\frac{1}{2}$	Tenth	=	5	Hundredths	=	50	Thousandths	.050
		Six-pence	=	$\frac{1}{40}$	Pound	=	$\frac{1}{4}$	Tenth	=	$2\frac{1}{2}$	Hundredths	=	25	Thousandths	.025
COPPER.	{	($2\frac{1}{2}$ d - $\frac{1}{16}$ d)	=	$\frac{1}{160}$	Pound	=	$\frac{1}{10}$	Tenth	=	1	HUNDREDTH	=	10	Thousandths	.010
		Penny	=	$\frac{1}{40}$	Pound	=	$\frac{3}{4}$	Tenth	=	$\frac{3}{8}$	Hundredth	=	$4\frac{1}{8}$	Thousandths	.004,0666
		Half-penny	=	$\frac{1}{80}$	Pound	=	$\frac{1}{2}$	Tenth	=	$\frac{3}{4}$	Hundredth	=	$2\frac{1}{4}$	Thousandths	.002,0833
		Farthing	=	$\frac{1}{160}$	Pound	=	$\frac{1}{4}$	Tenth	=	$\frac{3}{8}$	Hundredth	=	$1\frac{1}{4}$	Thousandths	.001,0416
		($\frac{1}{2}$ d - $\frac{1}{160}$ d, = } 1f - $\frac{1}{80}$ f)	=	$\frac{1}{1600}$	Pound	=	$\frac{1}{160}$	Tenth	=	$\frac{1}{16}$	Hundred	=	1	THOUSANDTH	.001

“ Mr. Farey has little wish to go further at present, (or very little) than *offering this plan and the four new Coins*, to the Public, for their acceptance and adoption, reserving further proceedings thereon, until *a complete decimal scale of Measures, and Weights* also is matured, and in action; and therefore, it would, he suggests, be proper to enact,

“ 1st. That no persons should be entitled to *demand* any of the new decimal Coins, instead of the present legal ones, if such are tendered.

“ 2d. That a *Pound-piece*, might legally be tendered and given in payment, instead or in lieu of 20 shillings.

“ 3d. That a *Tenth-piece* might be tendered and given instead of Two Shillings, or of 4 Six-pences, or of 24 Pence, &c.

“ 4th. That a single *Hundred-piece* might be given in lieu of Twopence-halfpenny, or 10 Farthings; two of such for five-pence, or 20 Farthings; three of such and a one Thousandth-piece for sevenpence-halfpenny, or 6 pence and 3 halfpence; four of such and a one Thousandth-piece for Tenpence, or 6 pence and 4 pence; and beyond which number of four Hundredth-pieces, in any one payment, no person should be compellable to take them, instead of the present Coins.

“ 5th. That a single *Thousandth-piece* might be given in lieu of a Farthing, two of such for a half-penny, three of such for three Farthings, and so on, to ten of such Thousandth-pieces (which together are equivalent to Twopence-halfpenny, within *less than the half a farthing*), beyond which number of ten Thousandth-pieces, no person should be compellable to take them, instead of the present Coins.

“ Mr. Farey begs further to remark, that his proposal, as above, has no dependance on the questions, as to how great a weight of Gold, of Silver, or of Copper, or how fine, should be put into the four new Coins, respectively; as he assumes, that the Pound will nominally and legally, be equal to 20 shillings, 240 pence, and 960 Farthings respectively; and the new Coin, exact decimations of each other.

“ He cannot avoid expressing a hope, that no propositions will be listened to, for *destroying all our present Coins* and the Pound sterling with them, in favour of exact *aliquot parts* of a Troy pound of Gold, or of Silver, or the like; much less, the still more improper proposal of some, for destroying all these, except *the Farthing*, in order from this very trifling *unit*, rather than the Pound Sterling, to raise *a decimal scale of Monies*, which in the ordinary transactions of business, would from the greatness of the numbers, be intolerable, and how much more so in the Public accounts?”

“ SIR,

“ 37, Howland-street, Fitzroy-square, June 16, 1816.

“ SIR,—The objection which you so strongly stated in our last conversation, to the introduction of the decimals of the Pound sterling; viz. that Persons whose dealings were wholly effected in Copper Money, without the aid of Silver Coin (which is a very extreme case) would lose 10 pence in every Pound Sterling, or $4\frac{1}{3}$ per cent. by taking *Thousandths* of a Pound in lieu of *Farthings*,—has suggested to me a remedy, which I beg now to submit for your consideration: viz. That a new denomination, and small Coin should be temporarily introduced, which might be called *Mites*, each $\frac{1}{25}$ th part of a Farthing in value, which would admit of calculations, and payments being made, and of accounts being kept in 3 columns £. s. d. as at present, or *exactly equivalent* calculations, payments, and accounts, in two new Columns, Pound-decimals and Mites, or £. M. as in the following Table; viz.

An exact EQUIVALENT TABLE, for keeping Accounts, either in Shillings Pence and Farthings, as at present, or in DECIMALS OF A POUND, and MITES, each $\frac{1}{25}$ th of a Farthing.

Old Mode.		New Mode.		Old Mode.		New Mode.		Old Mode.		New Mode.		Old Mode.		New Mode.	
Shillings, Pence & Farthings.		Pound Decimal, Mites.		Shillings, Pence.		Pound Decimal, Mites.		Shillings, Pence.		Pound Decimal, Mites.		Shillings, Pence.		Pound Decimal, Mites.	
S.	D.	£.	M.	S.	D.	£.	M.	S.	D.	£.	M.	S.	D.	£.	M.
0	0	.001	1	0	6	.026	1	0	0	.051	1	6	0	.076	1
0	1	.002	2	0	6	.027	2	0	0	.052	2	6	0	.077	2
0	2	.003	3	0	6	.028	3	0	0	.053	3	6	0	.078	3
0	3	.004	4	0	7	.029	4	1	1	.054	4	7	0	.079	4
0	4	.005	5	0	7	.030	5	1	1	.055	5	7	0	.080	5
0	5	.006	6	0	7	.031	6	1	1	.056	6	7	0	.081	6
0	6	.007	7	0	7	.032	7	1	1	.057	7	7	0	.082	7
0	7	.008	8	0	8	.033	8	1	2	.058	8	7	0	.083	8
0	8	.009	9	0	8	.034	9	1	2	.059	9	8	0	.084	9
0	9	.010	10	0	8	.035	10	1	2	.060	10	8	0	.085	10
0	10	.011	11	0	8	.036	11	1	2	.061	11	8	0	.086	11
0	11	.012	12	0	9	.037	12	1	3	.062	12	9	0	.087	12
0	12	.013	13	0	9	.038	13	1	3	.063	13	9	0	.088	13
0	13	.014	14	0	9	.039	14	1	3	.064	14	9	0	.089	14
0	14	.015	15	0	9	.040	15	1	3	.065	15	9	0	.090	15
0	15	.016	16	0	10	.041	16	1	4	.066	16	10	0	.091	16
0	16	.017	17	0	10	.042	17	1	4	.067	17	10	0	.092	17
0	17	.018	18	0	10	.043	18	1	4	.068	18	10	0	.093	18
0	18	.019	19	0	10	.044	19	1	4	.069	19	10	0	.094	19
0	19	.020	20	0	11	.045	20	1	5	.070	20	11	0	.095	20
0	20	.021	21	0	11	.046	21	1	5	.071	21	11	0	.096	21
0	21	.022	22	0	11	.047	22	1	5	.072	22	11	0	.097	22
0	22	.023	23	0	14	.048	23	1	5	.073	23	11	0	.098	23
0	23	.024	24	1	0	.049	24	1	6	.074	24	11	0	.099	24
0	24	.025	0	1	0	.050	0	1	6	.075	0	11	0	.100	0

“ Of which Table, and of 9 other similar and succeeding pages, a great number of stereotyped copies should be issued.

“ The *large* figures show the *Coins* that are now, and should I suggest be put speedily into circulation: the five first of the new Decimal Monies, should be of Copper, and be inscribed on one side respectively, *One Thousandth, Two Thousandths, Four Thousandths, One Hundredth, and Two Hundredths*; and two others of Silver, inscribed *Four Hundredths and One Tenth*, respectively*.

“ The 5 new small Coins (as only for *temporary* use) might be of Iron and very thin, so as almost to equal a farthing in diameter, and have inscribed on one side *One Mite, Two Mites, Four Mites, Ten Mites, and Twenty Mites*, respectively; and around these latter inscriptions, it would be proper to circumscribe, *with one Thousandth, makes a Farthing; with Two Thousandths, makes a Halfpenny; with Four Thousandths, makes a Penny; with One Tenth, makes Twopence-halfpenny; and with Two Tenths, makes Fivepence*, respectively; by which means, the uses and values of these temporary Coins, would be soon understood by every one, and the above Coins would suffice, for readily making up any exact sum required.

“ As fast as bargains and dealings came to be made in the Decimal Money, the Mites (and their column, in accounts) would be laid aside; and after a sufficient time, when this came to be almost wholly the case, in consequence of further issues of the new Coin, all the present Coin might be called in, and the use of three troublesome columns in accounts, wholly done away; and what is of even greater consequence, every *price* will be ready *without any reduction*, for multiplying by its *quantity* of a commodity (these also to be decimal) and the result would in no case need any reduction, advantages that would be incalculable, in a trading and scientific community.

“ The trouble of such small Coin, and of a Column, of very trifling amount in most cases, to carry at 25, would, I think, operate favourably, to induce bargains to be made and prices of articles to adjust themselves, ere long, to the Decimal Money; Trustees of Turnpike Roads and Bridges having their Tolls *fixed* and mostly paid in Copper, (who seem to have the greatest difficulties to surmount) might be induced to lower the Tolls under 6d (and odd copper, above it) to the decimal Money, on being allowed by the Quarter Sessions, on production of correct accounts of their separate Tolls, to advance the higher Tolls on Carriages,

* “ Some may perhaps think it necessary, to issue three other new Coins; viz. for *Twenty-five Thousandths, Five Hundredths, and Seventy-five Thousandths* of a Pound, respectively.

as much as to counterbalance the loss on the small ones, (on Horses and foot-passengers, &c.) by their being made Decimal.

“Canal Tolls, as well as the Customs and other Taxes to Government are many of them charged in small money, not exactly reducible to *decimal* Money, yet these tolls and duties are always *paid*, on pretty *considerable quantities*; so that the giving up of the *fraction of a farthing in the whole amount*, on either side, so as to Receive in Decimal Money, could not be an object of material consequence; indeed, whenever the Mites should exceed 12, one more Thousandth might be payable, in this and other cases, which, in the long-run, would balance the errors. I shall be happy to give any further explanations in my power, before leaving Town, which I hope will be in the end of the week, Mr. McMillan now having the Index to my last volume of Report, in his press.

“ I am, &c.”

III. *On the Article in our last Number, entitled “Controversy concerning Safe-lamps.”* By W. P. KNIGHT, Esq.

To Mr. Tilloch.

SIR, — I PERUSED, with a certain degree of surprise, an article in your excellent Magazine, entitled “Controversy concerning Safe-lamps,” which you introduce by expressing an opinion that “you had conceived that the discoveries of Sir H. Davy and Mr. George Stevenson were made independent of each other.” I do not think the question of dates so near to each other of any importance; and I am still inclined to think that Mr. Stevenson began, without knowing what Sir H. Davy was doing, though he probably did hear that he was engaged in the inquiry.

When I first saw the account of Mr. G. Stevenson’s lamp in the Philosophical Magazine, I had an idea that it was a lamp which might burn safely in explosive atmospheres: but having seen the lamp during a journey that I made in the north of England this summer, I was obliged to give up this opinion; and since I have read Mr. R. W. Brandling’s letter, I am convinced that Mr. Stevenson never made any discovery, and that there is not the slightest analogy between what he attempted and that which Sir H. Davy discovered and carried into execution.

It is said “that Mr. G. Stevenson had conceived an idea that hydrogen gas might be admitted into a lamp so as to be gradually consumed.” If any thing be meant by this idea, it must be—that explosive mixtures admitted into a lantern in small quantities