> And every Time I number'd them,
> One remain'd Overplus:
> I told them o'er by fevens at laft,
> And there were no Remains:
> If you can find the Number out
> Pray take it for your Pains."

In a copy of *Arithmetic* by the Right Rev. J. W. Colenso, D.D., Lord Bishop of Natal, dated 1872 is a chapter on Decimal Coinage " which has been for some time under the consideration of the Government, has been recommended for adoption by a Committee of the House of Commons, and is likely, therefore, before long, to be introduced in England, as it has been already in France and in the United States of America ".

Two systems of decimal coinage were proposed, the one based upon the penny or farthing, " the chief coin of the poorer classes ", the other upon the pound sterling or sovereign, " the chief coin of the wealthier classes ".

In the system using the farthing for its unit of reference the proposed money table was:

10 farthings make 1 Doit =   10 f. = 2½d.
10 Doits make 1 Florin   =   100 f. = 2s. 1d.
10 Florins make 1 Pound = 1000 f. = 20s. 10d.

The suggested coins were:

Copper—farthing, halfpenny, and penny;
Silver —doit (2½d.), groat (5d.), shilling (12½d.), florin (25d.);
Gold   —half-pound (125d.), pound (250d.).

One advantage of the system was that the farthing, halfpenny, and penny were to be permanently retained and " the price of food, the rate of wages et cet., being generally fixed by the penny, much inconvenience would be saved by this means to the mass of the population ".

Another advantage was that there need be no change in " the penny postage, the penny-stamp, nor the tolls for turnpikes ", etc.

Yours faithfully, FLORENCE OSBORN

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Upton, Chester.

To the Editor of the *Mathematical Gazette*

DEAR SIR,—I was most interested to read Miss Hartley's letter in *Gazette* No. 355 as I think I have a copy of the text-book which was used by her great uncle or his teacher. In the *Tutor's Assistant* the chapter headings are in exactly the same order as in her great uncle's letter. My copy was edited by John Fraser in 1826 having been revised previously by several other people. The book was written by Francis Walkingame, the original preface is printed though unfortunately the original date of publication is not mentioned. My copy was used by

George William Dowson of Spennymoor in 1874 so it seems quite likely to have been used in 1846.

There are six parts to the book, being given as:

I. Arithmetic in whole Numbers; being a brief Explanation of its Rules, in a new and more concise Method than any hitherto published; with an Application to each Rule, consisting of a large Variety of Questions in real Business, with their Answers annexed.

II. Vulgar Fractions, which are treated with a great deal of Plainness and Perspicuity.

III. Decimals, with the Extraction of the Square, Cube, and Biquadrate Roots, after a very plain and familiar Manner; in which are set down Rules for the easy Calculation of Compound Interest, and Annuities.

IV. Duodeacimals, or Multiplication of Feet and Inches, with Examples applied to measuring and working by Multiplication, Practice, and Decimals.

V. The Mensuration of Circles, &c.

VI. A Collection of Questions set down promiscuously, for the greater Trial of the forgoing Rules.

I think I have copied the punctuation and capitals correctly. In part I some of the answers are fractional but in the Explanation of the Characters used there is a note after the sign of division. This is: Numbers placed like a fraction do likewise denote Division; the upper number being the Dividend, and the lower the Divisor: thus $\frac{112}{14} = 8$.

This explains why fractions can come so late in the syllabus. The book says; Alligation is either Medial or Alternate.

Alligation Medial. Is when the price and quantities of several simples are given to be mixed, to find the mean or average price of thet mixture.

Rule:—Divide the value of the whole composition by the whole quantity: the quotient gives the mean or average price of the mixture.

Alligation Alternate. Is when the price of several things are given, to find such quantities of them to make a mixture, that may bear a price propounded.

In ordering the rates and the given price, observe,

1. Place them one under the other, and the propounded price, or mean rate, at the left hand of them, thus,

2. Link the several rates together, by 2 and 2; always observing to join a greater and a less than the mean.

3. Against each extreme, place the difference of the mean and its yoke-fellow.

18 — 2
19 — 6
22
24 — 2
28 — 4

When the prices of the several simples and the mean rate are given without any quantity, to find how much of each simple is required to compose the mixture.

Rule:—Take the difference between each price and the mean rate, and set them alternately, they will be the answer required.

Proof:—By Alligation Medial.

Note:—Questions in this rule admit of a grat variety of answers. according to the manner of linking them.

M2

Variations on this theme are Alligation Partial and Alligation Total. Single and Double Position or the Rule of False is the method given in *Early Nineteenth Century Mathematics* by W. More on p. 27, No. 355 of the *Mathematical Gazette*.

The book certainly justifies the rhyme

" The Rule of Three Doth puzzle me."

since this is the definition of the Rule of Three Inverse.

Inverse proportion is, when more requires less and less requires more. More requires less, is when the third term is greater than the first and requires the fourth term to be less than the second. And less requires more is when the third term is less than the first, and requires the fourth term to be greater than the second.

It is interesting to note that in the chapter on exchange it says At Paris, Lyons, Bordeaux, etc., they keep Accounts in livres, sous, and deniers and also in francs and cents. A livre and a franc were each worth 10d., though par was 25 francs to the pound sterling.

I have two other old Arithmetic books, a seventh edition of *Comes Commercii* or the *Traders Companion* published in 1740. This is mainly a book of tables which seems to have been published first in 1722.

The other is Dr. Willcockes and Messrs. Fryer's United, new and Improved System of Arithmetical and Mental Calculations which is a fourth edition published 1834. There are 19 pages of testimonials, 11 pages of names of the people who have been Mr. Fryer's pupils and 2 poetical Eulogiums addressed to the public!! This book is not of a high standard—this is the best example.

British and French Currency

We are indebted to a gentleman, who has resided a considerable time in France, for the following short method of bringing French currency into British, and British currency into French currency or francs.

Rule to bring francs into British pounds sterling.—Cut off the last two figures and multiply the remainder by 4, the product will be the answer in pounds.

Note: 25 francs are £1. British.
Example: In 5624 francs how many pounds?

$$56 \mid 24 \text{ francs.}$$
$$4$$
$$£224 \text{ and } 24 \text{ francs} = £224 \quad 19s. \quad 2d.$$

There is no explanation as to how the 24 francs becomes 19s. 2d.

Yours faithfully, MARY E. TOWNLEY

Rodborough House,
Rodborough,
Stroud, Glos.

To the Editor of the *Mathematical Gazette*

DEAR SIR,—Miss Dromgoole's letter in the October *Gazette* shows that she has traced the cause of confusion in elementary division to the