

The Project Gutenberg eBook of Gentlemen: please note

This ebook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this ebook or online at www.gutenberg.org. If you are not located in the United States, you'll have to check the laws of the country where you are located before using this eBook.

Title: Gentlemen: please note

Author: Randall Garrett
Illustrator: Freas
Editor: Randall Garrett

Release date: April 8, 2023 [eBook #70500]
Most recently updated: May 24, 2023

Language: English

Credits: Greg Weeks, Mary Meehan and the Online Distributed Proofreading Team at <http://www.pgdp.net>

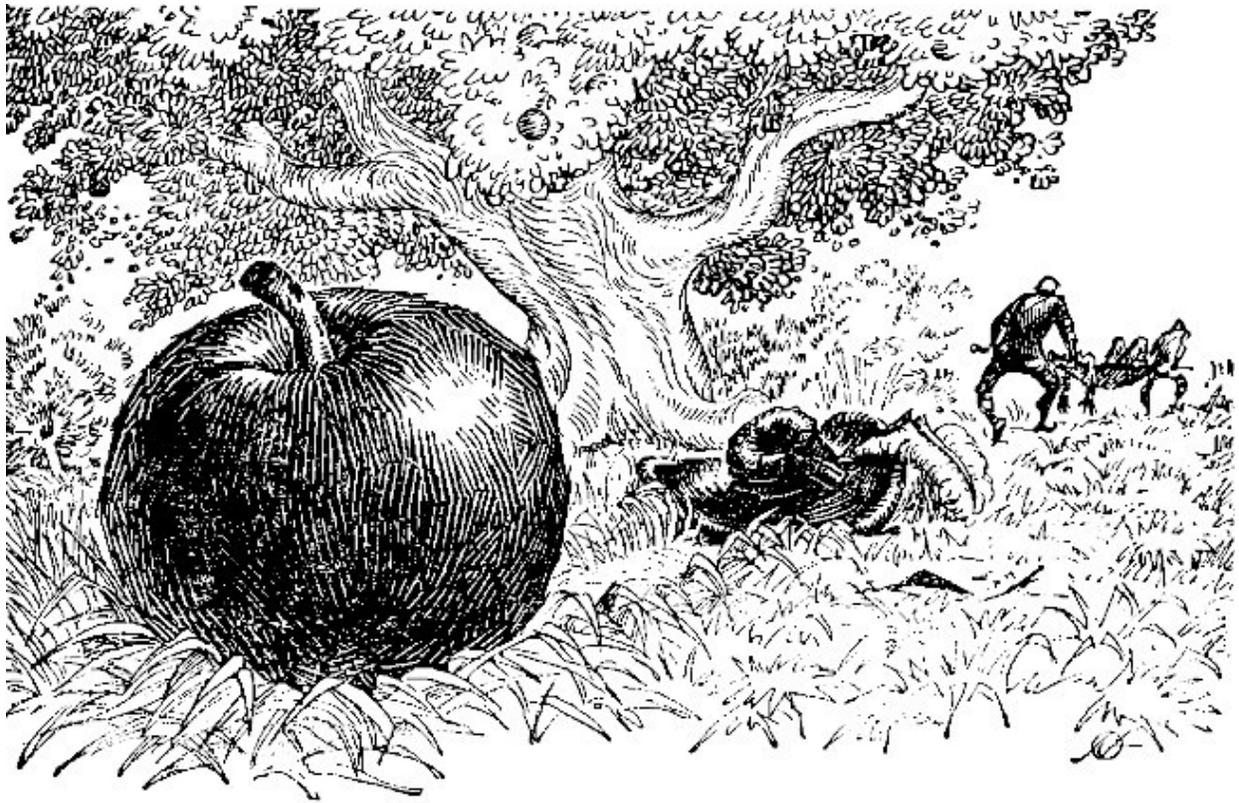
*** START OF THE PROJECT GUTENBERG EBOOK GENTLEMEN:
PLEASE NOTE ***

GENTLEMEN: PLEASE NOTE

BY RANDALL GARRETT

Illustrated by Freas

**[Transcriber's Note: This etext was produced from
Astounding Science Fiction October 1957.
Extensive research did not uncover any evidence that
the U.S. copyright on this publication was renewed.]**



18 June 1957
Trinity College
Cambridge

Sir James Trowbridge
No. 14 Berkeley Mews
London

My dear James,

I'm sorry to have lost touch with you over the past few years; we haven't seen each other since the French War, back in 1948. Nine years! It doesn't seem it.

I'll tell you right off I want a favour of you. (No, I do *not* want to borrow another five shillings! I haven't had my pocket picked again, thank you.) This has to do with a little historical research I'm doing here. I stumbled across something rather queer, and I'm hoping you can help me with it.

I am enclosing copies of some old letters received by Isaac Newton nearly three hundred years ago. As you will notice, they are addressed to "Mr. Isaac Newton, A.B."; it rings oddly on the ear to hear the great man addressed as anything but "your Grace," but of course he was only a young man at the time. He hadn't written his famous *Principia* yet—and wouldn't for twenty years.

Reading these letters is somewhat like listening to a conversation when only one of the speakers is audible, but they seem to indicate another side to the man, one which has not heretofore been brought to light.

Dr. Henry Blake, the mathematician, has looked them over, and he feels that it is possible that Newton stumbled on something that modern thought has only recently come up with—the gravitational and light theories of the Swiss mathematician, Albert Einstein.

I know it's fantastic to think that a man of even Newton's acknowledged genius could have conceived of such things three centuries before their proper place in history, but Blake says it's possible. And if it is, Blake himself will probably do to Newton's correspondents the same thing that was done to Oliver Cromwell at the beginning of the Restoration—disinter the bodies and have them publicly hanged or some such thing.

Actually, Blake has managed to infect me with his excitement; he has pointed out phrases in several of the letters which tally very well with Einstein's theory. But, alas, the information we have is woefully incomplete.

What we need, you see, are Newton's letters—the ones he sent which provoked these answers. We have searched through everything here at Cambridge, and we haven't found even a trace; evidently the Newton manuscripts were simply discarded on the basis that they were worthless, anyway. Besides, records of that sort were poorly kept at that time.

But we thought perhaps the War Office did a somewhat better job of record-keeping.

Now, I realise full well that, due to the present trouble with the Austro-Hungarian Empire, the War Office can't take a chance and allow just anyone to prowl through their files.

It wouldn't do to allow one of the Emperor's spies to have a look at them. However, I wondered if it wouldn't be possible for you to use your connexions and influence at the War Office to look for Newton's letters to one of the correspondents, General Sir Edward Ballister-ffoulkes. You can find the approximate dates by checking the datelines on the copies I am sending you.

The manuscripts are arranged in chronological order, just as they were received by Newton himself. Of them all, only the last one, as you will see, is perfectly clear and understandable in all its implications.

Let me know what can be done, will you, old friend?

With best wishes,
SAM
Dr. Samuel Hackett
Department of History

12 November 1666
London

Mr. Isaac Newton, A.B.
Woolsthorpe

Dear Mr. Newton:

It was very good of you to offer your services to His Majesty's Government at this time. The situation on the Continent, while not dangerous in the extreme, is certainly capable of becoming so.

Your letter was naturally referred to me, since no one else at the War Office would have any need for the services of a trained mathematician.

According to your précis, you have done most of your work in geometry and algebra. I feel that these fields may be precisely what are needed in our

programme, and, although you have had no experience, your record at Trinity College is certainly good enough to warrant our using your services.

If you will fill in the enclosed application blank, along with the proper recommendations and endorsements, we can put you to work immediately.

Sincerely,
Edward Ballister-ffoulkes, Bart.
General of Artillery
Ballistics Research Dept.

12 November 1666
Cambridge

Mr. Isaac Newton, A.B.
Woolsthorpe

My dear Isaac,

I am sorry to hear of your decision to remain at home for a while longer instead of returning to the College, but if you feel that your health is delicate, by all means rest until you are in better spirits.

I think, however, that you should attempt to return as soon as possible; you have a great deal of work ahead of you, my boy. Mathematicians—like Rome—are not built in a day—nor in four years.

If, however, you would like to do a part of your studies by post, I see no objection to it, under the circumstances, although, of course, it will be necessary to spend a part of your time in residence here, and the final examinations will have to be taken here.

Later on, when you are feeling better, I will send an outline of some work I intend to do on conic sections; I think it would be of great benefit to you to work with me on this. I have always had confidence in your ability. You are young yet, but, given time and plenty of study, you should make a place for yourself in the world of mathematics.

I think that the work I have in mind for you should prove stimulating.

Most sincerely,
Isaac Barrow, Ph.D.

16 November 1666
London

Dear Mr. Newton:

It would most certainly be quite convenient for you to do your work there at Woolsthorpe.

An explanation of the work we are trying to do and some of the problems we are up against will be despatched to you as soon as possible.

Sincerely,
Ballister-ffoulkes

21 November 1666
Cambridge

My dear Isaac,

Your paper has arrived. I haven't had time to look it over yet, but I shall find time to peruse it during the forthcoming holidays. I am, of course, very interested in what problems concerned you during the summer.

A very merry Christmas to you, my boy.

Is. Barrow

22 November 1666

FROM: Ballistics Research Dept.,
British Army Artillery

TO: Isaac Newton, A.B.,
Woolsthorpe

SUBJECT: Ballistics research data.

ENCLOSURE: Range table sample for 9-lb. artillery.

2nd ENCLOSURE: Outline and general discussion of ballistics

1. In order to better understand the problems facing this Department, you will familiarise yourself with the enclosed material.
2. This material is confidential, and is not to be allowed to fall into unauthorised hands.

By order of the Commanding General

SECOND ENCLOSURE

The purpose of this project is to determine, with as great a degree of precision as possible, the range of artillery used by His Majesty's Armed Forces, and the methods of accurately firing upon targets at various distances from the cannon.

After a great deal of research, the following factors have been found to affect the distance which a cannon ball may be hurled by exploding gunpowder:

1. Weight of the cannon ball.
2. Weight of powder used.
3. Angle of elevation of cannon.
4. Length of cannon barrel.

The first two factors are obvious; the heavier the cannon ball, the more powder it will take to blow it a certain distance, and contrariwise.

The third is somewhat unwieldy to work with and definitely problematical in its effects. Up to a certain point, increasing the angle seems to increase the range, but after that point is reached, an increase in elevation decreases the range of the weapon. In view of this, it has been decided that all cannon will

be fixed at the best angle for maximum range and the other factors varied to change the actual distance the cannon ball is fired.

(Here it may be noted, incidentally, that the angle of elevation is of no use in the Royal Navy, since that angle is indeterminate, due to the roll of the ship.)

The fourth factor, too, may be discarded, since a barrel of too great a length would make it unwieldy on the battlefield, although those of fixed fortresses could be somewhat greater. And, in view of the fact that changing the length of a cannon barrel on the field is out of the question, we may safely say that the fourth factor is a fixed quantity in each cannon and thus ignore it.

It has, therefore, been decided to test each of the various types of cannon presently in use by Army Artillery and publish for each a range table for various cannon balls and charges of powder, and to furnish a copy of such table to the battery leader of each field piece.

This programme, as may well be imagined, has required a great deal of cannon testing in the past year, and will undoubtedly require a great deal more before the project is finished. We hope, however, that it will be of at least limited use in the very near future, and will eventually greatly advance the science of cannon-firing.

2 January 1667

My dear Isaac,

Your Christmas was, I trust, a pleasant one? I hope your mother is in good health, and I hope your own is improved.

My dear boy, I have some advice for you; I do hope that you will take it as it is intended—as from an old friend and tutor who wishes you only well.

It has come to my attention that you are—shall we say—prostituting your talents. A friend of mine who works at the War Office tells me that you are doing some mathematical work by correspondence—something to do with cannon, I believe.

Now, I quite understand that you are in a somewhat precarious financial position, and believe me, I deeply sympathise with you. I know that the

earning of a few pounds can mean a great deal to you in furthering your education.

I do not say that such work is menial, either. I would not have you think that I deplore your choice of work in any way; it is necessary work, and money is certainly necessary for life.

However, let me warn you: a simple task like this, which pays rather well, can become soporific in its effect. Many men of talent, finding themselves comfortably fixed in a mediocre position, have found their minds have become stultified through long disuse. *Please*, dear boy, don't fall into that trap; don't throw away a fine career in mathematics for the sake of a few paltry pounds. You are young and inexperienced, I know, and have a great deal yet to learn, so please take the advice of one who is somewhat older and wiser.

No, I haven't gotten round to reading your paper yet; I'll do it this evening, my boy, I promise.

Most sincerely,
Isaac Barrow

3 January 1667
Cambridge

My dear Isaac,

I read your paper, and I am, I must confess, somewhat nonplussed. What *are* you doing?

I see that my letter of yesterday was somewhat premature; I should have waited until I had read your paper, since it is in exactly the same category.

You ask: "What is the optimum shape for a wine barrel? Should it be tall and thin, or squat and broad?"

And I ask: "What on Earth difference does it make?"

Surely you are not thinking of becoming a wine merchant? If so, what need is there to waste your time studying mathematics? On the other hand, if you

intend to become a mathematician, why should you debase a noble and lofty study by applying it to wine barrels?

As I told you, I have no objection to your making a few pounds by doing minor calculations for the Army, but this is foolishness. You have gone to a great deal of trouble for nothing; as you gain more experience, you will realize the folly of such things.

As to your theory of "fluxions," I admit myself to be completely at a loss. You seem to be assuming that a curve is made up of an infinite number of infinitely small lines. Where is your authority for such a statement? You append no bibliography and no references, and I cannot find it in the literature.

Apparently, you are attempting to handle *zero* and *infinity* as though they were arithmetical entities. Where did you learn such nonsense?

My boy, please keep it in mind that four years of undergraduate work does not qualify one as a mathematician. It is merely the first stepping stone on the way. You have a great deal of studying yet to do, a great many books yet to read and absorb—books, I may say, written by men older, wiser, and more learned than yourself.

Please don't waste your time with such frivolous nonsense as toying with symbols derived from wine barrels. No good can come out of a wine barrel, my boy.

I hope you will soon find yourself in a position to aid me in some of the calculations on conic sections as I outlined them to you in my letter of the 28th December last.^[1] I feel that this is important work and will do a great deal to further your career.

With all best wishes,
Sincerely,
Isaac Barrow

^[1] This letter was either lost or returned to Dr. Barrow.—S. H.

5 January 1667
London

Dear Mr. Newton:

Thank you for your tabulations on the seven-pounder. I must say you were very prompt in your work; there was no need to work over the holidays.

Your questions show that you are unacquainted with the difficulties of manufacturing military arms; I am not at all surprised at this, because it takes years of training and practical experience in order to learn how to handle the various problems that come up. It is something that no university or college can teach, nor can it be learned from books; only experience in the field can teach it, and you have had none of that.

I can, however, explain our method of approach thus:

Each cannon to be tested is fired with several balls—some of iron, some of lead, some of brass, and some which have been hollowed out to make room for a charge of gunpowder in order that they may explode upon reaching the target. With each type of ball, we find the amount of powder required to drive the ball five yards from the muzzle of the piece; this is considered the minimum range. (Naturally, with the testing of hollow, explosive missiles, we do not fill them with gunpowder, but with common earth of equal weight. To do otherwise would endanger the cannoneer.)

After the minimum range is found, more balls are fired, using greater amounts of powder, added in carefully measured increments, and the distance achieved is measured off.

This process is kept up until the safety limit of the weapon is reached; this point is considered the maximum range.

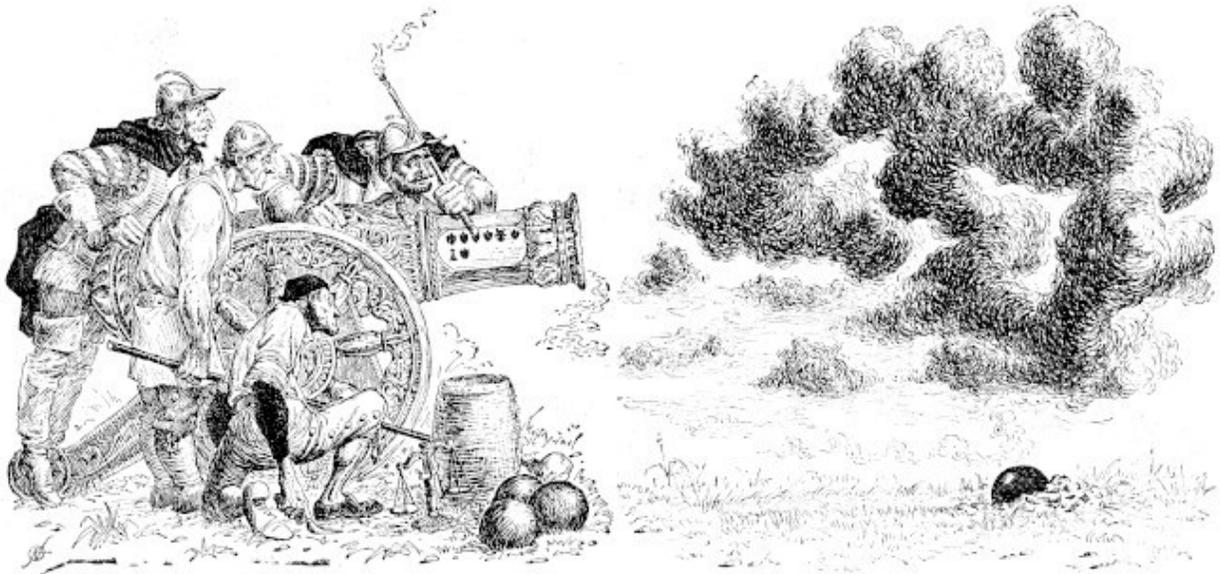
Naturally, the weights of different balls will vary, even if they are made of the same metal, and the bores of cannon will vary, too, but that can't be helped. What would you have us do? Make all cannon identical to the nearest quarter-inch? It would not be at all practical.

I am happy to see that you are enthusiastic over the work we are doing, but please, I beg you, wait until you have learned a great deal more about the problem than you have done before you attempt to make suggestions of such a nature.

As to the paper which you enclosed with your tabulations, I am afraid that it was of little interest to me. I am a military man, not a mathematician.

Thanking you again for your excellent work, I remain.

Yours sincerely,
Edward Ballister-ffoulkes, Bart.



9 January 1667
Cambridge

My dear Isaac,

I have known you for more than five years, and I have, I might say, a more than parental interest in you and your career. Therefore, I feel it my duty to point out to you once again that your erratic temper will one day do you great harm unless you learn to curb it.

You take me to task for saying to you what is most certainly true, viz.: that you are not yet a mathematician in the full sense of the word. You are young

yet. When you have put in as many years at study as I have, you will understand how little you now know. Youth is inclined to be impetuous, to rush in, as the saying goes, where angels fear to tread. But better men than yourself have come to realise that the brashness of youth is no substitute for the wisdom of maturity.

As to your other remarks, you know perfectly well what I meant when I said that no good can come out of a wine barrel. To accuse me of sacrilege and blasphemy is ridiculous. You are twisting my words.

Please let us have no more of this name-calling, and get down to more important work.

Sincerely,
Isaac Barrow

12 January 1667
London

Dear Mr. Newton:

Thank you again for your rapid work in tabulating our results. It is most gratifying to find a young man with such zeal for his work.

As I have said before, I am no mathematician, but I must confess that your explanation makes very little more sense to me than your original mathematical formulae.

As I understand it, you are proposing a set of equations which will show the range of any weapon by computing the weight of the ball against the weight of the powder. (Perhaps I err here, but that is my understanding.) It seems to me that you are building a castle-in-Spain on rather insubstantial ground. Where is your data? What research have you done on cannon-fire? Without a considerable body of facts to work with, such broad generalisations as you propose are quite out of order.

Even if such a thing could be done—which, pardon me, I take the liberty to doubt—I fear it would be impractical. I realise that you know nothing of military problems, so I must point out to you that our cannons are enlisted

men—untutored, rough soldiers, not educated gentlemen. Many of them cannot read, much less compute abstruse geometrical formulae. It will be difficult enough to teach them to use the range tables when we complete them.

Indeed, I may say that this last point is one of the many stumbling-blocks in the path of our project. More than one of the staff at the War Office has considered it to be insurmountable, and many times I have fought for the continuance of the research in the face of great opposition.

I greatly fear that using any but methods known to be practicable would result in our appropriation being cut off in Parliament.

Again, however, I thank you for your interest.

Most sincerely,
Ballister-ffoulkes

24 January 1667
Cambridge

My dear Isaac,

I am truly sorry I didn't get around to looking over your second manuscript until now, but, to be perfectly truthful, I have been outlining our course of work on conic sections, and had little time for it.

As it turns out, it was all for the best that I did so; it would have been sinful to take valuable time away from my work for such trivialities.

You are still harping on your wine-barrel fluxions and your Army cannon balls. Am I to presume that the whole thing is a joke? Or are you seriously proposing that the path of a cannon ball is related to the phases of the moon? That is rank superstition! Sheer magic! One would think that even a lad as young as yourself would have grasped the basic concept of the Scientific Method by this time.

How have you tested this absurd thing experimentally? Where are your measurements, your data? Your references?

Do not think, my boy, that fame and fortune in the sciences can be achieved by pulling wild hypotheses out of your imagination. There is no short-cut to mastery of a difficult subject like mathematics; it requires years of hard work and study.

As an example of what can happen when one has not learned enough of the subject, look at your own work. You appear to be handling Time as though it were a spatial dimension. You even end up, in several equations, with square seconds! Now, a yardstick will show that a foot up-and-down is the same as a foot East-and-West or a foot North-and-South. But where can you find a foot of time?

Please, dear boy, use your time to study the things you have yet to learn; don't waste it exploring a nonsensical cul-de-sac.

I will send you the outline on conic sections within the week.

Sincerely,
Isaac Barrow

1 February 1667
London

Dear Mr. Newton:

In reference to your letter of 14 January 1667, on the simplified algebraic formulae for the prediction of the paths of cannon balls, our staff has considered the matter and found that not only is your mathematics incomprehensibly confusing, but the results are highly inaccurate. Where, may I ask, did you get such data as that? On what experimental evidence do you base your deductions? The actual data we have on hand are not at all in agreement with your computations.

Men with more experience than yours, sir, have been working on this problem for several years, and nothing in our results suggests anything like what you put forth. Finding data is a matter of hard work and observation, not of sitting back in one's armchair and letting one's mind wander.

It would, indeed, be gratifying if our cannon would shoot as far as your equations say they should—but they do not. I am afraid we shall have to depend on our test results rather than on your theories. It is fact—not fancy—which is required in dealing with military operations.

Sincerely,
Edward Ballister-ffoulkes, Bart.
General, Army Artillery

3 February 1667
Cambridge

My dear Isaac:

I feel it would clear the air all round if we came to an understanding on this thing. Your continued insistence that I pay attention to theories which have no corroboration in the literature and are based on, to say the least, insufficient confirmatory data, is becoming tedious. Permit me, as a friend, to show you where, in your youthful impetuosity, you err.

In the first place, your contention that there is a similarity between the path of a cannon ball and the motion of the moon is patently ridiculous. I cannot imagine where you obtained such erroneous information. A cannon ball, when fired, strikes the earth within seconds; the moon, as anyone knows, has been in the sky since—according to Bishop Ussher—4004 B.C. Your contention that it remains held up by a force which pulls it down is verbal nonsense. Such a statement is semantically nothing but pure noise.

You state that the path followed by a cannon ball is parabolic in nature. How do you know? Can you honestly say that you have measured the path of a cannon ball? Have you traced its path, measured it, and analysed it mathematically? Can you prove analytically that it is not an hyperbola or part of an ellipse? Have you any data whatsoever to back up your statements, or any authority to which you can refer?

You make broad generalisations on the assumption that "every body is attracted equally to every other body"; that the earth attracts the moon in the same way that it attracts an apple or a cannon ball. Where is your data? You

have not, I dare say, measured the attraction between every body in the universe. Have you checked the variations in apples according to sugar content or the variations in cannon balls with reference to their diameters? If not, have you checked with any reliable authority to see if such work has already been done?

And where did you learn that anyone can just sit down and make up one's own mathematical systems? I am certain that I taught you no such thing. Mathematics, my boy, is based on logical interpretation of known facts. One cannot just go off half-cocked and make up one's own system. What would happen to mathematics as a science if anyone should just arbitrarily decide that two added to two yields five or that two multiplied by two equals one hundred?

You said that the whole thing came to you "in a flash" last summer when you were sitting under an apple tree and one of the fruit fell and struck you on the head. I suggest that you see a good physician; blows on the head often have queer effects.

If you have the data to prove your contentions, and can show how your postulates were logically deduced, then I will be very happy to discuss the problem with you.

As soon as you feel better, and are in a more reasonable frame of mind, I hope you will return to Cambridge and continue with the studies which you so badly need.

Sincerely,
Dr. Isaac Barrow

P.S.: It occurs to me that you may have meant your whole scheme as some sort of straight-faced pseudo-scientific joke, similar to that of another gentleman who bears our common Christian name.^[2] If so, I fail to comprehend it, but if you would be so kind as to explain it to me, I will be only too happy to apologise for anything I have said.

Is. Barrow

^[2] I have no idea who this might be. The reference is as obscure as the joke.—
S.H.

8 February 1667
London

Dear Mr. Newton:

I have tried to be patient with you, but your last letter was sulphurous beyond all reason. I may not, as you intimate, be qualified to judge the mathematical worth of your theories, but I can and do feel qualified to judge their practical worth.

For instance, you claim that the reason your computations did not tally with the data obtained from actual tests was that the cannon ball was flying through the air instead of a vacuum. By whose authority do you claim it would act thus-and-so in a vacuum? Do you have any data to substantiate your claim? Have you ever fired a cannon in a vacuum? For that matter have you ever fired a cannon?

What would you have our cannoneers do—use a giant-sized Von Guericke Air Pump to evacuate the space between the cannon and the target? I fear this would be, to say the very least, somewhat impractical and even dangerous under battle conditions. I presume a tube of some kind would have to be built between the enemy target and the gun emplacement, and I dare say that by that time the enemy would become suspicious and move the target.

You speak of "ideal conditions." My dear Newton, kindly keep it in mind that battles are never fought under ideal conditions; if they were, we should always win them.

If you wish to spend your time playing with airy-fairy mathematical abstrusities which have no basis in fact, that is perfectly all right with me. This is a free country, and no one proposes to dictate one's private life. However, I would appreciate it if you would do me the honor of not burdening my already overtaxed mind with such patent nonsense.

Otherwise, your work with the tabulations has been most excellent; I am enclosing a cheque for £20 to cover your work so far.

Sincerely,
Edward Ballister-ffoulkes, Bart.

12 February 1667
Cambridge

My dear Newton:

You have stretched the bonds of friendship too far. You have presumed upon me as a friend, and have quite evidently forgotten my position as head of the Department of Mathematics at this College.

The harsh language in which you have presumed to address me is too shocking for any self-respecting man to bear, and I, for one, refuse to accept such language from my social inferiors. As a Professor of Mathematics in one of the most ancient of universities, I will not allow myself or my position to be ridiculed by a young jackanapes who has no respect for those in authority or for his elders.

Your childish twaddle about glass prisms producing rainbows—a fact which any schoolboy knows—is bad enough; but to say that I am such a fool that I would refuse to recognise "one of the most important advances in mathematics" is beyond the pale of social intercourse.

Repeatedly during the last few months, you have attempted to foist off on me and others implausible and unscientific theories which have no basis whatever in fact and which no reputable scientist would be foolish enough to endorse. You are not a mathematician, sir; you are a charlatan and a mountebank!

You have no data; you admit working from "intuition" and hypotheses cut out of whole cloth; you cannot and will not give any reliable authority for any of your statements, nor will you accept the reliable statements of better men than yourself.

This unseemly behaviour forces me to exercise my prerogative and my authority in defence of the college and the university. I shall recommend to the authorities that you be refused readmission.

Isaac Barrow, Ph.D.
Department of Mathematics
Trinity College



16 February 1667

FROM: Ballistics Research Department,
Army Artillery

TO: Mr. Isaac Newton,
A.B., Woolsthorpe

SUBJECT: Reduction in personnel

ENCLOSURE: Cheque for £2/10s/6d

1. In view of the increased personality friction between yourself and certain members of this department, this department feels that it would be to our mutual disadvantage to continue retaining your services as mathematical consultant.
2. As of 16 February 1667 your employment is hereby terminated.
3. Enclosed is a cheque covering your services from 8 February 1667 to date.

By order of the Commanding General
Major Rupert Knowles,
Adjutant for
General Sir Edward Ballister-ffoulkes

12 March 1667
Whitehall

My dear fellow,

I am making this communication quite informal because of your equally informal method of—shall we say—getting my ear.

I have been nagged at day and night for the past three weeks by a certain lady of our mutual acquaintance; she wants me to "do something for that nice young Mr. Newton." She seems to think you are a man of some intelligence, so, more in order to stop her nagging tongue than anything else, I have personally investigated the circumstances of your set-to with the Ballistics Research Department.

I have spoken with General B-f, and looked over all the correspondence. Can't make head or tail of what you're talking about, myself, but that's beside the point. I did notice that your language toward the general became

somewhat acid toward the last. Can't actually say I blame you; the military mind can get a bit stiff at times.

And I'm afraid it's for that very reason that my hands are tied. You can't expect a man to run a kingdom if he doesn't back up his general officers, now, can you? Political history and the history of my own family show that the monarch is much better off if the Army and Navy are behind him.

So I'm afraid that, our little lady notwithstanding, I must refuse to interfere in this matter.

CAROLUS II REX

19 March 1667
Whitehall

Newton:

No! That is my final word!

C II R

21 May 1667
Cambridge

My dear Isaac,

Please accept the humble apologies of an old friend; I have erred, and I beg you, in your Christian charity, to forgive me. I did not realise at the time I wrote my last letter that you were ill and overwrought, and I have not written since then because of your condition.

As a matter of fact, when your dear mother wrote and told me of your unbalanced state of mind, I wanted desperately to say something to you, but the blessed woman assured me that you were in no condition for communication.

Believe me, my dear boy, had I had any inkling at all of how ill you really were, I should have shown greater forbearance than to address you in such an uncharitable manner. Forgive me for an ungoverned tongue and a hasty pen.

I see now that the error was mine, and it has preyed on my mind for these many weeks. I should have recognised instantly that your letters to me were the work of a feverish mind and a disordered imagination. I shall never forgive myself for not understanding it at the time.

As to your returning to the College for further study, please rest assured that you are most certainly welcome to return. I have spoken to the proper authorities, and, after an explanation of the nature of your illness, all barriers to your re-entrance have been dropped. Let me assure you that they are well aware of what such an unhappy affliction can do to unsettle a man temporarily, and they understand and sympathise.

I can well understand your decision not to continue your studies in mathematics; I feel that overwork in attempting something that was a bit beyond one of your tender years was as much responsible for your condition as that blow on the head from that apple. It is probably that which accounts for the fact that serious symptoms did not appear until late in March.

I feel that you will do well in whatever new field you may choose, but please do not work so hard at it.

Again, my apologies,

Isaac Barrow

3 April 1687
York

To His Grace,
The Most Reverend Dr. Isaac Newton,
By Divine Providence the Lord Archbishop of Canterbury
My Lord Archbishop,

May I take this opportunity to give you my earnest and heartfelt thanks for the copy of your great work which you so graciously sent; I shall treasure it always.

May I say, your Grace, that, once I had begun the book, I found it almost impossible to lay it down again. In truth, I could not rest until I had completed it, and now I feel that I shall have to read it again and again.

In my humble opinion, your Grace is the greatest theological logician since the Angelic Doctor, St. Thomas Aquinas. And as for beauty and lucidity of writing, it ranks easily with "*De Civitate Deo*" of St. Augustine of Hippo, and "*De Imitatione Christi*" of St. Thomas à Kempis.

I was most especially impressed by your reasoning on the mystical levitation of the soul, in which you show clearly that the closer a human soul approaches the perfection of God, the greater the attraction between that soul and the Spirit of God.

Surely it must be clear to anyone that the more saintly a man becomes, the greater his love for God, and the greater God's love for His servant; and yet, you have put it so clearly and concisely, with such beautifully worded theological reasoning, that it becomes infinitely more clear. It is almost as though one could, in some mystical way, measure the distance between an individual soul and the Holy Presence of God by the measure of the mutual love and attraction between that soul and the Blessed Trinity.

Your masterful analysis of the relative worthiness of those who have come to the Kingdom of Heaven on the Day of Judgment is almost awe-inspiring in its beauty. Even those souls which have been cleansed as white as snow by the forgiving Grace of God differ, one from another, and your comparison between those souls and a ray of pure white light striking a prism of clearest crystal is magnificent.

The Church has always held that those whose entire lives have been lived in holy purity and in the Grace of God would hold a higher place in Heaven than those whose lives have been sinful, even though God, in His graciousness, has forgiven them their sins. But no one had shown how this might be so. Your analogy, showing how the white light of the sun may be graded into the colours of the rainbow, ranging from red to violet, illustrates wonderfully how Our Lord will grade His chosen servants on the Last Day, when the sinful souls of the damned are cast into Darkness.

There are other instances, almost too numerous to mention, which show your immense theological understanding and deep thought. So thought-provoking are they that I would not dare to comment on them until I have re-read and studied them carefully, for fear I should show my own shallowness of mind.

It is my belief that your "*Principia Theologica*" will be read, honored, and loved by Christians for many centuries to come.

I shall, of course, write to you further and at greater length on this monumental work.

Praying for God's blessing on you and your work, and for the fullness of God's grace during the coming Eastertide,

I am,
Most faithfully yours,
William Sancroft
By Divine Permission
Lord Archbishop of York

THE END

Rights for this book: [Public domain in the USA](#).

This edition is published by Project Gutenberg.

Originally [issued by Project Gutenberg](#) on 2023-04-08. To support the work of Project Gutenberg, visit their [Donation Page](#).

This free ebook has been produced by [GITenberg](#), a program of the [Free Ebook Foundation](#). If you have corrections or improvements to make to this ebook, or you want to use the source files for this ebook, visit [the book's github repository](#). You can support the work of the Free Ebook Foundation at their [Contributors Page](#).

*** END OF THE PROJECT GUTENBERG EBOOK GENTLEMEN:
PLEASE NOTE ***

Updated editions will replace the previous one—the old editions will be renamed.

Creating the works from print editions not protected by U.S. copyright law means that no one owns a United States copyright in these works, so the Foundation (and you!) can copy and distribute it in the United States without permission and without paying copyright royalties. Special rules, set forth in the General Terms of Use part of this license, apply to copying and distributing Project Gutenberg™ electronic works to protect the PROJECT GUTENBERG™ concept and trademark. Project Gutenberg is a registered trademark, and may not be used if you charge for an eBook, except by following the terms of the trademark license, including paying royalties for use of the Project Gutenberg trademark. If you do not charge anything for copies of this eBook, complying with the trademark license is very easy. You may use this eBook for nearly any purpose such as creation of derivative works, reports, performances and research. Project Gutenberg eBooks may be modified and printed and given away—you may do practically ANYTHING in the United States with eBooks not protected by U.S. copyright law. Redistribution is subject to the trademark license, especially commercial redistribution.

START: FULL LICENSE

THE FULL PROJECT GUTENBERG LICENSE

PLEASE READ THIS BEFORE YOU DISTRIBUTE OR USE THIS WORK

To protect the Project Gutenberg™ mission of promoting the free distribution of electronic works, by using or distributing this work (or any other work associated in any way with the phrase “Project Gutenberg”), you agree to comply with all the terms of the Full Project Gutenberg™ License available with this file or online at www.gutenberg.org/license.

Section 1. General Terms of Use and Redistributing Project Gutenberg™ electronic works

1.A. By reading or using any part of this Project Gutenberg™ electronic work, you indicate that you have read, understand, agree to and accept all the terms of this license and intellectual property (trademark/copyright) agreement. If you do not agree to abide by all the terms of this agreement, you must cease using and return or destroy all copies of Project Gutenberg™ electronic works in your possession. If you paid a fee for obtaining a copy of or access to a Project Gutenberg™ electronic work and you do not agree to be bound by the terms of this agreement, you may obtain a refund from the person or entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. “Project Gutenberg” is a registered trademark. It may only be used on or associated in any way with an electronic work by people who agree to be bound by the terms of this agreement. There are a few things that you can do with most Project Gutenberg™ electronic works even without complying with the full terms of this agreement. See paragraph 1.C below. There are a lot of things you can do with Project Gutenberg™ electronic works if you follow the terms of this agreement and help preserve free future access to Project Gutenberg™ electronic works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation (“the Foundation” or PGLAF), owns a compilation copyright in the collection of Project Gutenberg™ electronic works. Nearly all the individual works in the collection are in the public domain in the United States. If an individual work is unprotected by copyright law in the United States and you are

located in the United States, we do not claim a right to prevent you from copying, distributing, performing, displaying or creating derivative works based on the work as long as all references to Project Gutenberg are removed. Of course, we hope that you will support the Project Gutenberg™ mission of promoting free access to electronic works by freely sharing Project Gutenberg™ works in compliance with the terms of this agreement for keeping the Project Gutenberg™ name associated with the work. You can easily comply with the terms of this agreement by keeping this work in the same format with its attached full Project Gutenberg™ License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern what you can do with this work. Copyright laws in most countries are in a constant state of change. If you are outside the United States, check the laws of your country in addition to the terms of this agreement before downloading, copying, displaying, performing, distributing or creating derivative works based on this work or any other Project Gutenberg™ work. The Foundation makes no representations concerning the copyright status of any work in any country other than the United States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate access to, the full Project Gutenberg™ License must appear prominently whenever any copy of a Project Gutenberg™ work (any work on which the phrase “Project Gutenberg” appears, or with which the phrase “Project Gutenberg” is associated) is accessed, displayed, performed, viewed, copied or distributed:

This eBook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at www.gutenberg.org. If you are not located in the United States, you will have to check the laws of the country where you are located before using this eBook.

1.E.2. If an individual Project Gutenberg™ electronic work is derived from texts not protected by U.S. copyright law (does not contain a notice indicating that it is posted with permission of the copyright holder), the work can be copied and distributed to anyone in the United States without paying any fees or charges. If you are redistributing or providing access to a work with the phrase “Project Gutenberg” associated with or appearing on the work, you must comply either with the requirements of paragraphs 1.E.1 through 1.E.7 or obtain permission for the use of the work and the Project Gutenberg™ trademark as set forth in paragraphs 1.E.8 or 1.E.9.

1.E.3. If an individual Project Gutenberg™ electronic work is posted with the permission of the copyright holder, your use and distribution must comply with both paragraphs 1.E.1 through 1.E.7 and any additional terms imposed by the copyright holder. Additional terms will be linked to the Project Gutenberg™ License for all works posted with the permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg™ License terms from this work, or any files containing a part of this work or any other work associated with Project Gutenberg™.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg™ License.

1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg™ work in a format other than “Plain Vanilla ASCII” or other format used in the official version posted on the official Project Gutenberg™ website (www.gutenberg.org), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the work in its original “Plain Vanilla ASCII” or other form. Any alternate format must include the full Project Gutenberg™ License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg™ works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg™ electronic works provided that:

- You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg™ works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg™ trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, “Information about donations to the Project Gutenberg Literary Archive Foundation.”
- You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg™ License. You must require such a user to return or destroy all copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg™ works.
- You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.
- You comply with all other terms of this agreement for free distribution of Project Gutenberg™ works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg™ electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from the Project Gutenberg Literary Archive Foundation, the manager of the Project

Gutenberg™ trademark. Contact the Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread works not protected by U.S. copyright law in creating the Project Gutenberg™ collection. Despite these efforts, Project Gutenberg™ electronic works, and the medium on which they may be stored, may contain “Defects,” such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or damaged disk or other medium, a computer virus, or computer codes that damage or cannot be read by your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the “Right of Replacement or Refund” described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg™ trademark, and any other party distributing a Project Gutenberg™ electronic work under this agreement, disclaim all liability to you for damages, costs and expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH 1.F.3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to

you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you 'AS-IS', WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg™ electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg™ electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg™ work, (b) alteration, modification, or additions or deletions to any Project Gutenberg™ work, and (c) any Defect you cause.

Section 2. Information about the Mission of Project Gutenberg™

Project Gutenberg™ is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the

efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the assistance they need are critical to reaching Project Gutenberg™'s goals and ensuring that the Project Gutenberg™ collection will remain freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg™ and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation information page at www.gutenberg.org.

Section 3. Information about the Project Gutenberg Literary Archive Foundation

The Project Gutenberg Literary Archive Foundation is a non-profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation's EIN or federal tax identification number is 64-6221541. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state's laws.

The Foundation's business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887. Email contact links and up to date contact information can be found at the Foundation's website and official page at www.gutenberg.org/contact

Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation

Project Gutenberg™ depends upon and cannot survive without widespread public support and donations to carry out its mission of increasing the number of public domain and licensed works that can be freely distributed in machine-readable form accessible by the widest array of equipment

including outdated equipment. Many small donations (\$1 to \$5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit www.gutenberg.org/donate.

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: www.gutenberg.org/donate

Section 5. General Information About Project Gutenberg™ electronic works

Professor Michael S. Hart was the originator of the Project Gutenberg™ concept of a library of electronic works that could be freely shared with anyone. For forty years, he produced and distributed Project Gutenberg™ eBooks with only a loose network of volunteer support.

Project Gutenberg™ eBooks are often created from several printed editions, all of which are confirmed as not protected by copyright in the U.S. unless a

copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our website which has the main PG search facility:
www.gutenberg.org.

This website includes information about Project Gutenberg™, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.