

**OBSERVATIONS UPON SOME REMARKS
RELATING TO THE METHOD OF FLUXIONS,
PUBLISHED IN THE REPUBLICK OF LETTERS
FOR AUGUST LAST, AND IN THE APPENDIX
TO THAT FOR SEPTEMBER.**

By

James Jurin

(The Present State of the Republick of Letters,
November 1736, Appendix, pp. 2–79)

Edited by David R. Wilkins

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NOTE ON THE TEXT

This text is transcribed from *The present state of the republick of letters* for November 1736.

The following spellings, differing from modern British English, are employed in the original 1735 text: expresly, hast [haste], grosly, remembred, sett, falshood, encreasing, surprizing, tast, writ.

The following errata given at the conclusion have been corrected:—

Page 10 line 1. r. *Ridiculum*.

Page 13. line. 7. r. *forms*.

David R. Wilkins
Dublin, June 2002

AN
APPENDIX
TO THE
Present State
OF THE
Republick of Letters
For the Month of *November* 1736.

BEING

OBSERVATIONS *upon some Remarks relating to the Method of Fluxions, published in the Republick of Letters for August last, and in the Appendix to that for September.*

By PHILALETHES CANTABRIGIENSIS.

*Evasti? Credo, metues, doctusque cavebis.
Quaeris quando iterum paveas, iterumque perire Possis.*

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OBSERVATIONS *upon some Remarks relating to the Method of Fluxions, published in the Republick of Letters for August last, and in the Appendix to that for September.*

[*The Present State of the Republick of Letters*, November 1736, Appendix, pp. 2–79.]

As the Author of these *Remarks* has thought proper to distinguish not only the sections, but even the several paragraphs, of my last *Considerations*, I intend in the following *Observations* to follow the example he has set me; and would therefore beg of the reader to mark those paragraphs numerically, in order to compare them more readily both with this Gentleman's *Remarks* and my *Observations*.

Sect. I, II, III, IV. If the rules for controversy, given in the second of these sections, were duly observed, I apprehend they would greatly *contribute towards determining the points in question*. The intelligent reader cannot but have observed, that those rules were occasioned by the contrary behaviour of Mr. *Robins*, especially in his *Dissertation* of *April* last; and I shall take occasion to shew, that most of them have again been broken by the Writer of these *Remarks*. In order to which, and to spare the trouble of turning to the *Republick of Letters* for *July*, so often as I shall have cause to mention those Rules, I have thought proper here to reprint them.

Rule 1. The person who contends for truth alone, will keep close to the points in dispute, with as little mixture as possible of foreign matter.

Rule 2. He will not begin *de novo* every time he writes; to embarrass and perplex his reader; but will resume the dispute just where his adversary left it.

Rule 3. He will study plainness and perspicuity, endeavouring always to set the point in the clearest and strongest light; and will be careful to avoid ambiguity as much as possible.

Rule 4. He will talk as little as may be in general terms: On the contrary, whenever it shall be necessary to clearing up the point in hand, he will descend to the minutest particulars, and the most circumstantial examination: More especially, if his opponent have already done so.

Rule 5. He will at all times be ready to give satisfaction, in case of any question, or challenge, from the person he disputes with.

Rule 6. He will not omit taking notice of any argument brought against him; much less will he pass by in silence, such as are the strongest and most forcible.

Rule 7. He will be so far from lessening the strength of any objection, by representing it unfairly and imperfectly, that he will, if possible, set it in a stronger and fuller light, than it was urged by his antagonist.

Rule 8. He will quote the words of his opponent, or of other writers, fairly and exactly, not giving his own paraphrase as if it were their expression; nor leaving out part of their words, or adding others of his own, in order to change or disguise the meaning; nor will he,

with the same intent, omit citing any material passage, following and explaining the passage cited by him.

Rule 9. He will not impute any opinions to his antagonist, which he does not hold; much less when he manifestly holds the contrary opinions.

Rule 10. He will take the words of the Authors he quotes, in that sense which is agreeable to their constant doctrine, and the general tenour of their writings, if the words are fairly capable of such a sense; and will not wrest them to another meaning more to his purpose.

Rule 11. He will not endeavour to impose upon his reader, by confident assertions instead of proof, by saying a thing is most evident, most manifest, most evidently appears, is expressly declared or affirmed, where there is no foundation for such assertions, but rather the contrary.

Sect. V. § 1–4. As the whole tenour of the passage I have quoted from Mr. *Robins*, does necessarily require, that by *the idea of fluxions* should be understood the doctrine or method of fluxions, the *Remarker's* quotation from the *Republick of Letters*, in *October*, can do him no service.

No notice is here taken of the words, *this latter doctrine, these two methods*, upon which my argument was principally founded. This is a gross breach of my sixth rule.

I shall therefore not need to take notice of the *Remarker's* using the words *the other method, that other method, this*; which again seem to imply, that, by *the idea of fluxions*, is meant the method of fluxions.

The idea of fluxions, if it mean only the form of conception of quantities encreasing by motion, is not owing to Sir *Isaac Newton*. All the ancients had the same conception. Can this *Remarker* have read any of them with careful attention?

§ 5–8. *It is not here attempted to be proved, that one of these methods could not possibly be invented before the other.* The *Remarker* is here guilty of a breach of *Rule 7* and *8*.

The thing by me proposed to be enquired into, was, Whether the method of fluxions *has no relation* to the method of first and last ratio's, whether the first of these methods be *absolutely distinct* from the last. Having finished this enquiry in § 6 and 7, I concluded against Mr. *Robins* in my 8th paragraph; and having done with my argument, I drew from it this additional consequence, that the former (method) could not possibly be *formed before* the latter *was invented*. The *Remarker*, in order to impose upon the reader, represents this consequence, as the only thing I had offered to prove, the argument itself being entirely dropt.

The method of fluxions, as it is drawn up by Sir *Isaac Newton* could not possibly be *formed before* the method of first and last ratio's *was invented*. Whether Sir *Isaac* could have drawn up a method of fluxions in another manner, is not the question. Mr. *Robins* has taken a different course from Sir *Isaac Newton*, but not a better.

§ 9. The inadvertence is in the book, and through that inadvertence there comes to be an S too much in the title page.

§ 11, 12. My enquiry was, where this express distinction was to be met with. Can a writer be said to *distinguish expressly* between two things, where he speaks of one only, and never mentions the other? Is the word *sufficiently* the same as expressly? *Rule 8.* is here broken.

§. 13. Sir *Isaac Newton* intermixes his simple and plain description of fluxions with the terms used in that other doctrine, at least as much as the Author of the *Analyst* has done so.

They both give this description first by it self, and afterwards intermix the terms of fluxions with what Mr. *Robins* calls the terms of that other doctrine.

Will any body say, the fifth proposition of the first book of *Euclid*, has no relation to the fourth, when the fourth is the means by which the fifth is demonstrated?

The doctrine of fluxions, as delivered by Mr. *Robins*, is not absolutely distinct from the ancient method of exhaustions; it has some relation to that method.

No notice is taken of what I have said concerning the Treatise of *Quadratures*, and the second *Lemma* of the second book of the *Principia*. *Rule 6.* suffers much.

§. *Rule 6.* is again broken.

Sect. VI. § 1–4. It seems here to be owned, that *Philalethes* has truly interpreted Sir *Isaac Newton*. That the passages by me quoted, are *unintelligible, or incorrect*, I leave to the *Remarker* to make appear. Had they been so, they would certainly have been altered in the last edition of the *Principia*. The Gentleman, who undertook the care of it, had too much skill not to perceive *their imperfection*, and too much regard for Sir *Isaac Newton* not to represent against any thing that was *unguarded, or incorrect*, much more *unintelligible*.

§ 5, 6. *It is not affirmed in the account of the* Commmercium Epistolicum, *that Sir Isaac Newton was accustomed to make use of indivisibles at that time.* This is the *Remarker's* exposition, not the very expression used in that account. *Rule 8.* is here broken.

Much of what is here said by the *Remarker*, might have been omitted, if he had not been in too much hast. He would needs answer the first part of my *Considerations*, before he had seen the second.

On the other hand he takes no notice of the letter *o* being used in the book of *Quadratures*, in the VERY SAME SENSE as in the Analysis. This is indeed to *disguise or conceal the truth*, in breach of *Rule 6.*

All the infinitely little quantities the *Remarker* speaks of, are composed of finite quantities multiplied by the one infinitely little quantity expressed by the symbol *o*.

That symbol never denotes any quantity, but what, by a continual decrease, becomes infinitely little, *i. e.* less than any finite quantity, and at last vanishes into nothing. This information is given to the *Remarker* by *Philalethes*.

§ 7, 8. Sir *Isaac Newton* had no occasion to describe his method, *when he was defending* it. He had described it before. But the thing spoken of was describing or defining his moments or augments, not describing his method. *Rule 8.* is here broken.

§ 9–12. I must desire the *Remarker* to read these paragraphs of my *Considerations* over again. He will there find, that Sir *Isaac Newton* has executed his purpose, and how he has executed it.

§ 13, 14. The reasoning here imputed to me, by the words *because* and *therefore*, is none of mine. *Rule 7.* is here broken.

Sect. VII. § 1–4. Any given difference, any difference that can be given, any difference that can be assigned, and any assignable difference, are all synonymous expressions.

Any assignable difference that shall be given, is the same as, any difference that can be given, that shall be given; the same as, any difference that can be assigned, that shall be assigned. This form of speech is, I think, somewhat like what the Criticks call tautological. A

difference, that shall be assigned, is undoubtedly assignable. In truth, the *want of accuracy* in regard to some people's *style and diction* is much to be lamented.

How will this *Remarker* prove to me, that the expression *quavis data quantitate*, in the passage he has here quoted, does not signify any assignable quantity?

Is it possible to assign a quantity so small, as that a series of terms decreasing *ad infinitum*, will not arrive at a term smaller than that quantity?

Some acknowledgment ought here to have been made of Mr. *Robins's* oversight, to use no harder term, in charging me with supposing the word *data*, singly taken, to stand for *assignable*; as also of his forgetfulness and injustice, in blaming me for my interpretation of the words *data quavis differentia*, when he himself has given the very same interpretation, *any assignable difference*.

*Ridiculum. Advorsum ne illum causam diceret,
Cui venit advocatus?*

My argument drawn from Sir *Isaac Newton's* demonstration is here over-looked, in breach of *Rule 6*.

§ 6, 7. If *the long string of phrases here collected* from Mr. *Robins's* writings, have not all the same meaning, that is not my fault, but his: Nor will this prove, that they were not *all designed to express the sense of data quavis differentia*. Mr. *Robins's* four interpretations have not all the same meaning, and yet they were *all designed to express the sense of* the first lemma. But any one of these phrases will serve to shew, that in Mr. *Robins's* opinion, the word *data*, in the first lemma does not *properly signify only what is actually assigned*.

§ 9. If the expression, *any difference how minute soever, that can be assigned*, in Mr. *Robins's* first interpretation of the lemma, was not designed to *expound the words in question, data quavis differentia*, I am at a loss to know how that expression came into the interpretation. *The meaning of the whole sentence* cannot be truly represented, unless the *sense* of that phrase be truly expounded.

§. 10. If *any given difference is not in Mr. Robins's opinion consonant to any difference that can be assigned*, he must acknowledge his two first interpretations of the first lemma, not to be consonant to each other, and consequently the cannot both *express Sir Isaac Newton's real meaning*.

Any difference that is or shall be given, is a new interpretation of the words *data quavis differentia*, never mentioned before, and shews these Gentlemen to be very hard set. These Gentlemen, I say: for

*Una quies operum tribus est, labor est tribus unus,
Tres Notus abreptos in saxa latentia torquet,
Saxa, vocant Itali stimulos: tres Euris ab alto
In brevia & syrtes urget, miserabile visu,
Illiditque vadis, atque aggere cingit arenae.*

Sect. VIII. § 1, 2. Mr. *Robins's* readers will be much puzzled to make out the same meaning in these *different forms of words*.

§ 3–9. *These four suppositions are here again repeated*, that the reader may have them at hand, in order to bring Mr. *Robins's* four different interpretations to the test. And the

very words of Sir *Isaac Newton* are subjoined to each of these suppositions, to shew, that they are every one undeniably contained in the lemma.

Now let Mr. *Robins* himself, or any the most sanguine of his associates, any who has *had the best opportunity of knowing Sir Isaac Newton's own mind*, let him, I say, instead of giving an interpretation in the lump, take the lemma to pieces, as I have done; let him distinctly, in plain and unambiguous terms, propound the several suppositions and the conclusion he takes to be contained in it, as I have done; let him shew how those suppositions and that conclusion flow from the very words of Sir *Isaac Newton*, as I have done; and in doing this let him apply every individual word of the lemma, as I have done:

Et credam dignum barbâ, dignumque capillis
MAJORUM credam. Nihil illi tendere contra:
Sed celerare fugam in sylvas, & fidere nocti.
Dissimulant, & nube cavâ speculantur amicti;
Defensi tenebris & dono noctis opacae.

I have not yet discovered that my interpretation of the lemma makes it an erroneous proposition. The *Remarker* here argues against an opinion, which he knows to be none of mine. This is contrary to *Rule 9*.

The word *perhaps* is needless: He knows I always *insisted upon the words* any given difference *being synonymous to any assignable difference*.

He is grossly mistaken in thinking, that quantities, which, before the end of a finite time, come nearer together than to have any assignable difference, will therefore become equal before the end of that time. But I desire at present to be excused from entering upon this argument. When I have done with Mr. *Robins* and this *Remarker*, if indeed they are two different persons, I shall accept of Dr. *Pemberton's* invitation to discuss it with him. In the mean time, I think it sufficient to return the assertion here made, by a counter assertion. Quantities, which by a constant approach do at last become equal, will come nearer together than any difference that can be assigned, before they become equal.

§ 10–12. The *Remarker* himself, in the paragraph immediately preceding this, has applied to quantities alone, what I had said of quantities and ratio's. Nor do I blame him for it. What Sir *Isaac Newton* has said of ratio's, is the very same that he has said of quantities.

§ 13. When these Gentlemen have shown, what are the *suppositions really contained in this lemma*, it will be easy to see, whether any of them *are omitted by Mr. Robins in the passage here cited*. But till that be done, it will be difficult to see clear in this dispute.

Quale per incertam lunam sub luce malignâ
Est iter in sylvis; ubi cælum condidit umbrâ
Jupiter, & rebus nox abstulit atra colorem.

The *Remarker* forgets the words *temporis ILLIUS*. What are we not plainly told, what Sir *Isaac Newton's* conclusion is? Which of his *different forms of words*, is that Mr. *Robins* dares stick to?

Quo diversus abis, periture? Huc dirige gressum:
Hoc age. Tunc etiam telis moriere Maronis?

I have clearly proved in *November* and *January* last, that Sir *Isaac Newton* designed no quantities or ratio's to be comprehended within the sense of this lemma, which do not become actually equal.

Why does not Mr. *Robins* give us a fifth interpretation, to settle the sense of this Lemma? Or is what is here said, to be taken for it?

§ 14. If the first interpretation was not sufficiently *near to the words of Sir Isaac Newton*, that was some *defect*. But I have shown *the sense* of the second interpretation to be different from that of the first, particularly with relation to a finite time.

§ 15. As this second interpretation was designed to *express the same sense in words nearer to those of Sir Isaac Newton*, it is great pity, methinks, that the *rangement of the words* should be so *different* from that of *Sir Isaac Newton*. The same rangement would have made the interpretation much clearer.

Unum hoc maceror & doleo tibi deesse, Robine.

Besides, in a mathematical proposition, a *different rangement of the words* is a dangerous thing. These great geometers, one would think, should have known, that by this means a true proposition may be turned into a false one. *Quæ mutuo sibi congruunt, sunt æqualia*, is true. *Quæ sunt æqualia, sibi mutuo congruunt*, is false. Five are more than four, is a true proposition. Four are more than five, is a false one.

If Mr. *Robins* *always intends to omit the second supposition ascribed by Philalethes to Sir Isaac Newton*, I should be glad to know, what is to be put in the room of it.

§ 16. Perhaps Mr. *Robins* thinks, that to read the demonstration first, may be a good preparation for reading the proposition afterwards. Why may he not deal in preparatives? He has shown admirable skill in correctives.

*Sed non Cantabricae medicari cuspidis ictum
Evaluit, neque eum juvere in vulnera cantus
Somniferi, aut Marsis quaesitae montibus herbae.*

§ 17, 18. Other persons think my *answer full and conclusive*, and till the *Remarker* shews it to be otherwise, I shall believe he thinks so too. As it is allowed to be *distinct*, it were easy to shew the faults of it. Why then does the *Remarker* here break the 6th *Rule*.

I apprehend *the sense of the remark here quoted* is greatly *altered*. Whether to *evade* my *answer*, or not, I leave to the reader. If not, why was it so tacitly altered? Few writers are guilty of false quotations without design; and fewer still quote their own works falsely.

§ 19–22. If the *Remarker* will be pleased to turn to the *Republick of Letters*, for *December* last, pag. 441, 442, he will find he has mistaken Mr. *Robins*'s intention. Observe with what solemnity this third interpretation is introduced, much more than any other interpretation.

Mr. *Robins* there tells us, *it has been urged against his explication, that Sir Isaac Newton does in his first lemma of his first book assert such a coincidence; and therefore though his method may be conclusive, yet it is not* A TRUE INTERPRETATION of *Sir Isaac Newton*.

He then says, "What foundation there is for this charge, will best appear by CONSIDERING this LEMMA; and that this may be done with more convenience, we will here insert a literal translation of it."

Having given this pretended literal translation, which, by the bye, is a very faulty one, he gives two different interpretations of the lemma; one which he rejects as false, and a second which he adopts as true.

After which he says, "Now that the latter sense is THE TRUE INTERPRETATION, will appear from the demonstration and application of this lemma."

In my *Considerations*, when I was making a collection of Mr. *Robins*'s interpretations, having no occasion to insert the first of these two interpretations, as having been rejected by Mr. *Robins*, I printed *the latter* alone. This obliged me to use the word *this*, instead of the words *the latter sense*; and I took care so to distinguish the word *this*, that it might appear not to be Mr. *Robins*'s word. Upon this the *Remarker* says, *the words are falsely cited*. But I should think, the putting *given difference*, for *any given difference*, is much more like a false citation.

§ 23. The reader, who turns to my *Considerations* of *January* last, here quoted, will easily see, whether I beg the question.

No reply is offered to my objection so often repeated, that the conclusion, as interpreted by Mr. *Robins*, is the same with the third supposition. A gross and repeated breach of *Rule 6*.

§ 24–26. The *Remarker* has just now told us, “The latter sense Mr. *Robins* speaks of, is the interpretation, he assigns to the words, *given difference*”.

Mr. *Robins* says, “Now that the latter sense is the true interpretation, will appear from the demonstration and application of this lemma.”

And yet the *Remarker* now affirms, that “Mr. *Robins* does not refer to the demonstration of this lemma, for the sense of the words *any given difference*.”

*Labitur hic quidam nimiâ formidine cursum
Praecipitans, capiturque.*

§ 27, 28. What is here said, seems to be very true. But it is no answer to my argument, by which it is proved, that Mr. *Robins* has not rightly explained the words *any given difference*. *Rule 6*. suffers much.

§ 29. My *purpose* in asking several *questions* here, was to learn Mr. *Robins*'s meaning, in order either to acquiesce in it, or to shew it to be wrong. If the *Remarker* does not know Mr. *Robins*'s meaning, why does he undertake to defend him? If he knows it, why dares he not tell it? A bare supposal of what Mr. *Robins* may mean, ties him to nothing, and leaves me nothing certain to build an answer on. *Rule 5* is hereby broken.

Notwithstanding this bad success of my questions to Mr. *Robins*, I must beg leave to put one or two to this *Remarker*.

He tells me, “Mr. *Robins* supposes the sense, he has ascribed to them, (the words *fiunt ultimo æquales*) not to be the plain and ordinary meaning of those words, but a *new sense* Sir *Isaac Newton* thought fit to put upon them.” I ask, therefore,

1. Since the word *æquales* does not signify equal, which is *the plain and ordinary meaning* of that word, but has a *new sense put upon* it, what does *inæquales* signify? They are opposed by Sir *Isaac Newton* to one another. *Si negas, (fieri æquales) fiant inæquales*.

2. Is Mr. *Robins*'s new sense of the word *æquales* to run through all the propositions of the *Principia* wherein that word is used? Or is it confined to the first section only?

3. In the second lemma, where the word *æquales* is thrice used, as *sub æqualibus basibus*, *ob æquales omnium bases*, and *fiunt ultimo æquales*, is this word used every time in this *new sense*, or once only in the *new sense*, and twice in its *plain and ordinary meaning*?

4. What becomes of the *perspicuity*, with which Sir *Isaac Newton* has delivered his meaning, where he purposely describes the method of prime and ultimate ratio's?

§ 5. Since Mr. *Robins* is said to have expressed Sir *Isaac Newton*'s real meaning, is the word equal used in the *new sense* in his writings likewise? If so, no wonder our dispute

continues so long. I use that word in the old sense.

As the *Remarker's* very probable reason will, I doubt, occur to very few readers; it is much, methinks, that no caution should be given about this *new sense*, at least in the last edition of the *Principia*.

But it is stranger still, that neither this *Remarker*, nor even Mr. *Robins* himself, to whose sagacity this discovery of a *new sense* seems to be entirely owing, should anywhere have informed us what this *new sense* is. It will be thought perhaps by some unwary persons, that this sense may be found in some of his four interpretations of the first lemma. But I must advise such to take warning by the reprimand given to me, on account of the words *data quavis differentia*, for *not distinguishing between the expounding the sense of a single phrase and representing the meaning of the whole sentence, in which that phrase is used*. Besides, which interpretation shall we have recourse to? They are all so equally clear, that I know not which to choose.

§ 30. What is here acknowledged, will, I hope, be particularly remembered. It puts the whole dispute upon a short issue. There wants only one thing to finish it: That is, for the *Remarker* and his friends to let us know, how they undertand the words *finito quovis tempore* & ante finem temporis *ILLIUS*.

*Heu, quid agat? Vario nequicquam fluctuat aestu;
Diversaeque vocant animum in contraria curae.*

§ 31. *Rule* 5. is again broken. The supposal here given, in the room of a plain and definite answer, can only occasion new questions. What is *the time, that the approach of the quantities or ratio's is under consideration*? What is meant by the words, *is under consideration*? Do they stand for, *continues*?

§ 33. The *Remarker* is mistaken. It does not *appear* at all *surprising* to me, that Mr. *Robins* should *give four disagreeing interpretations to the same thing*. I should not wonder, if he gave four more. Nay, I could *assign a very probable reason* for it, if the coarseness of the proverb might be pardoned: *The more cooks, the worse broth*.

But what *I apprehend in four different senses*, Mr. *Robins* thinks very evidently unite in the same.

*Facies nempe omnibus una est;
Aut diversa parum, qualem decet esse sororum,
Sive deae, seu sint foedae obscoenaeque volucres.*

Poor *Philalethes*! To how little purpose has thou bestowed thy time, in so long, laborious, and irksome an examination!

*Quid prodest misero, triplicem quod cominus hostem
Grantiacâ victor stravisti solus arenâ?*

Evidently, he tells thee, very evidently.

*Tu miser exclamas, quod Stentora vincere possit,
Vel potius quantum Gradivus Homericus: Audis
Haec, Moivri? Nec labra moves? At mittere risum
Debueras, si marmoreus, vel aheneus esses.*

No notice is at all taken of another desire I had expressed, to have it shown, that *any one of these interpretations agreed with the lemma they are designed to interpret*. Rule 5. required it.

Sect. IX. § 1, 2. If a common word, as *æqualis*, be put to signify unequal, the *Remarker* may call it introducing a *new term*. I should rather say, it was changing the sense of an old one.

§ 3, 4. If *Euclid's definition of compound proportion is not well adapted to explain the sense, in which that term is used*; this, at least, is no proof of his being *one of the correctest writers that ever was*; though he be justly esteemed so by all the world. Nor will a defect in *Euclid*, if there be any, justify Sir *Isaac Newton* in putting a new sense upon the word *æqualis*, without giving notice of it. Much less will it acquit him of extreme absurdity, if he sometimes uses it in a new sense, and sometimes in the old, without any mark of distinction, whereby his readers may know in which of those senses it is used. If this be his way of writing, I do not see how any body, but *his Majesty's Decipherer*, and one or two more, can be qualified to read the *Principia*.

§ 5. What Mr. *Robins's* former opinion was, is not greatly material. However, I have given the proof here required in § 9. of this Section of my *Considerations*; where I desire the reader will attend to the words NOT and ONLY. Surely, this *Remarker's* eyes must be very bad.

§ 6–8. It is asked, “What concession is that to *Philalethes*”? The concession made to *Philalethes* is very great. For, if *his interpretation of the lemma will agree with some of the quantities comprehended under it*, then it will follow,

1. That the words of the lemma may be taken in *the plain and ordinary meaning*:

3. When the words are so taken, still the lemma will be *a true and consistent proposition*; *the terms of the lemma are not rendered inconsistent with themselves by this interpretation*; *this interpretation of the Lemma does not make it an erroneous proposition*:

3. *The use made by Philalethes of the finite time mentioned in this Lemma is justified*; *the second supposition ascribed by Philalethes to Sir Isaac Newton ought not to be omitted by Mr. Robins*; he cannot have proved *Sir Isaac Newton* to mean otherwise.

§ 9. I stand here justly reprimanded for my inadvertency, in producing this latter quotation as general. It relates only to a particular case, as the *Remarker* has truly observed.

Non equidem invideo, miror magis.

On the other hand, it is evident, that the words *necessarily imply*, do very much alter the sense of the first passage. Is it true to say, “The following remark was subjoined,” when the following remark is greatly different from the remark that was originally subjoined? Was this put in for my *information*, or to impose upon the reader, and to conceal Mr. *Robins's* change of opinion?

Sect. X. § 1. I think I have said no more in this paragraph of my *Considerations*, than what the *Remarker* here allows. That with regard to some quantities the lemma may be taken in my sense, is confessed. That it can be taken in his sense with regard to other quantities, I utterly deny.

§ 3, 4. Is this *application particularly and distinctly made*, as I desired? What does the *Remarker* mean by the words *ultimately, unequal, last difference, and equality*? What is the

hypothesis here spoken of as contradicted? When these things are clearly explained, I shall either shew this demonstration to be false, or acknowledge Mr. *Robins* to be in the right. If they are not thought proper to be explained, I must reserve this point till I come to talk with Dr. *Pemberton*, it being impossible for me to enter into the examination of a demonstration, whose terms I cannot comprehend.

Vadunt obscuri solâ sub nocte per umbram.

§ 5–9. If it be a *mistake* to think, that the last difference, or what is here prudently called *the difference proposed as the last, is a difference which the quantities are supposed to have after the time of their approach is over*; then the quantities are supposed to have a last difference, and yet to have other differences later than the last.

Whether there be any *ground* for this *supposition* will appear, when Mr. *Robins* and his Friends have informed the publick what are the real suppositions contain'd in the Lemma. Is the Lemma, as publish'd in the first edition of the *Principia*, a *false proposition*? Nay do not stare, Gentlemen, the words there are *DATO TEMPORE*.

Apparent dirae facies; inimica Robinum
Littera magna tenet: Nulla hinc exire potestas.

§ 10. If the method here spoken of depends either upon an impossible operation, or an impossible supposition, the method must be *absurd* and *fallacious*. But if the *Remarker* chooses to call Mr. *Robins*'s *conclusion, inconclusive*; with all my heart, I have no objection to it. It suffices me, that this circumstance of a finite time cannot really be added by the method Mr. *Robins* has proposed.

Sect. XI. Has then Mr. *Robins*, in the place here quoted, *offered to shew, that any quantities or ratio's incapable of an actual equality are compared in this lemma*? I think not. To affirm it, is one thing; to offer to shew it, is another; actually to shew it, is a third.

———*Rotis levibus summas perlabitur undas.*

It suffices me to know, that Mr. *Robins* acknowledges some quantities, capable of an actual equality, to be the subjects of this Lemma. I don't trouble my head to know what they are.

Sect. XII. § 1–3. In the proposition in question, Sir *Isaac Newton* delivers all his precepts preparatory to his demonstration, after the manner of Geometricians, in the imperative mood. Then he adds the words *Is itaq; constitutis*, and proceeds to his demonstration. Now let any man breathing, who is not already engaged on the wrong side of the question, but once read over that proposition, as far at least as *His itaq; constitutis*, and then say whether *habeantur* is not the imperative mood. I am much mistaken, if any one of Mr. *Robins*'s friends, or even that Gentleman himself, will venture to assert in print, and put his name to it, that *habeantur* in this place is not the imperative mood. If authorities are to be quoted in this case, I had much rather see them taken from Sir *Isaac Newton*, or other mathematicians, than from *Linaker, Alvarez* and *Vossius*. But if this *Remarker*, so zealous to defend Mr. *Robins*, even when he is most apparently and undeniably in the wrong,

———*Protogere armis*
Lapsum, aut ingenti nutantem volnere civem,

will needs cite Grammarians, cannot he find a passage a little better suited to his purpose, a little more resembling the expression in question, *habeantur pro æqualibus*, than *non expectes, ut statim gratias agat, qui sanatur invitus*? Is any thing more common than to see this form of the verb used imperatively, especially when joined with a negative particle? With *Linaker's* leave, I take *non expectes* to be so used.

Mr. *Robins* gives the expression *pro æqualibus habeantur*, as an example of a *laxer* sense; he says Sir *Isaac Newton* means only, that such quantities or ratio's approach without limit. But the words *quippe quarum ultima ratio est æqualitatis*, do at least make this example very doubtful, even though *habeantur* should be expounded in Mr. *Robins's* way; and were, I suppose, therefore omitted by Mr. *Robins*. This I call an unfair quotation, contrary to *Rule 8*.

Whether my saying, When the quantities come to vanish, they will arrive at the ratio of an absolute equality, be a *manifest begging the question*, will be easily seen by the reader, if he pleases to turn to the *Minute Mathematician*, p. 25, 85, 86, 87. Mr. *Robins* ought to have considered those passages, before he charged me with supposing the evanescent quantities to *subsist*, or *exist* under their last proportion. And he ought likewise to have attended to what is so particularly explained, in the *Republick of Letters* for *November*, p. 378, 379; and in that for *January*, p. 76, 77; where, after having very distinctly explained myself upon this head, I use the following words, "This determinate proportion of the finite quantities *a* and *e*, is what I understand by the proportion of the evanescent augments." This I say, ought to have been attended to, before this charge against me was renewed. *Rule 9*. is grievously violated.

§ 4. Mr. *Robins* had observed, that *ultimo in ratione æqualitatis & ultimo æquales* were synonymous expressions. He took the first to be used in a *lax* sense, and made that an argument for taking the latter also in such a sense. But this was begging the question.

§ 5. This paragraph must be more plainly worded, before I can pretend to answer it. I can only say, if *Sir Isaac Newton* has applied equality to vanishing quantities, I, who profess to follow him, am not to be blamed for doing so likewise.

§ 6. I here bring no charge against Mr. *Robins*: 'Tis rather a commendation of him, for some sort of ingenuity, in dropping a false assertion upon better consideration. The case here spoken of, is indeed mentioned in the place quoted by the *Remarker*; but not as an example of quantities comprehended under this Lemma by Sir *Isaac Newton*, and yet capable of an actual equality. No. I had informed Mr. *Robins* better.

Mr. *Robins* made too free with Sir *Isaac Newton's* name, when he gave us that, as *observed* by Sir *Isaac Newton himself*, as *Sir Isaac's own express description*, which is not to be warranted from his words. Where has *Sir Isaac observed*, that the ultimate ratio of lines increasing together by equal additions, and having from the first a given difference, will be the ratio of equality, *in the sense of this Lemma*?

Sect. XIII. § 1–4. It is the business of Mr. *Robins*, not the business of *Philalethes*, to *extricate himself out of all this confusion*. It will be difficult, I find, since even the *Remarker* is sensible, that the *restriction* he offers for this purpose, *sometimes perhaps may not* have been *so expresly attended to*.

As for my definition of nascent increments, it will be time enough to discuss it, when I come to confer with Dr. *Pemberton*. In the mean time, I content my self with its being agreeable to the second Lemma, *Lib. II. Princip.* which is not denied.

§ 11. I desire it may be remembered, that Mr. *Robins* does not *pass any censure upon the passage here referred to*. This will be of singular service to me, with regard to one main point in dispute. See Sect. XII. § 1–3.

Sect. XIV. § 1, 2. Perhaps Mr. *Robins* may like the word *endlessly* the better, for its being an ambiguous term. If not, there would be no harm in fixing the sense of it. See *Rule 3*.

§ 3–6. If it be all one to Mr. *Robins*, which of these senses the word *endlessly* be taken in; there can be no hurt in fixing upon one of them. If he has a mind to pin me down, he need only say, he uses it in the first sense, which I acknowledge to be that of Sir *Isaac Newton*.

*Non aciem aut audent struere, aut secudere campo:
Castra modo, & tutos adservant aggere muros.*

§ 7. I have just now shown, *Consid.* § 4, 5. that the word *endlessly*, i. e. the words *in infinitum* are capable of another sense. Does not the *Remarker* say, § 3–6, “*Philalethes* has given two senses to the word *endlessly*”, i. e. to the words *in infinitum*?

§ 8. The skill here spoken of is a shameless violation of *Rule 8*.

If the *Remarker* pleases to turn to my last *Considerations*, Sect. XXI. § 4, and Sect. XXVII. § 20, or Sect. XXI. § 1–8. of his own *Remarks*; he may possibly find reason to be *ashamed* of what he here says about the words *in infinitum*.

§ 9. I here agree with the *Remarker*. But what shall we say to a writer, who changes the sense of common words, such as *æqualis*, and yet never explains his meaning? Never explains his meaning, did I say? That is not the hundredth part of the absurdity Sir *Isaac Newton* has been guilty of, if these Gentlemen are to be believed. In the beginning of the *Principia*, for twenty-seven pages together, he constantly uses the word *æqualis* in the same sense with all the rest of mankind: But in page 28, where he is laying down the foundation of his doctrine, the method of first and last proportions, *cujus ope sequentia demonstrantur*, where consequently he ought to be most clear and distinct; all of a sudden he throws a mist before his readers eyes, and uses the word *æqualis* in a *new sense* he *thinks fit to put upon* it. And in the very same page, seven lines after, he uses the same word in the old sense. In the following page he again uses the word in the old sense, and yet, five lines after, he uses it again in the new sense. And thus he goes on, throughout the *Principia*, in three several editions, without giving us any caution, or the least mark of distinction, to use it sometimes in the old sense, and sometimes in the new. This surely must occasion not only a *needless*, but an impenetrable *obscurity* to all eyes, but those of Mr. *Robins* and two or three friends. Happy was it for those, who *had an opportunity of knowing his true mind in every part of that treatise*!

O terque quaterque beati!

§ 10. All that I can make of this paragraph is, that we are to look upon Mr. *Robins* as a better writer than Sir *Isaac Newton*.

Sect. XV. § 1, 2. Does Mr. *Robins* still think himself thus directed by the words of Sir *Isaac Newton*?

I must here give a little advice to Mr. *Innys* and Mr. *Manby*. Let them tell those, who ask for Mr. *Robins*’s *Discourse of Fluxions*, that it cannot be understood without reading the ancients first. This, if it does not much promote the sale of that *Discourse*, may however

now and then help off with a complete sett of the ancient geometers. For myself, it suffices me, that I can understand Sir *Isaac Newton*.

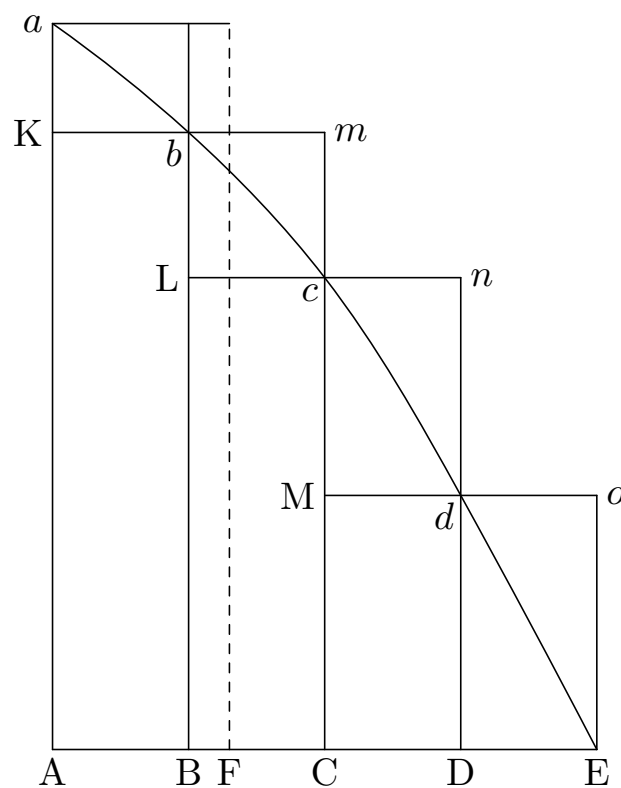
When the *Remarker* looks into *Euclid* again, he will find himself mistaken about one of the propositions quoted by *Philalethes*; and when he turns again to my *Considerations*, he will see that *Euclid*'s subdivision is not the way, that *Philalethes* himself takes to diminish the bases of the parallelograms *in infinitum*. He mentions it only, as the method he takes Mr. *Robins* to contend for.

How far my reading has gone, either in ancient or modern geometricians, is not material: Be it great or little, I have never boasted of it.

But I have read enough to make me capable of understanding the passages in controversy. And I here beg leave to acquaint this *Remarker* with an observation, that has sometimes been made in our university. The greatest readers have not always the clearest heads. It might be of use to some persons, to read less, and think more.

Sed nox atra caput tristi circumvolat umbrâ.

§ 4. The motion here proposed, divides the base of the curve, as much as is required for my purpose of shewing, that the base of the rectangle *ABla* becomes less than any given quantity.



There is no need to divide the whole line: It is customary with geometricians, to content themselves with representing one or two parts of a line, whether streight or curve, and to leave the other parts to be supplied by the imagination.

§ 5. Mr. *Robins* is at liberty to perform his subdivisions how he pleases; but, I think, he will hardly find a better way of performing them by the method of the ancients, than

what *Euclid* takes in the two propositions I have quoted. The passage he refers to in his own *Discourse*, contains divisions, but no subdivisions. Nor is it there said, how those divisions are made.

§ 6. After what I have replied to the fourth paragraph, I may reasonably expect an answer to the question proposed.

§ 7. As the assertions here made by me, are either grounded upon Sir *Isaac Newton*'s words, or have been fully proved in my former papers, I expect Mr. *Robins* should either acknowledge them, or endeavour to disprove them. It would do these Gentlemen great service to peruse my eighth rule with *careful attention*. This might prevent their relapsing so often into that perilous infirmity, of giving their own paraphrase, or consequence, as if it were the very expression of the author they are quoting.

Sect. XVI. § 1, 2. *Philalethes* does not hold it necessary to *form the parallelograms by continued motion*. The division of the base is sufficient for his purpose.

I have spoken of no such method of *Euclid*, as is here inquired about: I speak of *Euclid*'s method only for bisecting a line. This question seems intended to take off the reader's attention from my argument, to which no answer is given, in breach of *Rule 6*.

§ 3. My argument is again evaded. It is, that the subdivisions of the hour, and of the line, must be brought to a period by the end of the hour. This Mr. *Robins* had before denied. I say, the imagination can pursue neither of these subdivisions to the end of the hour.

§ 4. My meaning is, when a general proposition is once demonstrated, I need no farther consider any particular case, than to see that it is comprised in the general proposition.

The point here proposed to be discussed, is not the original point in dispute. The original point was, whether the explication I had given of Sir *Isaac Newton*'s first Lemma, was agreeable to his meaning. If this were once settled, it would then be time enough to consider *whose interpretation is most agreeable to the nature of vanishing quantities*.

In order to this, it is demanded on Mr. *Robins*'s part, that I should render my *interpretation a true and consistent proposition*. With all my heart. But then I must also require, that Mr. *Robins* will let me know what his interpretation is. He has indeed already given me four, if not five interpretations. But that is too many. I had much rather he would give me one only, such as he will abide by. For that these *four unite in the same sense*, does not appear at all to me, much less does it appear *very evidently*.

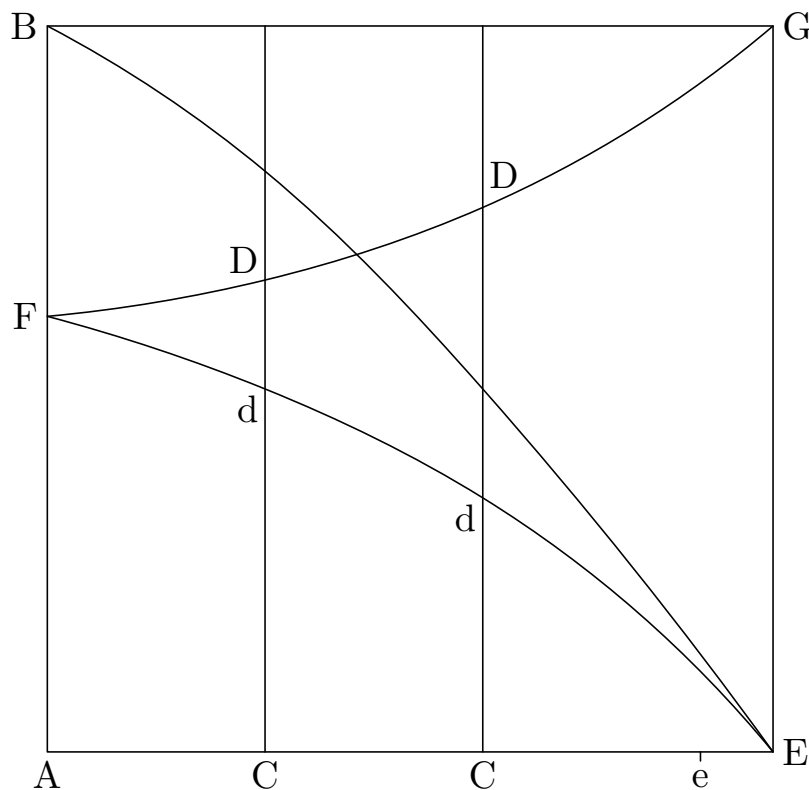
—*Spissae noctis se condidit umbris.*

Sect. XVII. As I had already shown, that the inscribed and circumscribed figures must necessarily, at the end of the given time, arrive at an actual equality with the curvilinear figure; the design of this section was only to represent that actual equality to the imagination.

To this end, I made use of two curves, which the ends *d*, *D*, of two variable lines *Cd*, *CD*, representing the proportion between the inscribed and circumscribed figures, were supposed continually to touch or describe.

In regard to these curves, it is said, they *are drawn in my figure, as simple curves*. Very true.

But they are not simple curves; they are compound. True again; and accordingly, when I come to a particular case, I have represented them as compound; though I did not think it necessary so to do in my general figure, where it was sufficient to express them as continued



curves. I call them neither *simple*, nor *single* curves, nor speak of any way to describe them: I only call them *continued* curves, or such as the points *d*, *D* continually touch or describe: and the *Remarker* does not deny their being continued. And as I have demonstrated § 9, 10, 11. both from Sir *Isaac Newton*, and from Mr. *Robins*'s own concession, that *Cd*, *CD*, the two variable lines, or ordinates to the compound curves *Edd*, *GDD*, will at the end of the finite time be equal to the constant line *AF*; it is incumbent upon Mr. *Robins* either to shew, that these lines are not always ordinates to the curves, or to acknowledge, that the curves must extend to the point *F*.

I must add, that, as the only use I make of these curves, is to assist the imagination in conceiving, and as it were seeing the gradual and constant approach to equality of the lines *Cd*, *CD*, with one another, and with the line *AF*; the proof I have given of their arriving, at last, at an actual equality, will still subsist, though all consideration of these curves should be laid aside, and the lines *Cd*, *CD* should be considered, not as ordinates to those curves, but only as variable lines.

Also, in the example I have given, as the proportion of *Cd* to *CD* is undeniably always that of $\frac{x+r}{2a} \times \frac{a-r}{2a}$ to $a - \frac{x+r}{2a} \times \frac{a-r}{2a}$; it follows, without any consideration of those curves, that when $x = a$ and r vanishes, this proportion will become that of $\frac{1}{2}a$ to $\frac{1}{2}a$, *i. e.* the ratio of a perfect equality.

But, it seems, I have given, *as an equation expressing the nature of a single curve, one which in reality includes an infinite series*, and this is said to be a *specimen of my skill in the common algebra of curve lines*.

Now had I ever spoken of this curve, or *incurvated line*, as these great masters in *style*

and diction are pleased to call it, as if it were one of the common algebraick curves; or had dropped the least expression, that should give cause to think I took it for such a one; it would indeed have been a notable specimen of my skill in the common algebra of curve lines. And I should have been sure of seeing that expression distinguished by the *Italick* character, as well as the term *continued*. But, as it unfortunately happens, that not a single word of mine can be found, to favour such a surmise; the candid insinuation here made, as well as the words *simple* and *single*, which have been invented for me, can only serve as a specimen, of the fair and ingenuous proceeding of my good friend the *Remarker*, and his most worthy associates.

My business was, to express the proportion between the inscribed and circumscribed figures. Have I not truly expressed it? If my expression be too complex, let these great Geometers shew me a simpler, if they can, and I will make use of that.

If the curve, whose nature is expressed by my equation, do necessarily include an infinite series; yet, if in the case before us, no simpler equation can be given, if no less compound curve can be found, they must not accuse me, but quarrel with the nature of things.

———*En queis consevimus agros!*

Sic omnes amor unus habet decernere ferro.

Sect. XVIII. “Here,” it is said, “Mr. *Robins* is positively and rudely charged with changing his opinion.” But is asking a question the same thing, as bringing a *positive charge*? Is it *rudeness* to suppose Mr. *Robins* has changed his opinion? To change one’s opinion is no fault, unless any disingenuity or prevarication be used to disguise such change. That indeed is a very great one.

But, perhaps my rudeness consists in producing several quotations from Mr. *Robins*, which contradict his present opinion. To atone for this, I shall be ready to make him any proper acknowledgement, whenever it shall be shown me, that those passages do not contradict his present opinion. But this point, I find, is wisely past over with a profound silence.

Illum exspirantem focij, atque extrema gementem

Obliti ignoto camporum in polvere linquant.

I have all along maintained, that the inscribed and circumscribed figures in the second and third *Lemmata*, must, at last, or in their last form, become equal to, coincide with, or degenerate into the curvilinear figure.

This assertion of mine the *Remarker* here undertakes to confute; and if my reader does not use *careful attention*, the subtilty and depth of the argument may possibly escape him, this being one of the most profound passages of these Gentlemens writings. For greater security, I shall give it word for word.

“*Philaethes* supposed a last form of these figures, which should be called equal to the curve. Now Mr. *Robins* has observed, that equality implies the things, which have that property, to be distinct from each other. For to say a thing is equal to it self, is certainly no proper expression, and Mr. *Robins* in the passage here referred to, has fully proved, there is no such last form distinct from the curve. For if these parallelograms could actually arrive at a last form distinct from the curve, which is necessarily implied, when it is asserted, that they can attain such a last form, which shall be equal to the curve; it is certain, that such a last form must essentially differ from the curve, for the reason Mr. *Robins* has given. Therefore

Philalethes, by granting at length, that there is no such last form distinct from the curve, gives up the point. What then does *Philalethes* mean by charging Mr. *Robins* with changing his mind, when he has reduced *Philalethes* to a concession inconsistent with the opinion he first held, and still appears desirous to support?"

*Cocyti stagna alta vides, stygiamque paludem:
Umbrarum hic locus est, somni noctisque soporae.
Dij, quibus imperium est animarum, umbraeque silentes,
Et Chaos & Phlegethon, loca nocte tacentia latè,
Sit mihi fas audita loqui, sit numine vestro
Pandere res altâ terrâ & caligine mersas.*

This argument may be thus abridged. *Philalethes* supposes a last form of these figures, equal to the curvilinear figure. Things, which are equal, are distinct from each other. Therefore, the last form of these figures must be distinct from the curvilinear figure; *i. e.* it must essentially differ from the curvilinear figure, *i. e.* it cannot be equal to the curvilinear figure.

Having thus fairly and impartially proposed the *Remarker's* argument, I come now to enter into the examination of it.

*Adspice, num mage sit nostrum penetrabile ferrum.
Tu, Dea, tu praesens nostro succurre labori,
Astrorum decus, & nemorum, Latonis, custos,
Hunc sine me turbare globum, & rege tela per auras.*

The defect of this argument, as I apprehend, lies in the second position, which is commonly called the minor of the syllogism. Things, which are equal, are distinct from each other.

If I deny this; how will the *Remarker* prove it? He will tell me, *to say a thing is equal to itself, is certainly no proper expression*. Perhaps so. But is it therefore untrue? May not a proposition be true, though it be improperly expressed? If *Euclid* were to say, Triangles of equal bases and equal heights are to be considered as equal to each other; it would be improperly expressed; they are strictly equal; but it is not therefore untrue. The minor therefore is a defective proposition, and consequently the whole argument falls to the ground.

But farther, it is not improper to say, two things become equal: though when they become so, they are no longer distinct from each other.

If a point be conceived to move in the direction of a given line, setting out at first from one end of the line, and arriving at last at the other end of the line; it is very proper in this case to say, that the path of the point, *i. e.* so much of the line as at any instant of time has been described by the motion of the point, does gradually approach to equality with the given line, and does at last become equal to it. And yet this path is not at last distinct from the given line.

But admitting all that is here contended for, with relation to the impropriety of saying two things at last become equal, which at last are not distinct from each other; is it the part of a candid and ingenuous adversary, to insist always upon the word *equal*, when a more proper expression, as that of *coinciding*, has been used by his antagonist? If the *Remarker's* argument be really good and conclusive, it will hold against my expression, that the figures inscribed and circumscribed do at last *coincide* with the curvilinear figure. Let him therefore alter his *minor*, and say, Things, which coincide, are distinct from each other. If that cannot be done,

this way of proceeding can only be looked upon, as a new specimen of Mr. *Robins's skill in selecting those expressions, which he thinks contribute most readily to prove his opinion.* This the *Remarker* believes Mr. *Robins* is not ashamed of. I have a better opinion of Mr. *Robins* than to think so: At least, I have used my endeavours to make him ashamed of it. To which purpose, I must take notice, that in *December* last, in speaking of the first Lemma, he would use no other word than *coincidence* and *coinciding* to express my sentiment, though I had constantly made use of the word equal or equality. And now, in the second *Lemma*, where, as I have formerly taken notice, [*Republick of Letters* Jan. p. 79.] *the word coincidence properly comes in*; this *Remarker*, in imitation of his friend, will make use of no other word to express my opinion, than *equal* or *equality*.

*Tantum infelicem nimium dilexit amicum.
Fortunati ambo, siquid mea carmina possunt.*

I can easily excuse the *Remarker* from endeavouring to reconcile the passages quoted from Mr. *Robins's* former writings, in this section of my *Considerations*, with his present opinion; because impossibilities ought to be required of no man.

But what can be the reason, that neither Mr. *Robins*, nor his *Remarker*, will condescend to take notice of those words of Sir *Isaac Newton*, that I have so often argued against them, from the corollaries of the third Lemma, *coincidit omni ex parte, non sunt rectilineæ, set limites curvilinei*? I had before called these expressions *decisive*, and it is plain they look upon them as such, by their not pretending to answer them, although to provoke them to it, I had given them a fresh citation from the first proposition of the *Principia*. How comes it likewise, that nothing is replied to what I said in the *Republick of Letters* for *November* last, page 374. about *Cas. 1.* and *Cas. 3.* of the eleventh Lemma?

—*Magno curarum fluctuat aestu,
Atque animum nunc huc celerem, nunc dividit illuc,
In partesque rapit varias, perque omnia versat.
Infelix! Haeret lateri lethalis arundo.*

This pregnant passage has already taken up so much of my time and paper, that I shall make only one more short observation, and so have done with it. My reader must observe it to be asserted, that “Mr. *Robins* in the passage here referred to, has *fully proved*, there is no such last form distinct from the curve.” I must confess, there is little proof required, because *Philalethes at length* grants the thing to be true. I shall therefore only take notice, that when the reader meets with this expression *fully proved* in this *Remarker's* writings another time, he may understand it to signify, that no proof at all has been given, nor any thing like one. And by the words *at length*, he is to understand *at first*, or from the beginning. Much of the same nature are the expressions *most evident*, *most manifest*, *expresly affirmed*, &c. which are still continued to be used, not in the plain and ordinary meaning of the words, but in a new sense thought fit to be put upon them, notwithstanding the kind admonition given in my eleventh Rule.

—*His se, quando ultima cernunt,
Extremâ jam in morte parant defendere telis.*

Sect. XIX. Instead of doctrine of fluxions, read, doctrine in the *Principia*.

Sect. XX. It does not appear, that I have been *misled* by Sir *Isaac Newton*'s expressions, nor that Sir *Isaac* has not *confined himself to the exact propriety of language*.

Sect. XXI. § 1–8. The question is not about what Mr. *Robins* has said in page 316, but what he has said in page 312. I have shown it to be no unusual thing, for that Gentleman to contradict himself.

As it seems here to be allowed, that what Mr. *Robins* has asserted about the *summa ultima*, is at least *defective*, I leave him to mend it as he can. But let him not make a bad emendation, and then ascribe it to me. I like the emendation now given, no better than the original passage.

Ita tu isthaec tue misceto, ne me admisceas.

To the latter part of what is here said, I only reply that, in my opinion, *an infinite number of nothings* can not indeed compose a *finite quantity*. If I have said any such thing, the *Remarker* is at liberty to quote the place.

§ 9. I agree, that *here Mr. Robins is misrepresented*: But it is by this *Remarker*, not by me; as will appear to any one, who compares this paragraph of my *Considerations*, with the passage there referred to, and with this paragraph of the *Remarks*.

§ 10, 11. I do not well know either the intent, or the meaning, of the first question here put to me. To the latter I answer, that the rebukes given to Mr. *Robins*, for so great a number of faulty expressions, may have a good effect upon these Gentlemen, in making them more careful for the time to come; and may also convince the reader, that people, who write so ill themselves, are not fit to censure Sir *Isaac Newton*.

*Saevit atrox Volscens, nec teli conspicit usquam
Auctorem, nec quo se ardens immittere possit.*

Sect. XXI. § 1. I believe, most mathematicians would *rather* use the words *curvilinear figure*, than the word *curve*, to express the area of a curve. But the thing is not worth disputing.

§ 2–4. This shift will never do. There is no mention of *quantities infinite in number*, in the passage under consideration.

§ 5, 6. If two equal triangles cannot *congruere*, coincide, how can *Euclide* mean, *that those quantities are equal, which can be made to coincide*?

Why are the words, *the same*, here so often made use of. Am I to look upon this, as another piece of Mr. *Robins*'s *skill in selecting those expressions, which he thinks contribute most readily to prove his opinion*, or of his skill in changing the expression of his opponent for another more to his advantage? Such skill is contrary to *Rule 8*.

§ 7, 8. More of the skill just now spoken of. I apprehend, that I *know Mr. Robins's meaning in these words*, and have rightly applied them.

§ 9. The *style of Philalethes*, will not, I believe, be thought to denote much *heat* in him, whatever heat it may occasion in Mr. *Robins*: It is rather, as Naturalists speak, potentially, than actually warm.

*Verum ubi tot traxisse moras, tot spicula taedet
Vellere, & urgetur pugnâ congressus iniquâ,
Multa movens animo, jam tandem erumpit, & inter*

*Bellatoris equi cava tempora conjicit hastam.
Tollit se arrectum quadrupes, & calcibus auras
Verberat, effusumq; equitem super ipse secutus
Implicat, ejectoq; incumbit cernuus armo.*

But the *Remarker* is so much taken up with my style, that he forgets my argument. It seems to be a very cogent one, and to be built upon the very words of Mr. *Robins*.

§ 10. If the *figura ultima* were by me any where said, to be a *collection of inscribed or circumscribed parallelograms*; this would *contradict* what I have maintained in other places. But let the *Remarker* shew where I have said so.

For the contrary, see *Republick of Letters*, November, p. 377, 378, and *Republick of Letters*, January, p. 85, 87, 88, 89.

§ 11. Till I am *proved* to be *tainted with indivisibles*, I need only deny it.

Solus enim hoc Ithacus nullo sub teste canebat.

Sect. XXIII. The actual equality I contend for, is by me *assigned as necessary to the accuracy and geometrick rigour of Sir Isaac Newton's demonstrations*, as they now stand; not as they might have been otherwise drawn up, if he had thought fit. As they now stand, the examples he has given in the several *Lemmata* of the first Section, are of such quantities and ratio's only, as do actually arrive at their respective limits. I do not say, that if he had thought fit to alter his demonstrations, he might not still have come up to the utmost accuracy and geometrick rigour. But I say, that if Mr. *Robins's* interpretation of the first *Lemma* be admitted, Sir *Isaac's* demonstrations, as they now stand, will not be accurate, nor geometrically rigorous.

Sect. XXIV. § 1, 2. This is no answer to my charge of unfair dealing. What Mr. *Robins* gave as my words, and affirmed to be my words, were not my words, but his own sense of my words, in manifest breach of *Rule 8*.

—*At tu dictis, Robine, maneres.*

But, if *becoming actually equal, and becoming equal in a finite time, are synonymous expressions*; then, whatever quantities comprehended under the first *Lemma*, become actually equal, become equal in a finite time: Consequently, *the use I have made of the finite time mentioned in the first Lemma*, is again allowed to be a right use, with regard, at least, to some quantities.

If one of the reasons I have laid down, *is proposed merely as the consequence of the other*; that does not prove, that they are not two reasons; but only, that one reason is not independent of the other. If the second had not been *proposed* by me, would Mr. *Robins* has proposed it for me as a consequence from the first? I doubt not.

For now, although I have proposed both those reasons, no notice is taken of either; but in the room of them, a third reason is imputed to me, which in that place I had never mentioned.

§ 3–5. The reason assigned by the *Remarker*, why a telescope composed of an hundred glasses, is not equally diaphanous with one composed of two, is, I think, true and just: but yet will not subvert my comparison.

If every glass were perfectly diaphanous; we should see as clearly through an hundred glasses at once, as we can through two. And if our memory were perfect, that it could

represent to us an hundred steps of a demonstration, intuitively all at once, as we can look through an hundred glasses at once; then a demonstration consisting of an hundred steps, would be equally perspicuous with one consisting of three only. But this is not the case. We can see only one step, intuitively, at a time; and the imperfection of our memory, in representing to us the distant steps, is equivalent to the loss of light in the glasses. Therefore, although *every step in any demonstration by exhaustions be perfectly perspicuous, yet the whole must not be so.*

Mr. *Robins*, in his misguided zeal for the ancients, *propter mille annos*, had unwarily said, "That this method (of Sir *Isaac Newton*) should be more perspicuous is impossible, the method of the ancients being perfect in that respect."

In answer whereto I informed him, that a shorter demonstration must be more perspicuous than a long one, when the single steps of each demonstration are equally clear.

This the *Remarker*, in a like misguided zeal for Mr. *Robins*, calls an *answer altogether evasive*.

Though my perspicuity here spoken of arises from brevity, yet I afterwards spoke of another sort of *perspicuity distinguished from brevity*.

The *assertion* laid down concerning demonstrations *ad absurde*, is not said to be *universally true*: though, I believe, it will not be easy to give many instances, where it will not hold. The reasons I have given of this assertion, are taken no notice of.

Sect. XXV. § 1, 2. *It is of no consequence, to know where this insinuation was made; because by this means the sense of it may be better understood, by seeing how it was brought in, and by comparing it with what is said before and after it.*

§ 3–8. I believe, the reader upon examination will find, it is the *Remarker* himself, that will not *distinguish* what I have so plainly taught him to distinguish, *viz.* the difference between the steps of the demonstration, and the steps of the imagination; between demonstrating the possibility of a thing, and conceiving how it may be executed or brought about.

How comes it, that not a word is said of my second and third example? Is it, that they are plainer, and make more strongly against Mr. *Robins* than the first?

§ 9. *All the time he stays there*, added after the word *perpetually*, is an instance of the *accuracy* of this writer's *style and diction*.

Sect. XXVI. § 1–7. Sir *Isaac Newton*'s design was only to *render more clear* that one thing, that went before, *viz.* that the *quantitates ultimæ* cannot be assigned.

The objection proposed was, that if the last ratio's were given, the last magnitudes must be given. In answer to this, he shews that, although the last ratio's are given, yet the last magnitudes cannot be given. That the last ratio's are given, is not to be proved here. He had proved it before, and it is admitted in the objection. The only thing he has to prove, is that the last magnitudes cannot be given.

The *Remarker* here greatly forgets himself. The argument taken from *Euclid*, is part of the objection; not Sir *Isaac Newton*'s answer to that objection.

No notice is taken, of the other arguments I brought, against Mr. *Robins*'s *exact parallel*.

§ 8. I apprehend that neither the Author of the *Analyst*, nor myself, have any where attributed this opinion to Sir *Isaac Newton*.

For the sense of the passages here quoted from me, I refer to the *Minute Mathematician*, p. 24, 25. written before those passages, and before this dispute with Mr. *Robins* was thought of; where the reader will observe the caution I used to prevent mistakes, in saying, “In the first place and above all, it is here diligently to be attended to, &c.” I must refer likewise to the *Republick of Letters* for *January* last, p. 76, 77, where, on account of this dispute with Mr. *Robins*, I have more fully explained myself, and introduced that explication, in the following remarkable manner; “To prevent all mistakes as much as possible, I shall here, once for all, explain myself in such a manner, as I am persuaded, this learned Gentleman will not except against.” Then having shown how to consider the proportion, which evanescent quantities at last arrive at, not in those evanescent quantities themselves; but in finite quantities always proportional to them, I conclude with the following declaration: “This determinate proportion of the finite quantities *a* and *e*, is what I understand by the proportion of the evanescent augments.”

Neither of these passages, although so expressly set down by way of caution to my readers, are by this *Remarker* at all attended to. He writes, just as if those cautions had never been given. But indeed, as he pays so little regard to the cautions given by Sir *Isaac Newton*, it is no wonder he should not remember mine.

———*Lethaei ad fluminis undam
Securos latices & longa oblivia potat.*

Sect. XXVII. § 1–14. Though I *have a much better opinion of the abilities for controversy, of the author of the Analyst, than of my own*, or of Mr. *Robins*, or of his friend the *Remarker*; yet I *undertake his defence*, for the reasons given in Sect. IV. and this present Section of my *Considerations*. But why does this *Remarker officiously undertake the defence* of Mr. *Robins*, *in which he is not concerned*? Why did Mr. *Robins officiously* intermeddle in a controversy, in which he was *not concerned*? Why did he set himself up for such a *Drawcansir* in Geometry? Will he say,

———*Mihi jus concurrere soli:
Solus ego in Pallanta feror: soli mihi Pallas Debetur?*

With all my heart. But then he should have entered the lists at first, and I would willingly have kept out. In as great a reverence as I hold the memory of Sir *Isaac Newton*, as much as I esteem the mathematical sciences, those most certain and unerring guides to truth, I should never have drawn my pen in their defence, had I seen it undertaken by another hand. Much less should I have attacked the person, who wrote in their vindication, for no other reason than because I had heard him commended.

*Nullum animantem ultro petet hic stylus. O Pater, & Rex,
Jupiter, ut pereat positum rubigine telum!*

But now, what a heap of troubles am I drawn into, by some of the very persons I was defending? Unfortunate *Philalethes*! How are thy adversaries multiplied! New ones arise every day.

*Lernaeus turbâ capitum circumstetit anguis.
O Analysta! O Boeotum fortissime gentis,
Barclide! Me Grantiacis ne occumbere campis*

Non potuisse, tuâque animam hanc effundere dextrâ!
Lenis ubi tacitum Camus devecta per amnem
Poc'la, tubos, fumumque, togataque corpora volvit.

Here is a very great leap taken from § 1, to § 14. 'Tis great pity, methinks. Mr. *Robins's* operation was something so curious, and the queries I proposed upon it, were of that consequence, that I am much concerned the *Remarker* had not time to explain the one, and answer the other. The words *very manifest* seem to be used in a *new sense*, not allowed by *Rule* 11.

§ 15–17. What does Mr. *Robins* say to those passages here quoted, where prime or ultimate cannot be added? They seem very clear and strong against him.

§ 18–26. Another great leap. The passages here quoted both from Sir *Isaac Newton*, and from Mr. *Robins* himself, are manifestly decisive, and therefore are ingenuously passed over in profound silence. The words *expresly acknowledges* seem to be of that number, that these writers use in a *new sense*. In the sentence here quoted from me, *diminishing* is distinguished from *vanishing*. Mr. *Robins* contends they are the same.

§ 27, 28. The reader is desired to turn to these paragraphs in my *Considerations*.

§ 29. See Sect. XXVI. § 8. of these *Observations*.

Sect. XXVIII, XXIX. I have explained myself sufficiently to shew, that this definition is grounded upon Sir *Isaac Newton's* words. I was not here explaining the first section of the first book: I was laying down the principles of fluxions. And my definition being attacked, I shew the authority upon which it is built.

Sect. XXX. See again Sect. XXVI. § 8. of these *Observations*.

Sect. XXXI. § 1–3. I do not find, that Sir *Isaac Newton* has said of himself, what the *Remarker* here says of him.

§ 4. If Mr. *Robins* still believes what he has here said of Sir *Isaac Newton*, to be absolutely true, I hope he will take care to remember the word OTHER, and more especially the word STRICTEST.

§ 5. I have taken notice, that in this passage Mr. *Robins* did not accuse Sir *Isaac Newton* of using indivisibles.

§ 6, 7. I am concerned, that the words here quoted, *the best judges*, should have bred so much ill blood.

Be not so sore offended, Judges sole.

I did not say *the best judges*, but *some of the best judges*. And I assure this *Remarker*, I esteemed the Gentlemen here spoken of, to be some of the best judges that are any where to be found, of these matters, before I knew that they approved of my sentiments. I did once esteem some others to be so likewise: But they have convinced me of the contrary. It will be said, perhaps, the reason, why I have changed my sentiment of these last, is, that they are not of my opinion. It may be so. But I have one reason more to exclude these persons out of the number of judges. Now law allows a man to be either judge, or EVIDENCE, in his own cause.

I should be glad to know, where I have in effect admitted, that the doctrine of infinitesimals intrudes upon Sir *Isaac Newton* whether he will or no. If I have any where admitted

this, I beg leave to explain it: This doctrine intrudes upon Sir *Isaac* in Mr. *Robins's* writings; but no where in his own.

No affront, I hope, to Mr. *Robins*, in calling Sir *Isaac Newton* our common master. That application is very consistent with — *Nullius in verba magistri*, a motto I have as much regard to, as he can have.

§ 8, 9. I was mistaken in saying, the term infinitely little frequently occurs together with the expressions infinitely great, infinitely greater, infinitely less, in the first section of the *Principia*. The term infinitely little occurs there but once, as it occurs but once in the *Analysis*. I should have said, one or other of these expressions frequently occur. But these being all of them marks of indivisibleism, equally with the term infinitely little, occasioned that oversight. Upon this the *Remarker* asks with so much emotion, “What induced *Philalethes* to assert so direct a falshood?”

—*Quanquam in mediâ jam morte tenetur,
Non tamen abstinuit, nec voci iraeque pepercit.
At tibi pro scelere, exclamat, pro talibus ausis,
Dij, siqua est coelo pietas, quae talia curet,
Persolvant grates dignas, & praemia reddant
Debita. Sic fatur, telumque imbelle sine ictu
Conjecit, rauco quod protinus aere repulsum
In summo clypei nequicquam umbone pependit.*

But what induced the *Remarker* to say, these terms are used in relation to a subject foreign to the present controversy? Is not the eleventh Lemma, equally with all the rest, a part of the method of first and last proportions? Is not this method the subject of the present controversy?

It is said, Mr. *Robins* has explained, with what design the term infinitely little is used at the end of the introduction to the *Quadratures*. To explain with what design it is used, is not to explain the meaning of it. But is it not used more than once? Has Mr. *Robins*, in the place referred to, explained either the design of using, or the meaning of the words, *seu finitis, seu infinite parvis*? And after all, have not I explained the meaning of the term infinitely little, used in the *Analysis*? Why then does this term favour more of indivisibleism, when used in the *Analysis*, than in the introduction to the *Quadratures*?

No reason is offered, why the tenth proposition of the second book of the *Principia* is excepted out of Mr. *Robins's* act of grace.

§ 10. The *Remarker* here leaves the argument, and insists much upon an expression no way material to the argument, but casually introduced after the argument is over. If I had happened to stop at the words *constant doctrine*, what would he have had to reply?

But after all, does he offer to shew me, that the expressions there set down, are used by any writer upon indivisibles? No: but they use expressions resembling them. This does not contradict what I have said. I add, that Sir *Isaac Newton* has distinctly explained his expressions, and cautioned us against taking them in a wrong sense. Have these Writers done so? Do they use them in the same sense with Sir *Isaac Newton*? If they do, they so far leave the method of indivisibles, or at least, all that is faulty in the method of indivisibles.

Does the passage here quoted warrant the use of, *He tells us expresly, that he used them in imitation of those who used indivisibles*? I think not.

§ 11-13. No reason is given, why Mr. *Robins* introduced so many new points, nor why he carried his charge against Sir *Isaac Newton* much farther than he had done before. This last indeed I have sufficiently accounted for. Is that the reason of the *Remarker's* silence?

§ 14. The words *simply matter of fact*, may possibly here be put to signify untrue; just as *æquales* is supposed to signify unequal.

What the world will think, I cannot tell: But I venture again to *deny*, that the expression *particulæ finitæ non sunt momenta*, is written *in the sense of indivisibles*, as Mr. *Robins* has asserted; or as the *Remarker* more tenderly words it, is a phrase suitable to the sense of that doctrine.

§ 15, 16. I must again give this accurate writer to understand, that, in the *British* language, by what a man *expresly* says, is meant nothing else but his very words.

It is to be hoped, this Gentleman will allow, that § 15. of this section of my *Considerations*, founded chiefly upon my tenth rule, contains a good direction for determining the meaning of dubious passages used by any Author. If so, such expressions as are here quoted, which I admit to occur frequently in the *Lectiones Opticæ*, are to be interpreted conformably to the doctrine of first and last ratio's, if they are capable of such a sense, and if Sir *Isaac Newton* were possessed of that doctrine, at the time when those Lectures were read, *i. e.* in the year 1669. But I have already shown, that he was possessed of that doctrine, when he wrote his *Analysis*, *i. e.* in or before the year 1669, nay, as Mr. *Robins* allows, in the year 1666, and they are capable of a sense suited to that doctrine. Therefore, there can be no doubt, but those expressions ought in equity to be so interpreted.

It is true, Sir *Isaac* does not give any such caution here, as is given in the *Principia*, against interpreting those expressions in the sense of indivisibles. Indeed, how could he do it, when his method of first and last ratio's had not been made publick?

His expression therefore was so contrived, as to be capable of two senses: one more loose and inaccurate, suited to the method of indivisibles; the other stricter and more exact, suited to his own method of conceiving quantities either to be formed, or to decrease and vanish into nothing, by continued motion.

Accordingly, such as were acquainted with the method of indivisibles, but were not informed of his own method, would naturally understand him in the former sense, and in so doing, could not be led into any error, the particles of light being of a finite magnitude.

But such of his friends, as were apprised of his own method, would understand him in the latter sense, suited to that method. At least, we, who now read those lectures, are so to understand him, for the reason given in the abovementioned fifteenth paragraph, of my *Considerations*.

§ 17. In this paragraph I exactly follow Sir *Isaac Newton*, and that being allowed me, I am in no pain about Mr. *Robins's* bugbear of indivisibles.

Terribiles visu; at tenues sine corpore vitas
Agnoscas volitare cavâ sub imagine formæ.

§ 18-21. In order to *make Sir Isaac Newton his own interpreter*, we must look for the meaning of the term, in that place where he has purposely explained it, rather than in those places where it is incidently mentioned. The latter places are to be expounded by the former; not the former by the latter. However, in compliance with Mr. *Robins*, I have considered the latter places likewise.

§ 22, 23. Mr. *Robins* would do well to explain, what he himself means by an indivisible. I have shown what I understand by it. We may dispute for ever, unless we settle the meaning of our terms.

§ 24. I suppose, that a variable, divisible quantity, by a constant diminution, can become less than any finite quantity whatsoever, before it vanishes into nothing.

But I do not suppose, that, before the quantity vanishes into nothing, it is ever true to say, it is NOW less, or it is NOW become less than any finite quantity whatsoever.

If the *Remarker* does not comprehend what I here assert, I may give him an opportunity of understanding better, when I come to confer with Dr. *Pemberton*. In the mean time, I shall only shelter my self under the authority of that most accurate and consistent writer, Mr. *Benjamin Robins*.

That Gentleman, in his celebrated *Discourse of Fluxions*, uses the following expressions: “The ratio of Y to H O may become less than any ratio, that CAN be proposed, greater than the ratio of equality.” p. 17.

“But a polygon CAN be circumscribed about the circle, the circumference of which shall exceed the circumference of the circle by less than any line, that CAN be named.” p. 46. *N. B.* This is going farther than I have done, and is given as a part of the method of the ancients. Did they express themselves in this manner?

“Provided the varying quantity CAN be made IN its approach to the other to differ from it by less than by any quantity how minute soever soever, that CAN be assigned.” p. 48.

“MAY be brought at last nearer to the proportion of equality, than to any other ASSIGNABLE proportion.” p. 49.

“CAN be made to differ from the circle, less than by any space, that CAN be proposed, how small soever.” p. 53.

“MAY be made to approach nearer than by any difference that CAN be named.” p. 54.

“CAN be made to approach nearer than by any difference that can be proposed.” p. 55.

“CAN be approached nearer than by any ASSIGNABLE difference.” p. 56.

“CAN be brought at last IN its approach nearer to this determined proportion than to any other, that CAN be assigned.” p. 57.

“CAN be brought nearer than by any difference whatever, that MAY be proposed.” p. 61.

“MAY be reduced to less than any magnitude, that CAN be proposed.” *ibid.*

“MAY be brought to differ less than by any ASSIGNABLE magnitude.” *ibid.*

“CAN be brought nearer than by any difference, that CAN be assigned.” p. 62.

“CAN also be brought nearer than by any difference, that CAN be assigned.” *ibid.*

“WILL be diminished, even so much as at length to bear a less proportion, than any that CAN be proposed.” p. 66.

“MAY be brought nearer than by any difference that CAN be proposed.” *ibid.*

“MAY be made less than by any ASSIGNABLE part.” p. 71.

Some persons perhaps may think that I have been unnecessarily copious in these citations. To such I reply, my design was to shew, that these passages are not accidentally thus delivered; but that this manner of expression is the product of a deliberate and settled judgment. And as that Gentleman *has expressed Sir Isaac Newton’s real meaning*, I need produce nothing farther in my vindication, unless it be required of me to shew that Sir *Isaac Newton’s* real meaning is not erroneous.

§ 25, 26. It is not uncommon among the writers upon indivisibles, to express what they call an infinitely little quantity, by applying, or dividing a finite quantity by what they call infinitely great. And as Sir *Isaac Newton* has sometimes made use of the term infinitely great, and has been quoted for it both by Mr. *Robins* and my self, I, who love to talk as clearly as I can, thought proper to explain what I took his meaning in it to be, and to shew the difference between his sense of it, and that of the writers upon indivisibles.

I have said nothing of indefinite numbers.

§ 27–30. Neither Sir *Isaac Newton*, nor I, who exactly follow him, have ever pretended to give any positive idea of the magnitude of the *momenta nascentia*, or *evanescentia*; but of their proportion only, or, to speak more strictly, of the proportion of their representatives, at the instant that they themselves vanish, as has been often declared. See *Minute Mathematician*, p. 25, 85, 86. *Republick of Letters* for November, p. 378, 379, 383, 384. *Republick of Letters* for January, p. 76, 77.

§ 31–33. See Sect. VI. of these *Observations*. § 5, 6. *sub finem*.

§ 34–41. See § 27–30. of this Section of *Observations*. As no shadow of a reply is offered to what I have so distinctly and fully laid down in these eight paragraphs, I congratulate these Gentlemen, upon their having at last discovered, what Sir *Isaac Newton* means by the word *moment*, which before they were much at a loss about. I hope for their thanks.

Sect. XXXII. § 1–4. If Cavallerius meant by his lines the very same, as the latter writers in that doctrine understood by surfaces infinitely narrow; did he also mean by his points the very same, as the latter writers understood by lines infinitely short? The *Remarker* does not venture to say this; and without it Mr. *Robins*'s argument is very imperfect.

It is plain, the writer of the account of the *Commercium Epistolicum*, was not of this opinion. He uses the word THO', to distinguish between a point in the sense of *Cavallerius*, and a line infinitely short: And he repeats the word THO', to distinguish between a line in the sense of *Cavallerius*, and a superficies infinitely narrow. That writer therefore, said by these Gentlemen to be Sir *Isaac Newton* himself, was according to this *Remarker*, absolutely unacquainted with the doctrine of indivisibles.

It is plain, Mr. *Robins* was not of this opinion in *April* last. See the restriction given to *Cavallerius*'s description, or rather illustration, in p. 300. See the new modelling of his conception into that form, which it still retains, and which now universally prevails among the foreign mathematicians, in p. 301. See the reformed notion of indivisibles, the alteration, the distinction between parallelograms of infinitely little breadth, and the lines of Cavallerius, the new method, the transforming his points, lines, and planes, into infinitely little lines, surfaces and solids, in p. 302. See also the improvement supposed to be made by Dr. Wallis, of this method of Cavallerius in the *Republick of Letters* for October, p. 247.

Mr. *Robins*, therefore, in October and in April last, was as absolutely unacquainted with the doctrine of indivisibles, as *Philalethes*: Nay, he is so still, if no words can be contrived to express Mr. *Robins*'s sense more distinctly, than those of the passage quoted in the second paragraph of this section of my *Considerations*.

§ 5, 6. *Philalethes* need not transform the sentence. If he had, it were only a different rangement of the words; and that with this *Remarker* is allowable.

§ 7, 8. *Philalethes* has shown, that Mr. *Robins* has quoted the wrong sentence. The right sentence does indeed immediately precede the wrong: but is not, as is here affirmed, referred

to in the wrong sentence *quoted by Mr. Robins*.

Sect. XXXIII. See this section in my *Considerations*.

Could not Sir *Isaac Newton* in the *Analysis* of 1666, make use of the first principle of fluxions, the idea of quantities encreasing, or decreasing, and at last vanishing by motion, without using the method of fluxions.

Has not the *Remarker* endeavoured to shew me, that Dr. *Wallis* and Mr. *Huygens* had this notion that quantities vanish? Had they the method of fluxions, when they had that notion!

But may not a man use a method without explaining it?

Sect. XXXIV. § 1, 2. I apprehend, I have given some reason to think my differing from Mr. *Robins*, does not proceed from my *ignorance of his writings*. As much as the *Remarker* undervalues that part of my learning, it cost me no little pains to acquire it.

O mihi per noctes multum vigilate serenas

Robnide!

See § 2. of my *Considerations*.

§ 3–7. If this repetition of a question already asked, and already answered (see Sect. XXXIII. § 3. of my *Considerations*) any thing like an answer to my paragraphs?

Sect. XXXV. I speak of Sir *Isaac Newton*, not of Sir *Christopher Wren*.

I should be glad to know what this *Remarker* understands by decreasing *ad infinitum*. I have carefully compared this section, with Sect. XIV. § 8, and Sect. XXI. § 1–8, but have not been able to satisfy myself what is his real meaning. Unless he is pleased to explain himself farther, I must leave this point to persons of greater sagacity.

Queis meliore luto finxit praeordia Titan.

Sect. XXXVI. § 1–4. No doubt but Sir *Isaac Newton* could have done without the word *moment*, if he had thought fit.

His doctrine of fluxions, at least the *idea of fluxions*, is not only *mentioned*, but described *in this place*.

§ 5–7. I leave it to Mr. *Robins*, both to find this idea, and to correct it. He says, Sir *Isaac Newton* *shews how to correct the idea (viz. of indivisibles) arising from his description of moments*. Now that idea must be, before it can be corrected.

§ 8–11. I have already considered the meaning, which the *Remarker* here ascribes to Mr. *Robins*; and have shown, that in this case the corrective is good for nothing. But, according to Mr. *Robins*, the corrective is good for something. Therefore, the *Remarker* has not taken Mr. *Robins*'s *real meaning*. The idea arising from the description of moments, can only be corrected by understanding the word *other* in contradistinction to moments.

§ 12. Does the *Remarker* think me ignorant of this custom, when I myself have inserted among the *errata* a *dele* of three pages and a half?

§ 13–15. The paragraph here spoken of depends entirely upon the word *other*. It is said, "From thence (the last mentioned caution) it will appear ————— he meant finite quantities." This paragraph therefore ought undoubtedly to be put among the *errata*. It is

surprising, that my kind admonition about the paragraph, and particularly about the word *caution*, should not have been better received.

If this *Remarker* cannot find out Sir *Isaac Newton*'s meaning, does it follow from thence, that Sir *Isaac* had no *real meaning at all*? It would argue more modestly, to *ascribe it to his own unskilfulness*.

Sect. XXXVII. Has this *Remarker* made no better use of his *idea of fluxions*, than to imagine contrary motions, at the same time, in the same flowing quantity?

Since he observes, and even proves *the passage of Mr. Robins is incorrectly expressed on another account*, I hope he will not hereafter treat my *criticisms about the propriety or impropriety of Mr. Robins's expressions*, as *trifling*.

I thought it sufficient, to set the Author of the *Analyst* right, in the simplest case first. If he had carried his objections farther, I was as well prepared to talk farther with him, as with Mr. *Robins*.

My question, How came this objection now to be put in? is not answered.

Sect. XXXVIII. § 1–3. That the LETTERS may be understood to represent the differences of Monsieur *Leibnitz*, is one thing: That Sir *Isaac Newton* considers these MOMENTS as the differences of *Leibnitz*, is another.

§ 4–6. Leaving out the second *these* will mend the matter very little. I shall still have cause to join with Mr. *Robins* in his lamentations, unless the word *momenta* be altered.

Sect. XXXIX. The first part of this passage may be *intended to make the other more easily understood*, and may also have an eye to the doctrine of Monsieur *Leibnitz*. That Gentleman did not *suppose the augments of quantities* to be *infinitely small*; but only to be exceeding small, or incomparably small, as small as the diameter of the earth in respect of the extent of the heavens.

Quam minimis is a stronger expression than very small.

Sect. XL. § 1–3. Whoever peruses what I have written upon this demonstration, in the *Republick of Letters* for November last, will need no answer to this paragraph.

§ 4–14. Since my explanation is allowed to be distinct, it will be easy to see whether it be true or false. If Mr. *Robins* also would write distinctly, our controversy would be much abridged. I would given him leave to *boast* as much as he pleases.

If these passages look like *nonsense*, it is not my fault. They are very exactly copied.

Sect. XLII.

—*Hem, si quid velis*
Defensum, si quem recte defensum velis,
Huic mandes.

If I have owned that Sir *Isaac Newton* did confound both methods together, it was indeed without knowing it.

Sect. XLIII. By an errant indivisibleist, I mean one, that constantly used the method of indivisibles, as Mr. *Robins* would make us believe was at first Sir *Isaac Newton*'s practice.

The *string of sentences* I have here *collected* from Mr. *Robins*, in my opinion, make a better figure now, than when they were scattered up and down in his writings.

Sic positae, quoniam suaves miscetis odores.

It does not become a man, who uses so few quotations himself, even in controverted points, to accuse me who make so many, for omitting to cite the places of passages, that admit of no dispute.

Sect. XLIV. § 1–4. The intent of this third collection out of Mr. *Robins*'s writings, seems to be very evident. He that runs, may read.

§ 5, 6. If Mr. *Robins* allows, that Sir *Isaac Newton* had at last read the ancients, because he speaks of them in the *Principia*, and Introduction to the *Quadratures*; he ought to allow, that he had read them, when he wrote his *Analysis*. The writer of the account of the *Commercium Epistolicum* takes notice, that in that *Analysis* Mr. *Newton* performed his calculations by *the geometry of the ancients*.

Sect. XLV. I ascribe no errors to Sir *Isaac Newton*, nor undertake the defence of any. I think he needs no apology. In particular points he may now and then have made a slip: But with regard to his general method, I can truly say,

*Faults he has none, or I no faults descry;
All beauty Newton, or all blindness I.*

Having now finished his *Remarks* upon my *Considerations*, this Gentleman enters upon the examination of the two following particulars.

I. How I fell into this *change of behaviour*, this *present intemperate manner of writing*.

II. *How it has come to pass, that Mr. Robins and I should both carefully have studied Sir Isaac Newton with a sincere desire of understanding him, and yet differ so much from one another.*

I. He seems to think, that *this change of behaviour* in me arises from my being *become doubtful of my own cause*. But if this be his opinion, I can easily undeceive him.

I must acquaint him therefore, if he is not already too much apprised of it, that there is a certain ingredient, much used in controversy, both ancient and modern, which to all our family is an instantaneous and mortal poison. The least particle of it inwardly used, would in a moment destroy the most vigorous and hearty *Philalethes*, that ever lived. Our antipathy to it is so strong, that we cannot bear the thought of it without pain, nor mention it without abhorrence. It seems as if its name would taint our breath, contaminate our pens, and foul our very ink. At the least appearance of it our blood ferments, our bile rises, our speech alters, and even the pens in our hands are unusually and unaccountably, I had almost said preternaturally affected.

And yet, though to our family it be a rank poison, a perfect *deleterium quid*, to use the term of a very learned physician; to others, it is so far from being offensive, that it yields them a very agreeable and comfortable support. I have my self known several persons to live upon it.

Nay, in some countries, there are thousands that use it for their daily bread, and with as little prejudice as they do the *Cassava* root in *Brazil*. But in *Britain*, there are fewer of these than in other parts, where it is much more cultivated. The plant grows rarely wild; at least it thrives but little without culture. But when raised in a proper soil, rich and fat, it grows to an amazing height.

—*Tantum vertice ad auras*
Aethereas, quantum radice ad Tartara tendit,
Innatumque solo caput inter nubila condit.

Now, in regard to my self, I well remember, in the month of *November* 1735, I was in as calm and temperate state, as at any time in my whole life. But about *Christmas* following, my bed-maker having brought in a few greens, in order to deck my chamber windows, as usual at that season; there happened to be among them a sprig or two of this plant, (for it flourishes all the year) which, by only lying a while upon my table, began to have its usual effect upon me, though in a gentle degree. But even this was sufficient to affect my pen so much, that it was impossible for me to write altogether in my usual hand, which is naturally a very fair one; and I did not wholly recover my self all the month of *January*. The following months I returned to my usual state.

But in *April* last, I had a nosegay sent me by some evil-minded persons, which was so artfully drest up and coloured over, that, at first sight, one would have taken it for a bouquet of the most agreeable and innocent spring flowers: but upon putting it to my nose, the deleterious smell immediately convinced me what it was. And, upon examination, I found it to be almost entirely composed of this pernicious plant, intermixed only with a few artificial flowers, that had neither smell nor taste: But the whole was so disguised, and was painted over with so much care and pains, that any soul alive, but a *Philaethes*, might have been deceived by it.

The reader may easily imagine the surprize I must be in, at such a piece of malice. But it was not difficult to guess at the authors. By the following lines upon the paper, which the stem of the nosegay was wrapped in,

Unus homo, & vestris, O cives, undique septus
Aggeribus, tantas strages impune per urbem
Ediderit? Juvenum primos tot miserit orco?

but especially by the word *Geryon*, underwritten; I could not but judge it to be a piece of revenge from a club of certain persons, whom I had disoblged by doing them the most good, that they ever received in their whole lives.

The effect this had upon me, was much more violent than the former.

—*Dij talia Graiis*
Instaurate, pio si poenas ore reposco.

I fell into an immoderate evacuation, of a particular species, which, in a polite foreign court, is called by the name of *atramento-cacaturitio*, or ink fh-ing, which held me by intervals for three months. As, during all that time, I had not the usual command of my pen, I unavoidably fell into that *manner of writing*, which this Gentleman calls *intemperate*, and which, for want of knowing the true reason, he imagined to proceed from my being *become doubtful of my own cause*.

II. In the second point he is yet more unhappy. He assigns several reasons for our differing; but has never hit upon the true one. Taking it for granted, that the fault lies altogether on my side, he endeavours to account for it in the following manner.

Philalethes's reading in the mathematicks, has been very much confined.

He is not *acquainted with the ancient writers, nor versed in the latter writers who have imitated them.*

He seems not to understand *the first proposition of the tenth book of the elements of Euclid*; nor to have read *Archimedes's treatise on the sphere and Cylinder*, nor his book of *Conoides* and *Sphæroides*: nor the following excellent writers;

Fed. Commandinus de centro gravitatis solidorum;

Lucas Valerius de Centro gravitatis solidorum;

Johannes della Faille de Centro gravitatis partium circuli & ellipsis;

Huygens de quadratura hyperbolæ, ellipsis & circuli, ex dato portionum gravitatis centro;

James Gregory de vera circuli & hyperbolæ quadratura;

Simson de sectionibus conicis;

Nor to have been at all acquainted with the writers on indivisibles, as *Monsieur Pascal* and *Dr. Barrow*, with the writings of which most excellent geometer, he is not in the least acquainted; and *Heuraet* and *Dr. Wallis*.

He is but imperfectly instructed in the precepts of common Algebra; has had little exercise in geometrical subjects; not has he been accustomed to contemplate the different figures of curves; nor is so well versed in the writings of *Sir Isaac Newton*, as might have been expected in one, who has appeared in his defence; he has taken little care even to understand the person he is writing against.

Heu, quianam tanti cinxerunt aethera nimbi!

Necdum etiam causae irarum, saevique dolores

Exciderant animo? Manet altâ mente repostum

Judicium Britonum, spretaeque injuria famae.

The consequences of these defects in *Philalethes*, are supposed to be, that,

1. He does not understand what *Mr. Robins* meant by saying, that he described the parallelograms of the second Lemma after the manner of the ancients, by subdividing the base of the curve.

'Tis pity, methinks, that so great a geometer as *Mr. Robins*, should not write so as to be understood by those, who are so unhappy as not to have read the ancients, or at least to be something more intelligible to those who have read them.

Ecce nigro subitam glomerari polvere nubem

Prospicio, & claris tenebras insurgere campis.

Quis globus, O Cives, caligine volvitur atrâ?

Ferte citi ferrum, date tela, scandite muros:

Hostis adest: Eja!

Infert se septus nebulâ, mirabile dictu,

Per medios, miscetque viris, neque cernitur ulli,

Robnides.

But will reading the ancients endue a Man with the gift of prophecy? Could *Philaethes*, by being *acquainted with the ancient writers, understand in July the meaning* of certain words, which were to be written in *September*? It will be said, perhaps, that in *April* last Mr. *Robins* had written, though not the same words, yet other words expressing the same sense. But, if the sense is the same, why are the words altered? To say truth, both the words and the sense is changed.

The words used by Mr. *Robins* in *April* were as follows. “We perform what is here directed, by that simple and obvious method practiced by the ancient geometers, of continually subdividing the base of the curve.” Now what is *that simple and obvious method of continually subdividing* a right line? For my part, I know of none so simple, nor yet so *obvious*, as the method described in the two propositions of *Euclid’s* Elements that I have quoted. If Mr. *Robins* can inform me better, I shall be glad to learn: If not, I shall think, I have rightly understood what he then said.

But the words now given us in *September* are, “He described the parallelograms after the manner of the ancients by subdividing the base of the curve.” And I confess, I *could never have thought, that* by these words, Mr. *Robins* had reference to those two propositions of *Euclid*: because nothing is said in those two propositions about a manner of describing parallelograms, but about a method of dividing lines only. But the words in *September* were not the words in *April*. How can this *Remarker* look Mr. *Robins* in the face after such a quotation? Surely they must meet like two *Haruspices*. Only, these will blush, as those laugh.

2. *Philaethes* is at a loss about the true sense of *data quavis differentia* used by Sir Isaac Newton in his first Lemma.

I do not remember, that I was ever at a *loss about the true sense* of these words. I never had the least doubt, but that in Sir *Isaac Newton’s* Lemma their meaning was, any difference that can be given, any difference that can be assigned, or as I have once or twice expressed it, any assignable difference, an expression synonymous to the two former.

Now if this be a proof, that I am not *versed in the ancients and in the latter writers who have imitated them*, it will follow that Mr. *Robins* is no more versed in those writers ancient or modern, than *Philaethes*. For he expounds those words in the very same manner. See Sect. XXXI. § 24. of these *Observations*.

Though this answer may be sufficient to one, who thinks Mr. *Robins* has expressed Sir Isaac Newton’s *real meaning*, yet it will not be amiss, to examine a little into the several quotations here produced, in order to settle the meaning of the words *data quavis differentia*, by similar expressions of other authors ancient and modern.

The first of these, is the first proposition of the tenth book of *Euclid’s* Elements, upon which we are told, “This is directly as Mr. *Robins* has represented it, first assigning a difference, according to which the degree of approach is afterwards to be regulated.”

We are therefore to gather the sense of the words, *data quavis differentia*, used in Sir *Isaac Newton’s* Lemma, from this proposition of *Euclid*, where those words are never used, nor any words at all resembling them. From this proposition, where a difference is first assigned, we are to learn the meaning of a Lemma, where no difference is first assigned.

Much of the same efficacy is the quotation from *Archimedes’s* treatise on the sphere and cylinder.

After giving a second quotation from *Archimedes*, and ten others from different authors, the *Remarker* tells us, "In all these propositions they always supposed a quantity first named."

Now if I were to deny this, how will this Gentleman prove it? He will tell me, perhaps, that in their demonstrations, they *first name a quantity, and then shew how to make the approach expressed in the proposition*. Let it be so. But is every thing, that is used in the demonstration, necessarily supposed in the proposition? If Mr. *Robins* were to demonstrate a proposition of *Euclid*, after five different manners, by five several mediums, would every one of those mediums be supposed in *Euclid's* proposition? But let this pass. Does Sir *Isaac Newton*, in his demonstration, likewise name a quantity first, and then shew how to make the approach expressed in the Lemma? If not, he has taken one course, and these authors have taken another. To what purpose are they quoted?

Lastly, I would ask this *Remarker*, what he supposes these authors to intend by the quantity first named, whether in the proposition, or in the demonstration. Does it stand for one, individual quantity there assigned? Or for any quantity whatsoever, that Mr. *Robins*, that I, that any body can assign? If it does not stand for any quantity whatsoever that can be assigned, these *excellent writers*, when they were drawing up their demonstrations, might have done equal service to the Learned World, by playing at push-pin.

Here is much talk of the ancients. But I remember an old *English* proverb, that says, Many men talk of *Robin Hood*, that never shot in his bow. It is easier to talk of the ancients, than to write like the ancients. Would *Euclid*, or *Archimedes*, or *Apollonius* have said, that quantities are to be *considered as equal*, which are not equal! Would any of them tell me, that quantities, which are unequal, are to be *esteemed as equal*. It is really matter of great lamentation, that persons, who have read so much, should have improved so little.

3. He takes the word *data* or *assignata* to mean assignable.

Will these Gentlemen never learn to quote better? Did not I reprove Mr. *Robins* twice before, for putting down *data* only, when he should have written *quavis data*? See *Considerations*, Sect. VII. 1, 2, 3, 4. Sect. VIII. § 20.

4. *He attempts a vain distinction between the sense, in which the writers of indivisibles use the phrase infinitely small, and the sense, he imagines Sir Isaac Newton had affixed to it.*

Mr. *Robins* and I have been disputing some time, whether Sir *Isaac Newton* used indivisibles. That Gentleman maintains, that he used them; and grounds his charge upon the term *infinitely little*, which is sometimes to be met with in Sir *Isaac Newton's* writings: but he does not explain the meaning of that term, when used either by Sir *Isaac*, or by the writers of indivisibles.

I, on the contrary, distinctly explain, what I apprehend to be meant by it; both when used by Sir *Isaac Newton*, and when used by the writers on indivisibles.

The *Remarker* calls this a *vain distinction*. But, if Mr. *Robins* would take the same course, our dispute would soon be at an end. I have endeavoured all I could, to bring him to be more distinct both upon this and other occasions: But hitherto to no purpose:

Nam sine vi non ulla dabit praecepta, neque illum Orando flectes.

I supposed the writers upon indivisibles, by an infinitely little quantity, to mean a quantity actually existing, fixed, determinate, invariable, indivisible, less than any finite quantity whatsoever.

The *Remarker* tells me, “Several writers in indivisibles, on set purpose avoided expressions, that implied any thing fixed, determinate, or invariable.” “Monsieur *Pascal* is so cautious as to avoid the word infinite;” he “constantly calls it indefinite.”

Monsieur *Pascal* is much to be commended for his caution. But I was not speaking of those writers, that *avoided the word infinite*, that *constantly called it indefinite*. I spoke only of those, who used the term infinite, or infinitely little.

Dr. *Barrow* is likewise quoted for the same caution. He is said *almost constantly* to use *the term indefinite*; and ten or a dozen passages are produced to prove it. But as the writers I am speaking of, are such as *almost constantly* use the term infinite, or infinitely little.

That some of the writers upon indivisibles have been more cautious than others, is very manifest. I have already observed, that Monsieur *Leibnitz* himself was not altogether so bold, as some of his followers have since been. But that some of those writers, and particularly the latter ones, such especially, as maintain, that curves are actually composed of right lines infinitely little, have used the term infinitely little in the sense I have supposed, and that those are the most faulty, if not the only faulty ones, is not to be denied.

But all this while the *Remarker* does not tell us, what Mr. *Robins* supposes the writers on indivisibles mean by this term, nor what Mr. *Robins* himself means by it. Surely he does not blame them so much for nothing.

I must not forget to observe, that it is not denied, but that Sir *Isaac Newton*, by the term *infinitely little*, meant a quantity variable, divisible, that, by a constant diminution, is conceived to become less than any finite quantity whatsoever, and at last to vanish into nothing. By which meaning, all that is faulty in the method of indivisibles, is entirely avoided and that being allowed, the rest is only a dispute about a word.

5. *Philalethes* imagines *an incurvated line, which he saw would meet a right line in an infinite number of points, to be one and the same curve, and expressible by a finite equation.*

*Talia voce refert, curisque ingentibus aeger
Spem voltu simulat, premit altum corde dolorem.*

It is very true, that *Philalethes* imagines an *incurvated line* to be a curve line: And that what is already expressed by a finite equation, although not one of the common equations for algebraick curves, is *expressible by a finite equation*, he conceives to be *indubitable*.

But cannot these Gentlemen content themselves with so notably correcting my *diction*? Why will they coin new expressions of their own, and impute them to me? Have I any where used the words *one and the same curve*, or *finite equation*? Have I any where called this curve line, an *algebraick curve*? Is there any resemblance between a curve, which, as themselves acknowledge, *I saw could meet a right line in an infinite number of points*, and a curve which can meet a right line, only in a finite number of points, the number of whose intersections with a right line is limited by the order of the curve, or, to speak more properly, by the dimensions of the equation?

6. In one or two particulars he is *unapprised of Mr. Robins's meaning*.

Not impossible. Mr. *Robins* might have writ more clearly.

7. *But above all it is most astonishing, that he should think, Mr. Robins has given no less than four different interpretations of this (the first) Lemma.*

That Mr. *Robins* has given four interpretations of this Lemma, I have shown. But let the *Remarker* call them three, or if he pleases, two. The main point is, whether they are

different in meaning from one another, and whether they disagree with the Lemma they are designed to interpret. I have plainly pointed out their difference from one another, and their disagreement with the Lemma. What does the *Remarker* reply to this? Only, that *Mr. Robins thinks they very evidently unite in the same sense*. If this be very evident, it must be very easy to overthrow all that I have said about their disagreement. But, *I can inform the publick*, that is past the skill either of our *Remarker*, or any of his associates.

And unless that be attempted, to what purpose are these interpretations again brought upon the stage? Poor things! It would grieve any soul alive to hear them mentioned.

*Eheu! Quae lucis miseris tam dira cupido?
Quidve, Pater Robine, paras? Jam parce sepultis,
Quas dulcis vitae exortes & ab ubere raptas
Abstulit atra dies, & funere mersit acerbo.
Parce pias scelerare manus: Non has tibi Granta
Aut tulit externas, aut haec sine numine Divôm
Eveniunt. Lethumne iterum te cernere coram
Natarum, & patrios foedari sanguine voltus!
Ne tibi pugnandi veniat tam saeva libido.*

From what has been said, I must beg leave to conclude, that neither this *Remarker*, nor his second self, *Mr. Benjamin Robins, F. R. S.* nor any one of those ingenious persons, who have done me the honour to unite their forces, against me alone and unassisted; notwithstanding their intimate *acquaintance with the ancients*, and with those excellent modern geometers, who have imitated the ancients notwithstanding they *have carefully studied Sir Isaac Newton with a sincere intention of understanding him*, and notwithstanding all the instruction, that has been so charitably and so copiously bestowed upon them by *Philaethes Cantabrigienses*; notwithstanding all this, I say, there is not a man among them, that is yet able to comprehend the very easiest, the very first and fundamental proposition of *Sir Isaac Newton's Principia Mathematica Philosophiae Naturalis*.

—*O quantum est in rebus inane!*
*Ille autem expirans, Non me, quicumque es, inulto,
Victor, nec longum laetabere: Te quotue fata
Prospectant paria, atque eadem mox arva tenebis.
Olli sedato subridens pectore contra
Grantiacus, De me Divôm pater atque hominum rex
Viderit, impavido: Quid enim sibi conscia veri
Mens timeat, licet ipse tuus nunc adforet Hector?
Flebit, & insignis totâ cantabitur urbe.
Δυσήνων ἄρα παῖδες ἐμῇ τῷ ἀληθεῖ βίῃ ἀντιώσιν.
Semineci haec dicens eduxit corpore telum:
Olli dura quies oculos & ferreus urget
Somnus, in aeternam clauduntur limina noctem.*

POSTSCRIPT.

To carry on two controversies at once, is more than I have leisure for. But, as soon as the present dispute with Mr. *Robins* is over, I intend to accept of Dr. *Pemberton*'s invitation, and to enter upon the examination of the two points he has proposed, without troubling any of those Gentlemen who have honoured my pieces with their approbation, or changing the appellation I have always gone by.

Other persons may act, as they find necessary: but for myself, I shall never alter my name, to avoid being charged with contradictions. *Philalethes*, in replying to Dr. *Pemberton*, shall be answerable for what has been said by *Philalethes* in the dispute with Mr. *Robins*.

In the mean time, I apprehend, I may lie under a considerable disadvantage, on account of the testimonial given to Mr. *Robins*, by a person of Dr. *Pemberton*'s reputation. That is, very deservedly, so great, that, were it not for the constant adherence, which our family have always shown to the grand maxim of Protestantism, in preferring the written word to any tradition, even I myself might be influenced by it. And yet, to endeavour to balance this, by making myself either judge, or evidence, or both one and the other, in my own cause, may be looked upon as unfair and dishonourable, as well as utterly insignificant with the judicious part of mankind. I have, therefore, no other remedy left me, for the present, than to insert the following attestation of my learned friend and kinsman *Phileleutherus Oxoniensis*. In doing this, I am sensible, my kinsman's character is not so well known to the world as that of Dr. *Pemberton*: but then on the other hand, it is to be considered, that this is an *affidavit*, whereas the Doctor's is but a simple *certificate*.

AFFIDAVIT.

As I have had the very best opportunity of knowing Sir *Isaac Newton*'s true mind in every part of his Treatise, intituled, *Philosophiae Naturalis Principia Mathematica*, and have made the very best use of that opportunity, with relation to the points in dispute between Messieurs *Robins* and *Philalethes*, I do hereby declare and make oath, that I am fully satisfied, Mr. *Philalethes* has expressed Sir *Issac Newton*'s real meaning.

Phileleutherus Oxoniensis.

Jurat coram me

Nov. 1, 1736.

Thomas Della Valle.