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1938

THE
Schoolmasters Assistant:
BEING A
Compendium of ARITHMETIC,
BOTH
Practical and Theoretical.

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EDITOR'S NOTE

THOMAS DILWORTH, schoolmaster in Wapping and author of *The Schoolmaster's Assistant*, *The New Guide to the English Tongue*, *The Young Bookkeeper's Assistant*, and *An Essay on the Education of Charity-Children*, must have been a textbook writer of no small importance. The eleventh edition of *The Schoolmaster's Assistant*, from which the material in this book has been selected, appeared in the year 1762. Thirty-one years later, in 1793, there appeared in America "The Latest Edition. Printed at New York for T. Allen, No. 12, Queen St."

When the first English edition was published is not known, but judging from the dates on certain of the testimonials in the eleventh edition, the date of first publication may have been 1743. How many editions, if any, followed the American edition of 1793 we are unable to determine, but it is evident that this old textbook in arithmetic had a life of more than fifty years.

The eleventh edition of *The Schoolmaster's Assistant* contains some two hundred pages of material. In this booklet the first twenty pages are presented as they stand in the original. From the remainder of the text certain selections, which the editors hope will be of interest to educators, have been made.

The type in which the material has been reset, known as Caslon Old Style, is an almost exact duplicate of the type used in the edition of 1762.

EDITOR'S NOTE

The compositors were given instructions to follow the style of the original exactly as to spelling, capitalization, punctuation, and, so far as possible, even as to spacing. So close is the contemporary Caslon Old Style to the original that the compositors were able to set the material line for line. Thus the present reprint is an almost exact duplicate of the original, except for one detail: In the interests of legibility the old style *s*, that is, an *s* that closely resembles an *f*, was not used.

It is interesting to note that modern textbook publishers are merely following in the tradition of their trade when they promote the sale of their books by the use of testimonials from educators. Thomas Dilworth was able to marshal an imposing array of witnesses to the excellence of his work, even to the point of praise in poetry. Modern authors have apparently overlooked the possibility of employing the Muse to help their sales. Even in Mr. Dilworth's time there was some opposition to the use of textbooks, because we note that in his preface he expresses himself as aware of the feeling "that to teach by a printed book is an argument of ignorance and incapacity."

Many a modern pedagogue will smile wryly to himself as he reads the essay on the education of youth to find that the youth of Mr. Dilworth's day, while removed from today's student by two centuries, had certain characteristics that seem almost modern.

The reader may wonder why some of the so-called developmental material relating to certain of the processes was not included. The answer is simple: There was no such developmental mate-

EDITOR'S NOTE

rial. As Mr. Dilworth explains in his preface, he restricts his treatment to the "catechetical form" in order that there may be "room enough left for every man to speak his own mind and instruct his pupils in his own method."

But we shall leave to the reader the discovery of the interesting facts brought to light in this reproduction of school-book material of two hundred years ago. In presenting this book to you, Scott, Foresman and Company extends its cordial holiday greetings and its heartiest best wishes for the New Year.





A. Burgh Sculp. 1754

THE
Schoolmasters Assistant:
BEING A
Compendium of ARITHMETIC,
BOTH
Practical and Theoretical.

In Five PARTS.

CONTAINING

- | | |
|---|---|
| I. Arithmetic in Whole Numbers, wherein all the common Rules, having each of them a sufficient Number of Questions, with their Answers, are methodically and briefly handled. | IV. A large collection of Questions, with their Answers, serving to exercise the foregoing Rules; together with a few others, both pleasant and diverting. |
| II. Vulgar Fractions, wherein several Things, not commonly met with, are there distinctly treated of, and laid down in the most plain and easy Manner. | V. An Appendix of Duodecimals, commonly called Cross Multiplication; wherein that Sort of Arithmetic is thoroughly considered, and rendered very plain and easy; together with the Method of proving all the foregoing Operations at once by Division of several Denominations, without reducing them to the lowest Term mentioned. |
| III. Decimals, in which, among other Things, are considered the Extraction of Roots; Interest, both Simple and Compound; Annuities, Rebate, and Equation of Payments. | |

The Whole being delivered in the most familiar Way of *Question and Answer* is recommended by several eminent *Mathematicians, Accountants, and Schoolmasters*, as necessary to be used in *Schools* by all Teachers, who would have their *Scholars* thoroughly understand, and make a quick Progress in ARITHMETIC.

To which is prefixt, An ESSAY on the *Education of YOUTH*; humbly offer'd to the Consideration of PARENTS.

The Eleventh Edition.

By THOMAS DILWORTH,
Author of the *New Guide to the English Tongue; Young Book-keeper's Assistant; &c. &c.* and *Schoolmaster in Wapping.*

All Things, which from the very first Original Being of Things, have been framed and made, do appear to be framed by the Reason of Number; for this was the principal Example or Pattern in the Mind of the CREATOR.

Thou [O LORD] hast ordered all Things in Measure, Number, and Weight. Anitius Boetius.
Wisdom xi, 20.

LONDON:

Printed and Sold by HENRY KENT, at the Printing Office
in *Finch-Lane*, near the *Royal Exchange*. MDCCCLXII.

Just Publish'd, (Price 2 s.)

THE YOUNG
BOOK-KEEPER'S Assistant:
SHEWING HIM,
In the most plain and easy Manner,
The ITALIAN Way of Stating
DEBTOR and CREDITOR:
WITH

Proper and instructive Notes under every Entry in the WASTE-BOOK, where necessary, by which the Method of Journalizing is rendered more easy and intelligible; and also the like Notes in the JOURNAL and LEDGER, inserted by way of Information, how to post the JOURNAL, and correct Errors in the LEDGER: Wherein there is a great Variety of Examples, not only in the common and ordinary Way of buying and selling, but in that of trading beyond the Seas, both for a Merchant's Self and in Company. All which is contained in two Setts of Books, directing the Learner not by Precept only, but by Example, how to draw out a new Inventory from the old Books, and insert it in the new ones; and the Trade continued as if it were in the real Shop or 'Compting-House.

To which is annexed,

A SYNOPSIS or COMPENDIUM
OF THE

Whole Art of stating DEBTOR and CREDITOR,
In all the Circumstances of BOOK-KEEPING, both in Proper,
Factorage and Company-Accompts, Domestic and Foreign.

THE WHOLE

Designed for the Use of Schools in *Great Britain* and *Ireland*, and in the *English* Plantations and Colonies abroad; for the Help and Assistance of Merchants in their several 'Compting-Houses; and for young Gentlemen at their first Entrances on their Mercantile Apprenticeships.

The like, for Ease to the Master and Benefit to the Scholar, not extant.

By THOMAS DILWORTH,
Schoolmaster in *Wapping*: Author of the *New Guide to the English Tongue, Schoolmasters Assistant, &c. &c.*

Printed and Sold by HENRY KENT, at the Printing-Office in *Finch-Lane*, near the *Royal Exchange*

The PREFACE Dedicatory.

School-Boys) *I have endeavoured at the same time to reduce the Whole, to as neat and portable a Volume, as any that have gone before me.*

I must confess, I do not propose by THIS, to add to any Master's Knowledge in Arithmetic, who, I imagin, is already acquainted with every thing contained in this Compendium; for which Reason it is reduced to the narrow Compass it now appears in, without particular Directions for working the Operations at large; and therefore, I conceive, here is room enough left for every Man to speak his own Mind, and instruct his Pupils in his own Method. And,

*I believe, it is confessed by All, that it is a Task too hard for Children to be made compleat Masters of Arithmetic; and therefore the best Way of instructing them in it, is, most certainly, first to give them a general Notion of it in the easiest Manner, and next to enlarge upon it afterward, if there be Time; otherwise it must be done by themselves, as their Increase in Years, and Growth in Understanding will permit. * " For Arithmetic is the more valuable, " as it is the more exact, easy and short; and the " Art lies in giving as few Rules as possible, and " clearly explaining them; and not confounding " Principles together, and then diversifying them " into several Rules, when they are built on the " same Reason, which has not only made Arith- " metic seem difficult of Access, but has hinder'd " many from being Accomptants."*

To enter into a Detail of the following Particulars, would be tedious, and swell this Preface beyond its just Limits; but that the kind Reader may not be wholly at a Loss, I shall beg Leave to Speak as follows, viz.

* WATTS'S Essay.

I. That

The PREFACE Dedicatory.

1. *That the Whole is divided into Five Parts, as the Title Page expresses it.*

2. *That the Rules and Examples are contrived in the easiest Manner, and the Whole put in such an easy Method, as is no where else extant.*

3. *I have omitted Reduction of Foreign Coins, partly because all those Tables, which I have met with, which shew the Value of Foreign Coins in English Mony, are very erroneous; but principally because all such Questions as relate to the turning of the Mony of one Country into that of another, are much better answered under the Head of Exchange. For the Value of Foreign Species (such I mean as relate only to Exchange) both of Gold and Silver, in every Country is unsettled, and therefore such Coins are subject to vary in their Prices, as the Merchants find an Opportunity to profit by them. Hence proceed the various Courses of Exchange; and from them again, the particular Worth of any Quantity of Foreign Coin in English Mony, which is sometimes more, sometimes less, according as the Course of Exchange runs at that Time when such Foreign Coin becomes due. Add to this the Agio, or Advance Mony, usually paid Abroad on the changing Current Mony into Exchange or Bank-Mony, which is 2, 3 or more per Cent, in Payment, according to what the Exchange or Bank Mony is worth more than the Current Mony, and this cannot be done otherwise than by the Rule of Three.*

4. *In Interest, &c. by Decimals, I have follow'd Mr. WARD's Method, by which Means the Rule is drawn into a much narrower Compass; and appears more beautiful to the Eye than in Words at length.*

5. *In*

The PREFACE Dedicatory.

5. *In all Places where it could be done conveniently, I have given Directions for varying the Examples by Way of Proof; because it not only discovers the Reason of the Operation, but at the same Time both produces a new Question, and proves the old One. And sure I am, that the varying the Question, when it may be done under the same Rule, contributes very much towards a thorough Understanding of it, and making a good Accomptant, as every one's Experience will teach him.*

6. *I have thrown the Subject of the following Pages into a Catechetical Form, that they may be the more instructive; for Children can better judge of the Force of an Answer, than follow Reason thro' a Chain of Consequences. Hence also it proves a very good examining Book; for at any Time, in what Place soever the Scholar appears to be defective, he can immediately be put back to that Place again, without the formal Way of beginning every Thing anew.*

7. *In order to make the Progress still quicker, every Example, to be wrought, hath its Answer annexed to it: so that they who do not chuse to have every Operation proved by varying the Question, may know without it, whether the Work be right or not.*

*And now after all, it is possible that some, who like best to tread the old beaten Path, and to sweat at their Business when they may do it with Pleasure, may start an Objection against the Use of this well intended Assistant; because the Course of Arithmetic is always the same; and therefore say, 'That some Boys lazily inclined, when they see another at work upon the same Question, will be apt to make his Operation pass for their own:' But these little Forgeries are soon detected by the Diligence of
the*

The PREFACE Dedicatory.

the Tutor : Therefore, as different Questions to different Boys, do not in the least promote their Improvement : So neither do the same Questions binder it. Neither is it in the Power of any Master (in the Course of his Business) how full of Spirits soever he be, to frame new Questions at Pleasure in any Rule, but the same Questions will frequently occur in the same Rule, notwithstanding his greatest Care and Skill to the contrary.

It may also be further objected, 'That to teach by a printed Book, is an Argument of Ignorance and Incapacity,' which is no less trifling than the former. He indeed (if any such there be) who is afraid his Scholars will improve too fast, will undoubtedly decry this Method : But that Master's Ignorance can never be brought in question, who can begin and end it readily; and most certainly that Scholar's Non-Improvement can be as little questioned, who makes a much greater Progress by This, than by the common Method.

As to the Order of the Rules, I can hardly find two Masters follow it alike; some liking best to teach that Rule first, which another thinks more convenient to teach afterward; while a third looks upon it as a Matter quite indifferent, among some Rules, which he teaches first. But this need be no Hindrance to the Use of this Book. For however the Rules are placed here, every Man may turn to that Rule first, which he likes should be taught first; and if a Master has a Mind to teach Vulgar Fractions immediately after Reduction in Whole Numbers, as some do, he may do it as easily, as in the Order they now lie.

To this eleventh Edition, I have added, An Appendix of Duodecimals, commonly called Cross Multiplication;

The PREFACE Dedicatory.

Multiplication; wherein I have largely treated of that sort of Arithmetic, in every Branch; shewing how the same may be proved by varying the Operations; by whole Numbers; by vulgar Fractions, and by Decimals; and lastly by a particular sort of Division, wherein the Divisor, Dividend and Quotient are each of them of several Denominations, just as the Factors and Products are in Multiplication, without reducing them into the lowest Term or Denomination mentioned. And as Duodecimals, by all the Writers that I have seen, except Mr. Hawney, have only been superficially treated of, I think I may venture to say, without any Breach of Modesty, that this is the compleatest Piece extant.

I should have been very glad to have seen an Attempt of this Nature, stamp'd by the Authority of some Person of Distinction and of better Abilities; but since no abler Hand has undertaken it, I hope its homely Appearance will not lessen its Usefulness.

The Printer's Errors, as well as my own Defects, I hope will candidly be overlook'd; But because a Man's Failings are so familiar to himself, that he can scarce discern them; therefore the kind Admonitions of a good natur'd Reader, shall always be very acceptable.

I have nothing more to add, but my repeated Thanks for Favours received, together with my earnest Desire that you may be prosperous in Your several Undertakings, and to beg this additional Favour of being esteemed,

GENTLEMEN,

Your most humble, and

most obedient Servant,

THOMAS DILWORTH.



ON THE
Education of YOUTH
AN
ESSAY;
Humbly offer'd to the Consideration of
PARENTS.

THE right Education of Children, is a Thing of the highest Importance, both to Themselves and the Common-wealth. It is this, which is the natural Means of preserving Religion and Virtue in the World: And the earlier good Instructions are given, the more lasting will be their Impression. For it is as unnatural to deny these to Children, as it would be to withhold from them their necessary Subsistence. And happy are those, who, by a religious Education and watchful Care of their Parents, their wise Precepts and good Examples, have contracted such a Love of Virtue and Hatred of Vice, as to be removed out of the Way of Temptations. And 'tis owing to the Want of this Education, that many, when they leave their Schools, do not prove so well qualified as might be expected. This great Omission being for the most part chargeable on the Parents, I hope the following Particulars (which are the common Voice of our Profession) will not be taken amiss. And

1. A constant Attendance at School is one main Axis whereon the great Wheel of Education turns. Therefore if that Observation, which is commonly made by Parents be true, That the Masters have
Holidays

AN ESSAY ON THE

Holidays enough of their own making, *there is, by their own Confession, no Necessity for them to make an Addition.*

2. Parents *should never let their own Commands run counter to the Master's, but whatever Task he imposes on his Pupils, to be done at Home, they should be careful to have it perform'd in the best Manner, in order to keep them out of Idleness.* " * For vacant Hours move on heavily, and " drag *Rust* and *Filth* along with them; and " 'tis full Employment, and a close Application " to Business, that is the only Barrier to keep out " the Enemy, and save the *future Man*.

3. Parents *should endeavour to be sensible of their Childrens Defects and want of Parts; and not blame the Master for Neglect, when his greatest Skill, with some, will produce but a small Share of Improvement. But the great Misfortune is, as the Proverb expresses it; Every Bird thinks her own Young the fairest: And the tender Mother, tho' her Son be of an ungovernable Temper, will not scruple to say, He is a meek Child, and will do more with a Word than a Blow, when neither Words nor Blows are available. On the other Hand, some Children are of a very dull and heavy Disposition; and are a long Time in gathering but a little Learning, and yet their Parents think them as capable of Instruction, as those who have the most bright and promising Parts: And when it happens that they improve but slowly, tho' it be in Proportion to their own Abilities, they are hurried about from School to School, till at last they lose that Share of Learning, which otherwise, by staying at the same School, they might have been Masters*

* WATTS'S Essay.

of.

Education of YOUTH.

of. Just like a sick, but impatient Man, who employs a Physician to cure him of his Malady; and then, because the Distemper requires Time, as well as Skill to procure his Health, tells him, 'He has all along taken a wrong Method;' turns him off; and then applies to another, whom he serves in the same Manner; and so proceeds till the Distemper proves incurable.

4. *It is highly necessary that Children should be early made sensible of the Scandal of telling a Lye: To that End Parents must inculcate upon them, betimes, that most necessary Virtue of speaking Truth, as one of the best and strongest Bands of human Society and Commerce, and the Foundation of all Moral Honesty.*

5. *Injustice (I mean the Tricking each other in Trifles, which so frequently happens among Children, and is very often countenanced by the Parents, and looked on as the Sign of a very promising Genius) ought to be discouraged betimes, lest it should betray them into that vile Sin of pilfering and purloining in their riper Years; to which the grand Enemy of Mankind is not wanting to prompt them by his Suggestions, whenever he finds their Inclinations have a Tendency that Way.*

6. *Immoderate Anger and Desire of Revenge, must never be suffered to take Root in Children. For (as a most Reverend Divine observes) * " If any of these be cherished, or even let alone in them, they will in a short Time grow headstrong and unruly: and when they come to be Men, will corrupt the Judgment, and turn good Nature into Humour, and Understanding into Prejudice and Wilfulness."*

* A. B. TILLOTSON.

7. Children

AN ESSAY ON THE

7. Children are very apt to say at Home what they see and bear at School, and oftentimes more than is true, and some Parents, as often, are weak enough to believe it. Hence arise those great Uneasinesses between the Parents and the Master, which sometimes are carried so high, as for the Parent, in the Presence of the Child, to reproach him with hard Names, and perhaps with more abusive Language. On the Contrary,

8. If Parents would have their Children improve in their Learning, they must cause them to submit to the little (imaginary) Hardships of the School, and support them under them by suitable Encouragements. They should not fall out with the Master upon every idle Tale, nor even give their Children the Liberty of expressing themselves that way; but they should, by all Means, inform them frequently, 'That they ought to be good Boys, and learn their Book, and always do as their Master bids them, and that if they do not, they must undergo the Pain of Correction.' And it is very observable what a Harmony there is between the Master and the Scholar, when the latter is taught to love and have a good Opinion of the former; and then With what Ease does the Scholar learn! With what Pleasure does the Master communicate!

9. The last Thing that I shall take Notice of is, That while the Master endeavours to keep Peace, good Harmony, and Friendship among his Scholars, they are generally taught the Reverse at Home.

" *It is indeed but too common for Children to
" encourage one another, and be encouraged by
" their Friends in that Savage and Brutal Way
" of Contention, and to count it a hopeful Sign

* TALBOT'S Christian Schoolmaster.

" of

Education of YOUTH.

“ of *Mettle* in them to give the *last Blow*, if not
“ the *first*, where-ever they are provoked; for-
“ getting at the same Time, that to teach *Cbil-*
“ *dren* betimes to love and be good natured to
“ others, is to lay early the true Foundation of
“ an *honest Man*. Add to this, that *cruel Delight*
“ which some are seen to take in tormenting and
“ worrying such poor *Animals* as have the Mis-
“ fortune to fall into their Hands. But *Cchildren*
“ should not only be restrained from such *barba-*
“ *rous Diversions*, but should be bred up from the
“ Beginning to an Abhorrence of them,” and at
the same Time be taught that great Rule of Huma-
nity, *To do to others as we would they should do to us.*

*From what has been said relating to the Manage-
ment of Children at Home; the Necessity of the
Parents joining Hands with the Schoolmaster ap-
pears very evidently. For when the Master com-
mands bis Pupils to employ their leisure Time in
getting some necessary Parts of Learning; their
Friends should not command them to forbear: And
when they ought to be at School at the stated Hours,
they should not be sent an Hour or two after, in the
Time of Health, sometimes with a Lye in their Lips
to excuse their Tardiness; and sometimes with an
Order, and a brazen Front, to tell their Master,
Their Friends think it Time enough to come to
School at Nine in the Morning, because the
Weather is a little Cold, or because they must
have their Breakfast first. I say Parents should
not act so indiscreetly, because it clips the Wings of
the Master's Authority: It makes Boys first despise
and undervalue their Teachers, and then become un-
mannerly and impertinent to them; Correction for
which,*

AN ESSAY ON THE

which, makes the Tutor hated by the Children, and then there naturally follows either a total disregard to Business, or a general Carelessness in every Thing they do. And,

While I am speaking of the Education of Children, I hope I shall be forgiven, if I drop a Word or two relating to the fair Sex.—It is a general Remark that they are so unhappy as seldom to be found either to Spell, Write, or Cypher well: And the Reason is very obvious; Because they do not stay at their Writing Schools long enough. A Year's Education in Writing is, by many, thought enough for Girls; and by others it is thought Time enough to put them to it, when they are Eighteen or Twenty Years of Age; whereas by sad Experience, both these are found to be, the one too short a Time, and the other is too late. The first is a Time too short, because, when they are taken from the Writing School, they generally forget what they learnt, for want of Practice: And the other too late, because then they are apt to look too forward, imagin all things will come of themselves without any Trouble, and think they can learn a great deal in a little Time; and when they find they cannot compass their Ends so soon as they would, then every little Difficulty discourages them: And hence it is that adult Persons, seldom improve in the first Principles of Learning so fast as younger Ones. For a Proof of these, I appeal to every Woman, whether I am just in my Sentiments or not.—The Woman who has had a liberal Education this Way, knows the Advantages that arise from the ready Use of the Pen; and the Woman who has learnt little or nothing of it, cannot but lament the Want of it. Girls therefore ought to be put

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*put to the Writing School as early as Boys, and continued in it as long, and then it may reasonably be expected that both Sexes should be alike ready at their Pen. But for want of this, How often do we see Women when they are left to shift for themselves in the melancholy State of Widowhood (and what Woman knows that she shall not be left in the like State?) obliged to leave their Business to the Management of others; sometimes to their great Loss, and sometimes to their utter Ruin; when on the contrary had they been ready at their Pen, could Spell well, and understand Figures, they might not only have saved themselves from Ruin, but perhaps have been Mistresses of a good Fortune. Hence then may be drawn the following, but most natural Conclusion, viz. * “ The Education of Youth is
“ of such vast Importance, and of such singular
“ Use in the Scene of Life, that it visibly carries
“ its own Recommendation along with it: For
“ on it, in a great Measure depend all that we
“ hope to be; every Perfection that a generous
“ and well-disposed Mind would gladly arrive at:
“ ’Tis this that stamps the Distinction of Man-
“ kind, and renders one Man preferable to ano-
“ ther: Is almost the very Capacity of doing
“ well; and remarkably adorns every Point of
“ Life.” And as the great End of human Learn-
ing is to teach a Man to know himself, and there-
by fit him for the Kingdom of Heaven: So he
that knows most, consequently is enabled to prac-
tise the best, and become an Example to those
who know but little, or are quite ignorant of their
Duty. I am,*

Your and your Childrens Well-wisher,

* WATTS’S Essay.

THOMAS DILWORTH.



TO MR. THOMAS DILWORTH,
ON HIS
Compendium of ARITHMETIC,
INTITLED,
The Schoolmasters Assistant.

WHILE some, seducive of the rising Age,
Expose for Hire the lewd and factious Page,
On ev'ry Stall appear the public Pest,
Deep Bane instilling in the tender Breast;
Thou, Friend of moral as of social Truth!
Employ'st thy Toils to mend our growing Youth.
Thy Cares, how worthy of the Good and Wise,
Impow'r the Embrio Genius first to rise;
Make the dark Clues of Science plain to find,
And thro' its Mazes lead the pleasur'd Mind.
E'en now afresh, unweari'd in thy Pains,
For future Times thy recent Task remains:
By double Motives it assures to please,
The Youth's Instructor and the Tutor's Ease:
From darker Forms it clears encumber'd Rules,
And Learning makes the fit Delight of Schools.
Thy Labours, Friend, have found their just Success,
And gen'ral Plaudits thy Desert confess.
O may THIS WORK, nor THIS be found thy last,
No sordid Pride o'erlook, or Envy blast,
Far as our Mother-Tongue extends, be known,
And grateful Pupils thy Assistance own.

M O S E S B R O W N E .

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To Mr. Thomas Dilworth, *Author of*
The Schoolmasters Assistant.

S I R,

AS you was pleased to favour me with the Perusal of Your *Schoolmasters Assistant* in Manuscript, which gave me a sensible Pleasure; You have thereby obliged me, in Justice to your Merit, to give my humble Opinion upon it.— That a Work of *this Kind* has been long wanted, admits of no Dispute. And I must confess, that you have treated the Subject so methodically, laid down the several Rules so very plain, yet concise, as must make this Book of general Use and Advantage: And I heartily wish you may meet with equal Encouragement in the Publication of this, as you did in your excellent *New Guide* to the *English Tongue*. I am, SIR,

London, 29th of
November,
1743.

Your sincere Friend,

And Humble Servant,

BRIGHT WHILTON.

To Mr. Thomas Dilworth, *on his*
Schoolmasters Assistant.

S I R,

I Have perused, with Pleasure, Your *Schoolmasters Assistant*, and give You my Thanks for your kind Endeavours to further the Improvement of Youth with greater Facility to the Tutor.

I am convinced, *that Piece* is well calculated to promote both, and therefore with you the Success due to so much useful Labour. I am,

S I R,

Twelve-Bell-Court
in Bow Church-
Yard, 13 Jan.
1743.

Your Friend and Servant,

WILLIAM COLES.

To Mr. Thomas Dilworth, on his
Treatise of ARITHMETIC, intitled
The Schoolmasters Assistant.

S I R,

IT is universally allow'd (in all Nations civiliz'd) that the Instruction of Youth is of the greatest Importance, the Happiness of every Individual, and Society in general thereon depending; and that it is of two kinds, *viz.* To form the good Man and the good Scholar. To compleat the latter, those Studies are chiefly to be pursu'd, which are adequate to the Disposition of the Pupil, and to compleat the Man of Business he is design'd for: But I do not know any Business that can be well executed without ARITHMETIC. THIS therefore claims the first Place, and due Care of the Master, to inculcate and explain its Rudiments, which will not only ground the *Tyro*, but also give him some Glances of those Beauties and Uses, he may expect from his present Labours: Every Help then, that may gain the Master Time in the Discharge of his Duty, will (in consequence) add to the Improvement of his Scholars: For which Use and Purpose, that THIS BOOK is well adapted, (having perus'd it some Time ago in Manuscript) is the ingenious Opinion of, S I R,

Gainsford-Street, Shad-
Thames, Southwark,
the 9th of May, 1743.

Your respectful Friend and Servant,

WILLIAM MOUNTAINE.

To Mr. Thomas Dilworth, *Author*
of the Schoolmasters Assistant.

S I R,

I Have perus'd your *Book*, intitled, *The Schoolmasters Assistant*, and readily recommend it as a *proper Companion*, for such as are employ'd in teaching ARITHMETIC, as well as for those who are desirous of Improvement in that useful and necessary SCIENCE. I am,

The Academy in
Little Tower-
Street, 29 March,
1744.

S I R,

Your humble Servant,

EM. AUSTIN.

WE whose Names are underwritten, having perused this Book, intituled, *The SCHOOLMASTERS ASSISTANT*, do recommend it to be used in Schools, for the speedy Improvement of YOUTH in ARITHMETIC, as the only one for that Purpose, that hath yet been made public.

- | | |
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T H E
Schoolmasters Assistant.

P A R T I.

Of Arithmetic in Whole Numbers.

The INTRODUCTION.

Of Arithmetic in general.

- Q. *WHAT is Arithmetic?*
A. *Arithmetic* is the Art or Science of computing by Numbers, either Whole or in Fractions.
- Q. *What is Number?*
A. *Number* is one or more Quantities, answering to the Question, *How many?*
- Q. *What is Arithmetic in Whole Numbers?*
A. Arithmetic in *Whole Numbers* or *Integers*, supposes its Numbers to be entire Quantities, and not divided into Parts.
- Q. *What is Arithmetic in Fractions?*
A. Arithmetic in *Fractions*, supposes its Numbers to be the Parts of some entire Quantity.
- Q. *How do you consider Arithmetic with regard to Art and Science?*
A. Both in *Theory* and *Practice*.
- Q. *What is Theoretical Arithmetic?*
A. *Theoretical Arithmetic* considers the Nature and Quality of Numbers, and demonstrates the Reason of Practical Operations. And in this Sense Arithmetic is a *Science*.
- Q. *What is Practical Arithmetic?*
A. *Practical Arithmetic* is that which shews the Method of working by Numbers, so as may be most useful and expeditious for Business. And in this Sense Arithmetic is an *Art*.
- Q. *What is the Nature of all Arithmetical Operations?*
A. The Nature of all *Arithmetical Operations* is, by some Quantities that are given, to find out others that are required.
- Q. *Which are the fundamental Rules in Arithmetic?*
A. These Five: *Notation, Addition, Subtraction, Multiplication, and Division.*

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I. Of MONEY.

Q. Which are the Denominations of English Money?

A. 4 Farthings make 1 Penny.
 12 Pence ——— 1 Shilling.
 20 Shillings ——— 1 Pound Sterling.

Q. Are there no other Names of Money used in England?

A. Yes; such as,

	£	s.	d.
A Moidore	=	1	7 0
A Guinea	=	1	1 0
A Half Guinea	=	0	10 6
A Crown	=	0	5 0
A Half Crown	=	0	2 6

There are also several smaller Pieces which speak their own Value; as, a Six-pence, Four-pence, Three-pence, Two-pence, Penny, Halfpenny, Farthing.

2. Of TROY-WEIGHT.

Q. Which are the Denominations of Troy-Weight?

A. 24 Grains make 1 Pennyweight.
 20 Pennyweights 1 Ounce.
 12 Ounces ——— 1 Pound.

Q. What sort of Things are weighed by this Weight?

A. Gold, Silver, Jewels, Electuaries, Bread, and all Liquors.

3. Of AVOIRDUPOIS-WEIGHT.

Q. Which are the Denominations of Avoirdupois-Weight?

A. 16 Drams make 1 Ounce.
 16 Ounces ——— 1 Pound.
 28 Pounds ——— 1 Quarter of an Hundred Weight.
 4 Quarters ——— 1 Hundred Weight, or 112 Pounds.
 20 Hundred Wt. 1 Ton.

Q. What is the Use of Avoirdupois-Weight?

A. Avoirdupois-Weight is used in weighing any Thing of a coarse and drossy Nature, as all Grocery and Chandlers Wares, and all Metals but Silver and Gold.

Q. What other denominations are there in this weight?

A. There are several other Denominations in Avoirdupois-Weight, in some particular Goods, and others only customary in some particular Places; as appears by the following Table.

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T A B L E.

	lb.		lb.
A Firkin of Butter is —	56	A Burden of Gad	} 180
— of Soap is —	64	Steel, or 9 Score	
A Barrel of Pot Ash is	200	A Quintal of Fish in	} 100
— Anchovies is —	30	<i>Newfoundland's</i> —	
— Candles is —	120	A Stone of Glass is —	5
— Figs, from —	98	A Seam of Glass is 24	} 120
to 2 C. 3 <i>qrs.</i> —		Stone, or —	
— Soap is —	256	<i>For Cheese and Butter.</i>	
— Butter is —	224	A Clove or half Stone is	8
— Gunpowder is —	112	A Wey in <i>Suffolk</i> is	} 256
— Raisins is —	112	32 Cloves, or —	
A double Barrel of	} 60	— <i>Essex</i> is 42 Cloves or	} 336
Anchovies —		<i>For Wool.</i>	
A Punccheon of Prunes is 10C.		A Clove is —	7
or 12C.		A Stone is —	14
A Fother of Lead is 19C. 2 <i>qrs.</i>		A Tod is —	28
A stone of Iron or Shot is	14	A Wey is 6 Tod and	} 182
— Butchers Meat is	8	1 Stone, or —	
A Gallon of Train Oil is	7½	A Sack is 2 Weys, or	364
A Faggot of Steel —	120	A Last is 12 Sacks, or	4368

4. Of APOTHECARIES-WEIGHT.

Q. *Which are the Denominations of Apothecaries-Weight?*

- A. 20 Grains make 1 Scruple.
 3 Scruples — 1 Dram.
 8 Drams — 1 Ounce.
 12 Ounces — 1 Pound.

Q. *What is the Use of Apothecaries-Weight?*

A. *Apothecaries-Weight* is such as their *Medicines* are compounded by

5. Of LONG MEASURE.

Q. *Which are the Denominations of Long Measure?*

- A. 3 Barly-Corns make 1 Inch.
 4 Inches — 1 Hand.
 12 Inches — 1 Foot.
 3 Feet — 1 Yard.
 6 Feet — 1 Fathom.
 5 Yards and a Half 1 Rod, Pole, or Perch.
 40 Poles — 1 Furlong.
 8 Furlongs — 1 Mile.
 3 Miles — 1 League.
 60 Miles — 1 Degree.

Note, 1 Degree is 69 Miles, and 4 Furlongs, very near, tho' commonly reckoned but 60 Miles.

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Q. *What is the Use of Long Measure?*

A. To measure Distance of Places, or any thing else, where Length is considered, without Regard to the Breadth.

Q. *Is the Pole, or Perch, always of the same Length?*

A. No.

Q. *What is the Difference?*

A. Five Yards and an Half are the Statute-Measure for a Pole or Perch; but for Fens and Wood-lands, it is customary to reckon 18 Feet to the Pole; and the Forests 21 Feet.

Q. *What is the Use of an Hand?*

A. It is used to measure Horses.

Q. *What is the Use of a Fathom?*

A. It is used to measure Depths.

6. Of CLOTH-MEASURE. ⁴

Q. *Which are the Denominations of Cloth-Measure?*

A. 2 Inches and a Quarter make 1 Nail.

4 Nails — — — 1 Quarter of a Yard.

4 Quarters — — — 1 Yard.

3 Quarters of a Yard — 1 Flemish Ell.

5 Quarters of a Yard — 1 English Ell.

Note, 1. *The Yard is used in measuring all sorts of Woollen Cloths, wrought Silks, most Linens, Tape and Gartering.*

2. *The Ell English is used only in measuring some particular Linens, called Hollands.*

3. *The Ell Flemish is used in measuring Tapestry.*

7. Of LAND-MEASURE. ⁵

Q. *Which are the Denominations of Land-Measure?*

A. 9 Square Feet — — — make 1 Yard.

30 Yards and a Quarter — — 1 Pole.

40 Poles in Length and 1 in Breadth 1 Rood.

4 Roods — — — — 1 Acre.

Q. *What is the Use of Land-Measure?*

A. It gives the Content of any Piece of Ground in Acres.

8. Of LIQUID-MEASURE.

Q. *How many Sorts of Liquid-Measure are there?*

A. Two: *Wine-Measure* and *Winchester-Measure*.

Q. *What is meant by Winchester-Measure?*

A. It is a particular Measure used for Beer and Ale.

Q. *What is the Difference between Wine-Measure and Winchester-Measure?*

A. A Gallon of Wine is 231 solid Inches; but a Gallon of Beer or Ale exceeds that Measure by 51 Inches, and is 282 solid Inches.

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(1) Of WINE-MEASURE.

Q. *What are the Denominations of Wine-Measure?*

- A. 2 Pints ———— make 1 Quart.
4 Quarts ———— 1 Gallon.
10 Gallons ———— 1 Anchor of Brandy or Rum.
18 Gallons ———— 1 Runlet.
31½ Gallons ———— 1 Barrel.
42 Gallons ———— 1 Tierce.
63 Gallons ———— 1 Hogshead.
84 Gallons ———— 1 Puncheon.
2 Hogsheads ———— 1 Pipe or Butt.
2 Pipes or 4 Hogsheads 1 Tun.

Q. *What other Liquors are measured by the Wine-Standard?*

- A. All Brandies, Spirits, Strong Waters, Perry, Cyder, Mead, Vinegar, Hony and Oil.

Note, Milk is also retail'd by this Standard, not by Law, but Custom only.

(2.) Of WINCHESTER-MEASURE.

Q. *Which are the Denominations of Winchester-Measure?*

- A. 2 Pints — — — — make 1 Quart.
4 Quarts — — — — 1 Gallon.
8 Gallons — — — — 1 Firkin of Ale.
9 Gallons — — — — 1 Firkin of Beer.
2 Firkins — — — — 1 Kilderkin.
4 Firkins — — — — 1 Barrel.
1 Barrel and a Half, or 54 Gallons 1 Hogshead of Beer.

Q. *What is the Difference between Ale and Beer-Measure?*

- A. In London only they compute 8 Gallons to the *Firkin of Ale*, and 32 Gallons to the *Barrel*; but in all other Parts of England, for *Ale*, *Strong Beer*, and *Small Beer*, 34 Gallons are computed to the *Barrel*, and 8 Gallons and an Half to the *Firkin*.

Q. *What other Commodities are there that go by the Winchester-Measure?*

- A. A Barrel of *Salmon* or *Eels* is 42 Gallons.
A Barrel of *Herrings* — 32 Gallons.
A Keg of *Sturgeon* — — 4 or 5 Gallons.
A Firkin of *Soap* — — 8 Gallons.

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9. Of DRY MEASURE.

Q. Which are the usual Denominations of Dry Measure?

A. 2 Pints — make 1 Quart.
2 Quarts ——— 1 Pottle.
2 Pottles ——— 1 Gallon.
2 Gallons ——— 1 Peck.
4 Pecks ——— 1 Bushel.
8 Bushels ——— 1 Quarter of Corn.
36 Bushels ——— 1 Chaldron of Coals.

Q. Wherein does London differ from other Places in England in the Coal Measure?

A. In London 36 Bushels make a Chaldron; but in all other Places 32 Bushels make a Chaldron. The Bushel also in Water Measure contains 5 Pecks.

Q. What other Denominations are there in Dry Measure?

A. A Score of Coals ——— is 21 Chaldrons.
A Sack of Coals ——— 3 Bushels.
A Sack of Corn ——— 4 Bushels.
10 Quarters of Corn make 1 Wey.
12 Weys are ——— 1 Last.
A Load of Corn ——— is 5 Bushels.
A Cart-load ditto ——— 40 Bushels.

Q. What is the Standard for Dry Measure?

A. The Standard for Dry Measure is a Winchester Bushel, being 18 Inches and a Half wide throughout, and 8 Inches deep. One Gallon of this Quantity is 268 solid Inches and $\frac{1}{4}$, and consequently is less than an Ale Gallon by 13 solid Inches and $\frac{1}{4}$.

10. Of TIME.

Q. Which are the Denominations of Time?

A. 60 Seconds ——— make 1 Minute.
60 Minutes ——— 1 Hour.
24 Hours ——— 1 Day.
7 Days ——— 1 Week.
4 Weeks ——— 1 Month.

13 Months, 1 Day, and 6 Hours, 1 common or Julian Year.

Q. What is a Solar Year?

A. According to the best Computations, a Solar Year is 365 Days, 5 Hours, 48 Minutes, and 55 Seconds.


Q. How is the Year divided by the Calendar?

A. Thirty Days hath *September*,
April, *June*, and *November*,
All the rest have Thirty-one,
Except *February* alone,
Which claimeth just Eight and a Score,
But every Leap Year one more.

THE
Schoolmasters Assistant.

PART IV.

*A Collection of QUESTIONS to exercise
the foregoing RULES.*

1.  DEMAND the Difference between 14676 and the Fourth of itself? *Answ.* 11007.
2. I demand the Quotient of the Square of 476 divided by the half of its Root? *Answ.* 952.
3. An ancient Lady being demanded how old she was; to avoid a direct Answer, said, I have 9 Children, and there are 3 Years between the Birth of each of them; the Eldest was born when I was 19 Years old, which is now exactly the Age of the Youngest; how old was the Lady? *Answ.* 62 Years old.
4. A Gentleman went to Sea at 17 Years of Age; 8 Years after that, he had a Son born, who lived 46 Years, and died before his Father; after whom the Father lived twice 20 Years, and then died also; I demand the Age of the Father when he died? *Answ.* 111 Years.
5. *A, B,* and *C,* freight a Ship for the *Canaries* worth 3696 *l.* whereof *A* put in 369 *l.* *B* 897 *l.* but by reason of a Storm, one third of the Goods were cast overboard; I demand each Man's Share of the Loss? *Answ.* *A's* Loss was 123 *l.* *B's* 299 *l.* and *C's* 810 *l.*
6. *A, B,* and *C,* traded together, the first laid in I know not how much; *B* put in 20 Pieces of Cloth; and *C* put in 500 *l.* and they have gained 1000 *l.* whereof *A* ought to have 350 *l.* and *B* 400 *l.* I demand *C's* Share, how much the first Man laid in, and what the 20 Pieces of Cloth were worth? *Answ.* *C's* Share was 250 *l.* *A* laid in 700 *l.* and *B's* Cloth was worth 800 *l.*
7. A young Man received 210 *l.* which was $\frac{1}{3}$ of his elder Brother's Portion; now three Times the elder Brother's Portion was half of the Father's Estate; I demand how much the Estate was? *Answ.* 1890 *l.*
8. A Factor bought a certain Quantity of broad Cloth, and Druggat, which together cost him 81 *l.* The Quantity of broad

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Cloth that he bought was 50 Yards, at 18 *s.* per Yard, and for every five Yards of broad Cloth, he had nine Yards of Drugget; I demand how many Yards of Drugget he had, and how much the Drugget cost him per Yard? *Ans.* 90 Yards of Drugget, at 8*s.* per Yard.

9. A certain Usurer lent out 90 *l.* for 12 Months, and received Principal and Interest 95 *l.* 8 *s.* I demand at what Rate per Cent. he received Interest? *Ans.* 6 *l.* per Cent.

10. Two Men depart both from one Place, the one goes North, and the other South, the one goes 7 Miles a Day, and the other 11 Miles a Day; how far are they distant the 12th Day after their Departure? *Ans.* 216 Miles.

11. Two Men depart both from one Place, and both go the same Road; the one travels 12 Miles every Day, the other 17 Miles every Day; how far are they distant the tenth Day after their Departure? *Ans.* 50 Miles.

12. Ship'd from Spain 10 Tuns of Wine, at 10 *l.* Sterling per Hbd. paid Custom at the Port of London, 1 *s.* per Gallon: The Charges for Lighterage, Cartage, and Porterage, amounted to 5 *l.* afterwards by the Misfortune of a Pipe staving, containing 126 Gallons, I lost 59 Gallons; the next Day 28 Gallons more run out, and the Remainder of the Pipe not being saleable, I threw it away: The Market-Price not running high, I sold the rest for 17 *l.* per Hbd. I demand how much I gain'd or lost by the Sale of the said Wine? *Ans.* Gain'd 115 *l.*

13. A Brewer mixed 17 Gallons of Ale, at 8 *d.* per Gallon, with 19 Gallons at 10 *d.* per Gallon, and with 40 Gallons at 6 *d.* per Gallon; I demand what one Gallon of this Mixture is worth; and also the Worth of the whole Quantity?

Ans. $\left\{ \begin{array}{l} 0 \text{ l. } 0 \text{ s. } 7 \text{ d. } 1 \text{ gr. } \frac{3}{4} \text{ per Gallon.} \\ 2 \text{ l. } 7 \text{ s. } 2 \text{ d. the Price of the whole Mixture.} \end{array} \right.$

14. There are two Numbers, whose Product is 1058, and Multiplicand 46; I demand the Multiplier; the Sum of the Factors, and the Difference between the Sum of the Cubes of the Factors, and the Square of the Product?

Ans. $\left\{ \begin{array}{l} \text{Multiplier} - - - 23. \\ \text{Sum of the Factors} 69. \\ \text{Difference} - 1009861. \end{array} \right.$

15. There are two Numbers whose Dividend is 1216, and the Quotient 76; I demand the Divisor; the Difference between the Cube of the Quotient, and the Sum of the Squares of the Divisor and Dividend; and the Cube-Root of the Sum of the Cubes of the Divisor, Dividend and Quotient?

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$$\text{Answ. } \left\{ \begin{array}{l} \text{Divisor} \text{ --- } 16. \\ \text{Difference} \text{ } 1039936. \\ \text{Cube-Root} \text{ --- } 1216. \end{array} \right.$$

16. Six Rogues, *viz.* *A, B, C, D, E,* and *F,* having entered into a Confederacy, do agree to divide whatever Sums of Money they shall at any time take upon the Highways, according to their Valour, that is in proportion to the Number of Scars they should then have on their Faces: Now the first two, *viz.* *A,* and *B,* being very bold and daring Fellows, had received *A* 20, and *B* 19 Scars: The next two, *viz.* *C,* and *D,* having a less Share of Courage, and not caring to stand all Brunts, had each of them but 9 Scars; but the other two, *viz.* *E,* and *F,* being mere Cowards, always turned their Backs at the least Opposition, and so by Chance they had one a-piece; and they having, at several times, stolen the Sum of 700 *l.* 13 *s.* do desire to know how they must divide it?

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>qrs.</i>	
Answ. {	A must have	237	10	2	o ^{ts} .
	B -----	225	12	7	3 ^{tt} .
	C -----	106	17	6	3 ^{tt} .
	D -----	106	17	6	3 ^{tt} .
	E -----	11	17	6	o ^{tt} .
	F -----	11	17	6	o ^{tt} .

17. If 48 taken from 120 leave 72, and 72 taken from 91 leave 19, and 7 taken from thence leave 12; what Number is that, out of which, when you have taken 48, 72, 19, and 7 leaves 12? *Answ.* 158.

18. A Gentleman had 7 *l.* 17 *s.* 6 *d.* to pay among his Labourers; to every Boy he gave 6 *d.* to every Woman 8 *d.* and to every Man 16*d.* and there were for every Boy three Women, and for every Woman two Men; I demand the Number of each? *Answ.* 15 Boys, 45 Women, 90 Men.

19. Ship'd for *Jamaica* 550 Pair of Stockings, at 11 *s.* 6 *d.* per Pair, and 460 Yards of Stuff, at 14 *d.* per Yard; in return for which, I had 46 *C.* 3 *qrs.* of Sugar, at 24 *s.* 6 *d.* per *C.* and 1570 *lb.* of Indigo, at 2 *s.* 4 *d.* per *lb.* what remains due to me of my Adventure? *Answ.* 102 *l.* 12 *s.* 11 *d.* 2 *qrs.*

20. A Man driving his Geese to the Market, was met by another, who said, Good-morrow Master with your Hundred Geese. Says he, I have not an Hundred; but if I had half as many as I now have, and two Geese and an half, beside the Number I have already, I should have an Hundred: How many had he? *Answ.* 65.

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21. The computed Distance between *London* and *York* is 150 Miles; now if a Man set out from *London*, and walk every Day towards *York* 20 Miles, and back again toward *London* 15 Miles; how long will it be before he gets to his Journey's End? *Answ.* 30 Days.

22. Bought threescore Pieces of Holland for three times as many Pounds, and sold them again for four times as much; but if they had cost me as much as I sold them for, what should I have sold them for, to gain after the same Rate? *Answ.* 320*l.*

23. A Gentleman a Chaise did buy,
An Horse and Harness too;
They cost the Sum of threescore Pounds,
Upon my Word 'tis true.
The Harness came to half of th' Horse,
The Horse twice of the Chaise;
And if you find the Price of them,
Take them and go your Ways.

Answ. { Chaise ----- 15 *l.*
 { Horse ----- 30
 { Harness ----- 15

24. A Gentleman courted a young Lady; and as their Birth Days happen'd together, they agreed to make that their Wedding-Day. On the Day of Marriage, it happen'd, that the Gentleman's Age was just double to that of the Lady's, that is as 2 to 1. After they had lived together 30 Years, the Gentleman observed that his Lady's Age drew nearer to his, and that his was only in such Proportion to hers as 2 to 1 $\frac{1}{2}$. Thirty Years after this the same Gentleman found his and his Lady's Ages to be as near as 2 to 1 $\frac{2}{3}$; at which Time they both died. I demand their several Ages at the Day of their Marriage, and of their Death? Also the Reason why the Lady's Age, which was continually gaining upon her Husband's, should, notwithstanding, be never able to overtake it?



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1. A General having a Castle, situate on a Square, and garrison'd by 48 Soldiers, so order'd them, as that any two Corners and the Side between them, should consist of 18 Men; but he thinking there were not Men enow, hired 8 more, but still kept up the same Number of 18 Men as before; afterwards 16 Men were paid off, he not having Occasion for them; but yet he kept up his Number of 18 Men; I demand how he must place the said Men, to make 18 every Way, when he had 48, 56, and 40 Soldiers.

2. A poor Woman carrying some Eggs to Market, met with a rude Fellow, who broke them all; but presently after, considering what he had done, went back and told the Woman he was willing to make Satisfaction, provided she could tell how many there were; she answered, she could not tell, but the best Account that she could give, was, that when she told them in by two at a Time, there was one left, when by three, there was one left, and when by four, there was one left, but when she told them in by five, there was none left: I demand how many Eggs the Woman had?

3. A Gentleman's Servant went to Market with an Order to buy 20 Fowls for 20 *d.* he did so; and brought home Pigeons at 4 *d.* a-piece, Larks at a Halfpenny a-piece, and Sparrows at a Farthing a-piece; I demand how many there were of each sort?

4. Suppose the 9 Digits to be placed in a quadrangular Form: I demand in what Order they must stand, that any three Figures in a right Line may make just 15?

5. Let 12 be set down in four Figures, and let each Figure be the same.

6. A Countryman having a Fox, a Goose, and a Peck of Corn, in his Journey came to a River, where it so happened that he could carry but one over at a Time. Now, as no two were to be left together that might destroy each other: So he was at his Wits end how to dispose of them: For, says he, Tho' the Corn can't eat the Goose, nor the Goose eat the Fox, yet the Fox can eat the Goose, and the Goose eat the Corn. The Question is, how he must carry them over?

7. Three jealous Husbands with their Wives, being ready to pass by Night over a River, do find at the Water-side a Boat which can carry but two Persons at once, and for want of a Waterman, they are necessitated to row themselves over the River at several Times: The Question is, how these 6 Persons shall pass by 2 and 2, so that none of the three Wives may be found in the Company of 1 or 2 Men unless her Husband be present? *Wingate.*

8. Two merry Companions are to have equal Shares of 8 Gallons of Wine, which are in a Vessel containing exactly 8 Gallons: Now to divide it equally between them, they have only two other empty Vessels, of which one contains 5 Gallons, and the other 3; the Question is, how they shall divide the said Wine between them by the Help of these 3 Vessels, so that they may have 4 Gallons a-piece? *Wingate.*

9. Says *Jack* to his Brother *Harry*, I can place four threes in such manner that they shall make just 34; can you do so too?

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