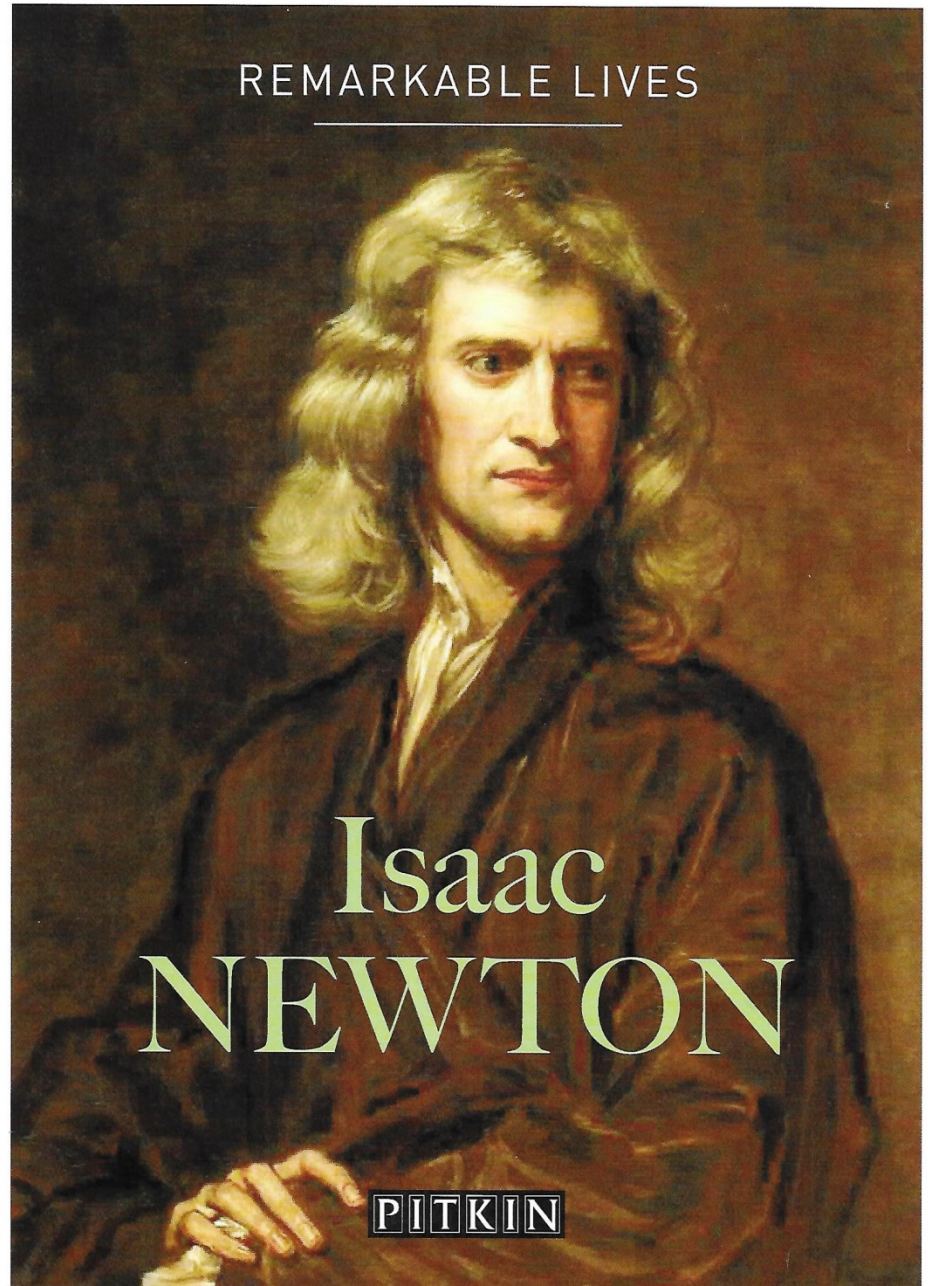


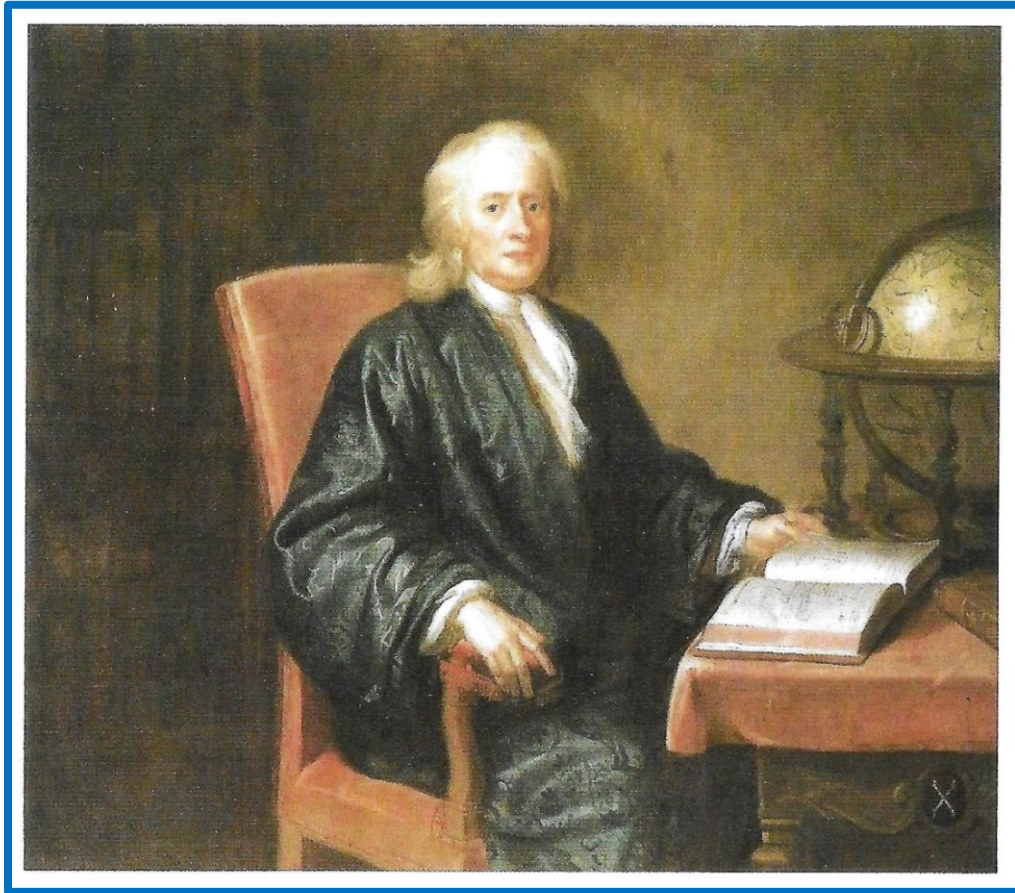
ISAAC NEWTON

*Life, Labours
and Legacy*

Robin Wilson
&
Raymond Flood



Contents



Turbulent times

Early years

Cambridge

Restoration science

Plague & fire

Newton & the apple

Gravity & the *Principia*

Optics

Mathematics

Alchemy

Divinity

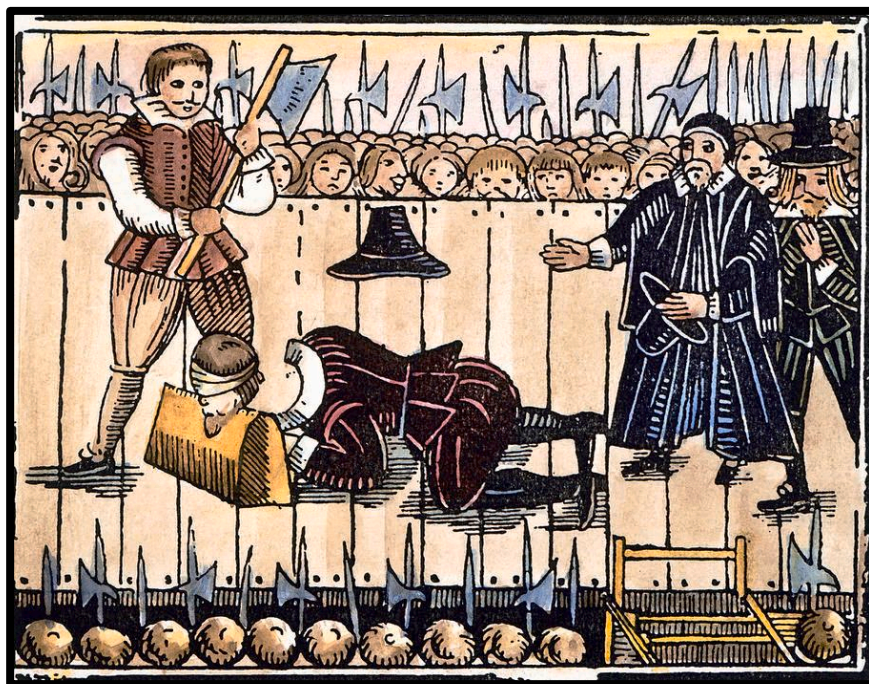
London

Final years

Newton's legacy

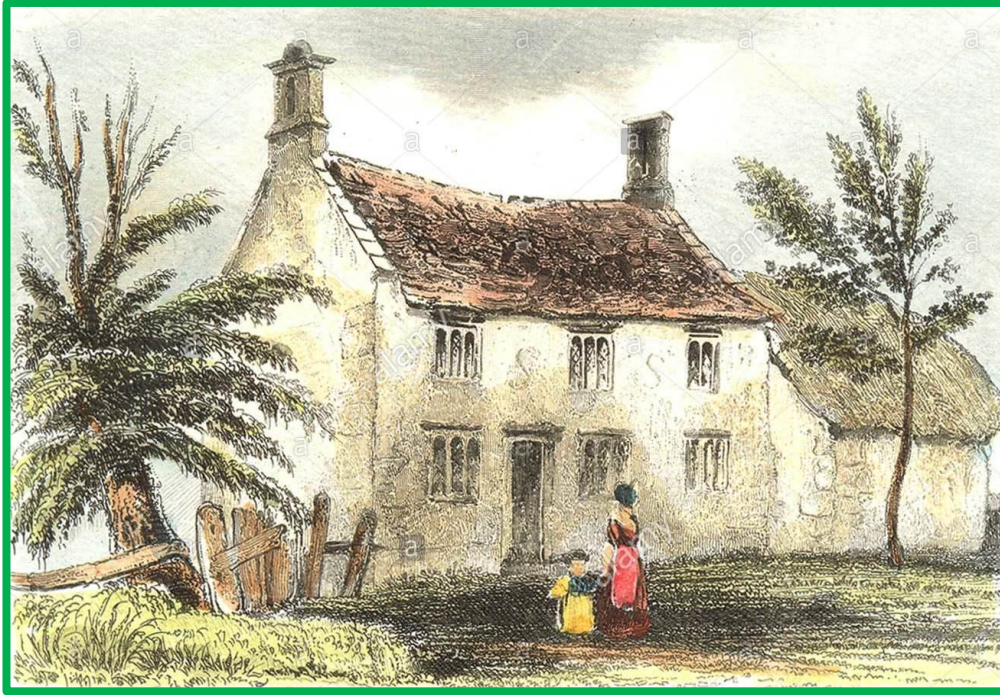


Turbulent times (1640-1649)



Turbulent times (1650-1660)

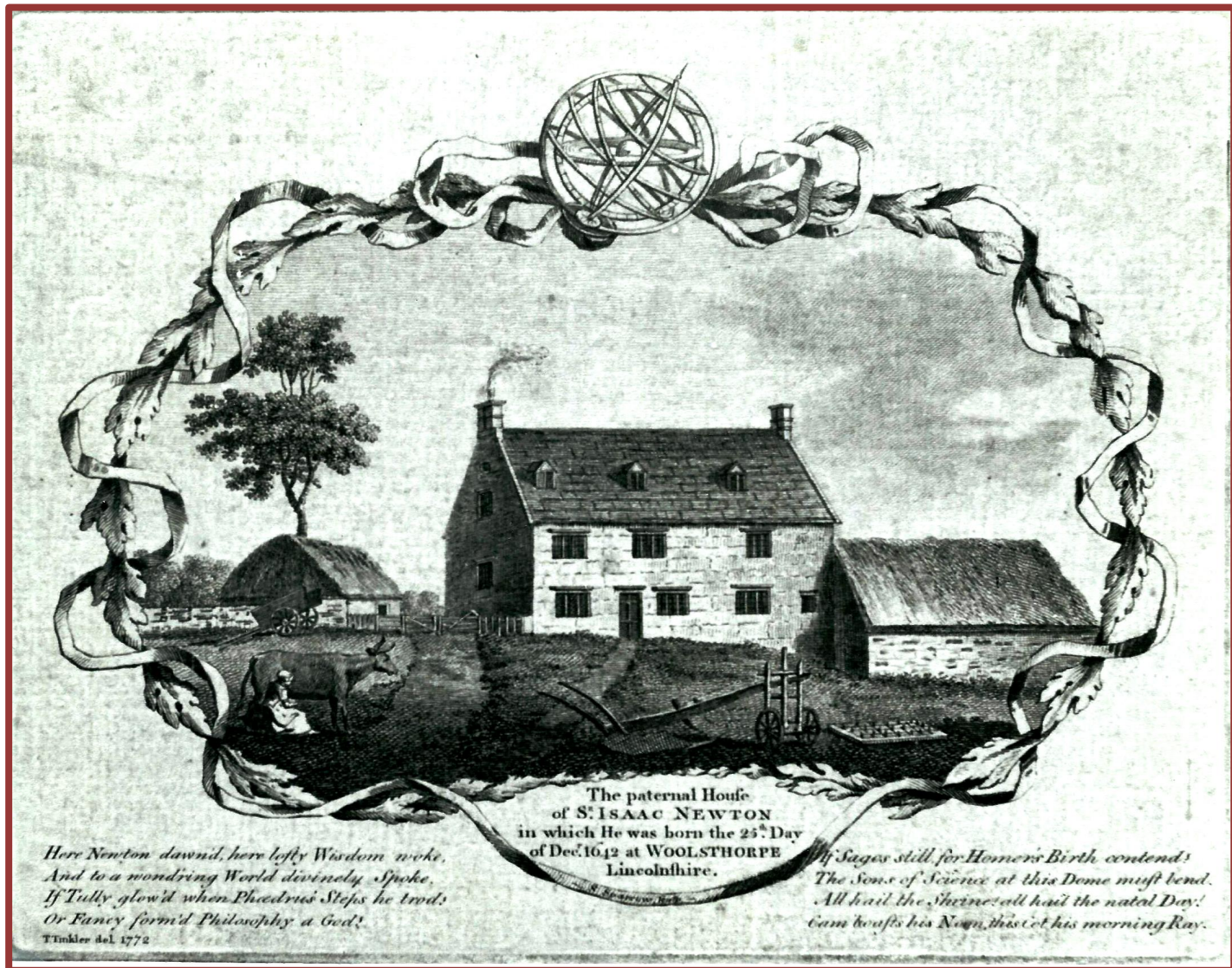




Woolsthorpe Manor



Woolsthorpe Manor



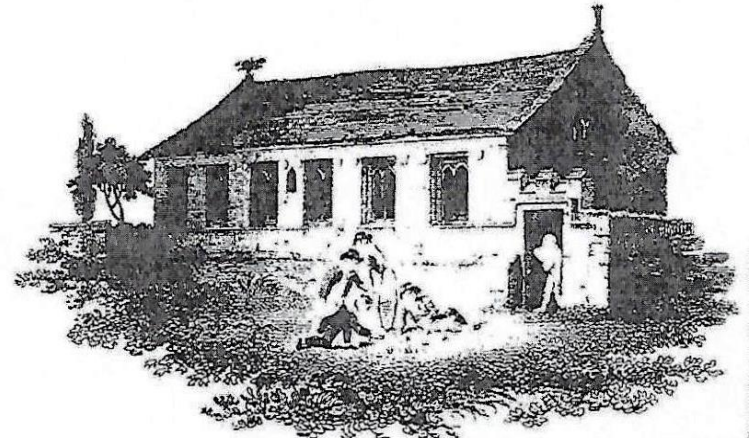
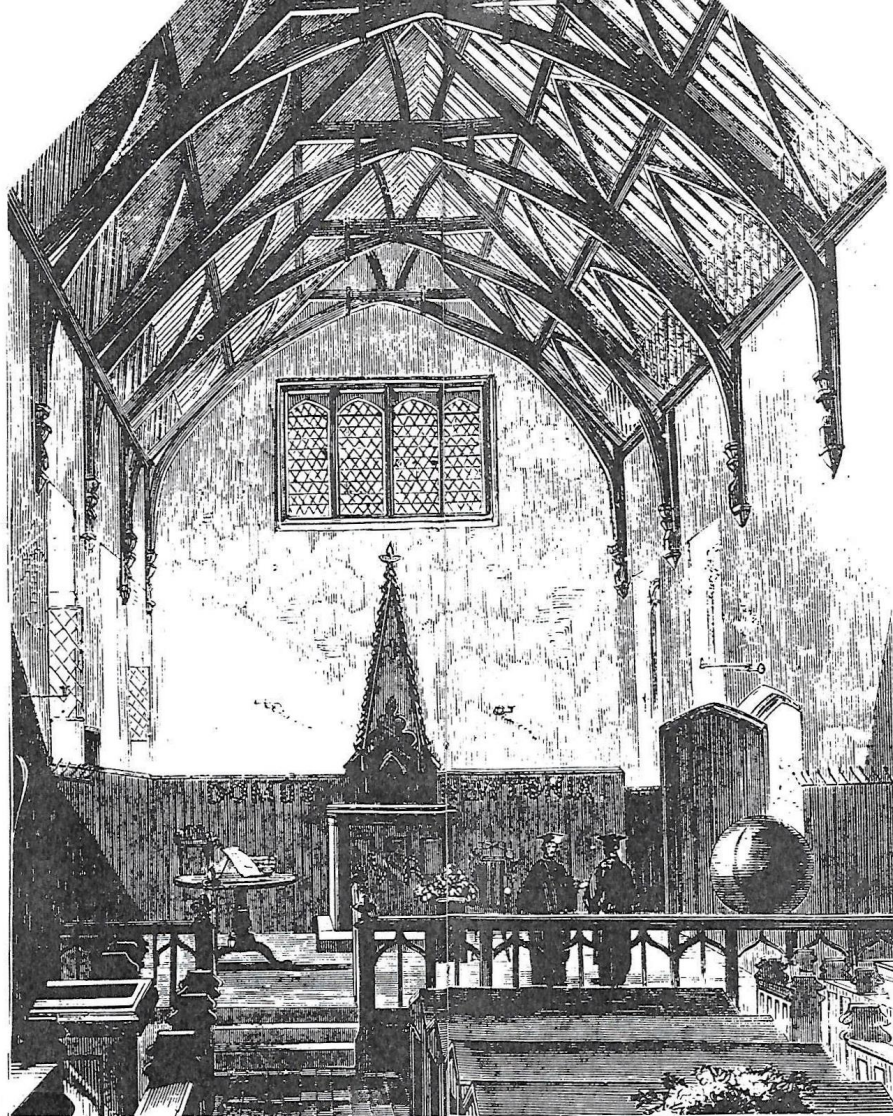
The paternal House
of S. ISAAC NEWTON
in which He was born the 25th Day
of Dec. 1642 at WOOLSTHORPE
Lincolnshire.

*Here Newton dawn'd, here lofty Wisdom woke,
And to a wondrous World divinely Spoke,
If Tully glow'd when Phœdrus Steps he trod;
Or Fancy form'd Philosophy a God!*

T. Tinkler del. 1772

*My Sages still for Homer's Birth contend;
The Sons of Science at this Dome must bend.
All hail the Shrine! all hail the natal Day!
Can boasts his Name, tho' 't is his morning Ray.*

Grantham



Newton's statue in Grantham

Back to Woolsthorpe Manor



An undergraduate at Cambridge

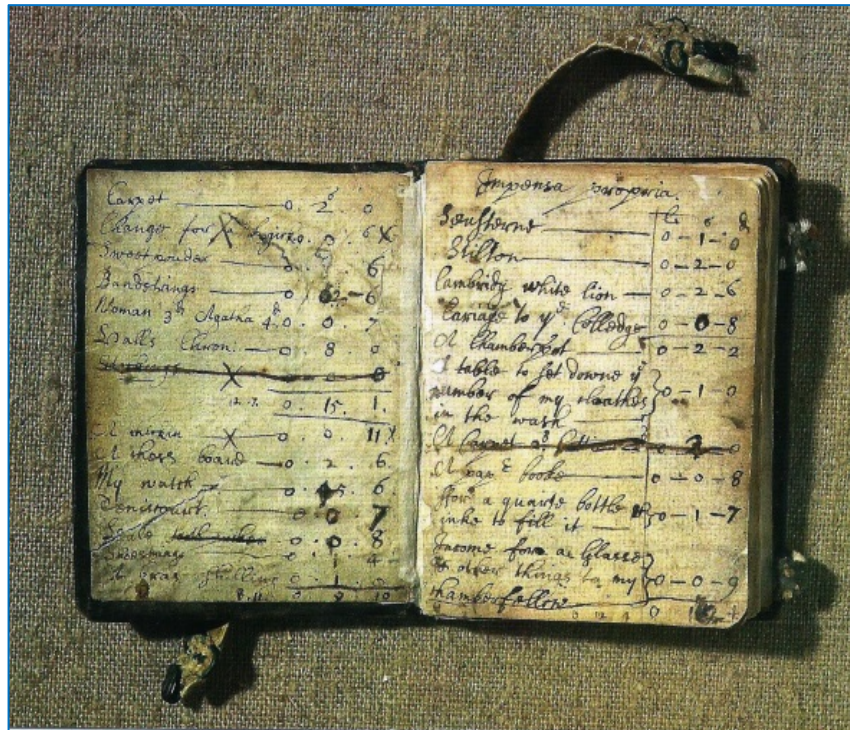


Roubiliac's statue



Trinity College Great Court

Cambridge

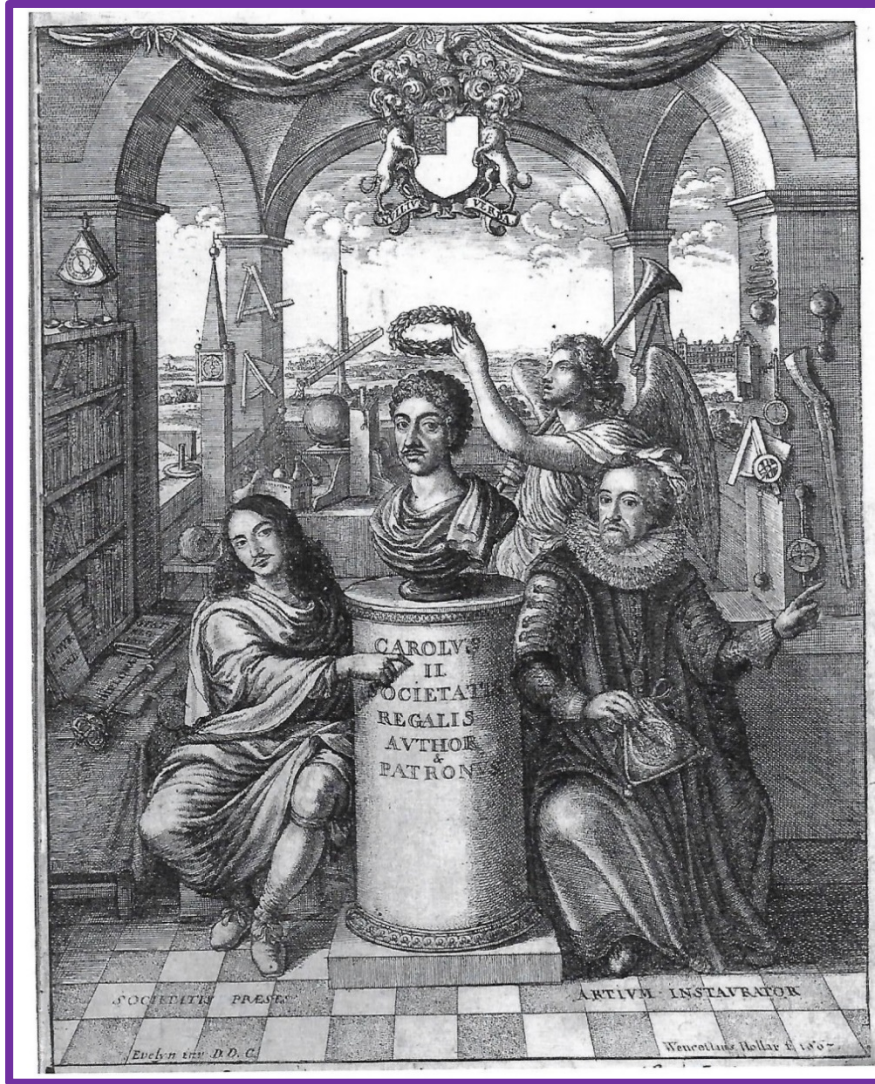


Newton's notebook

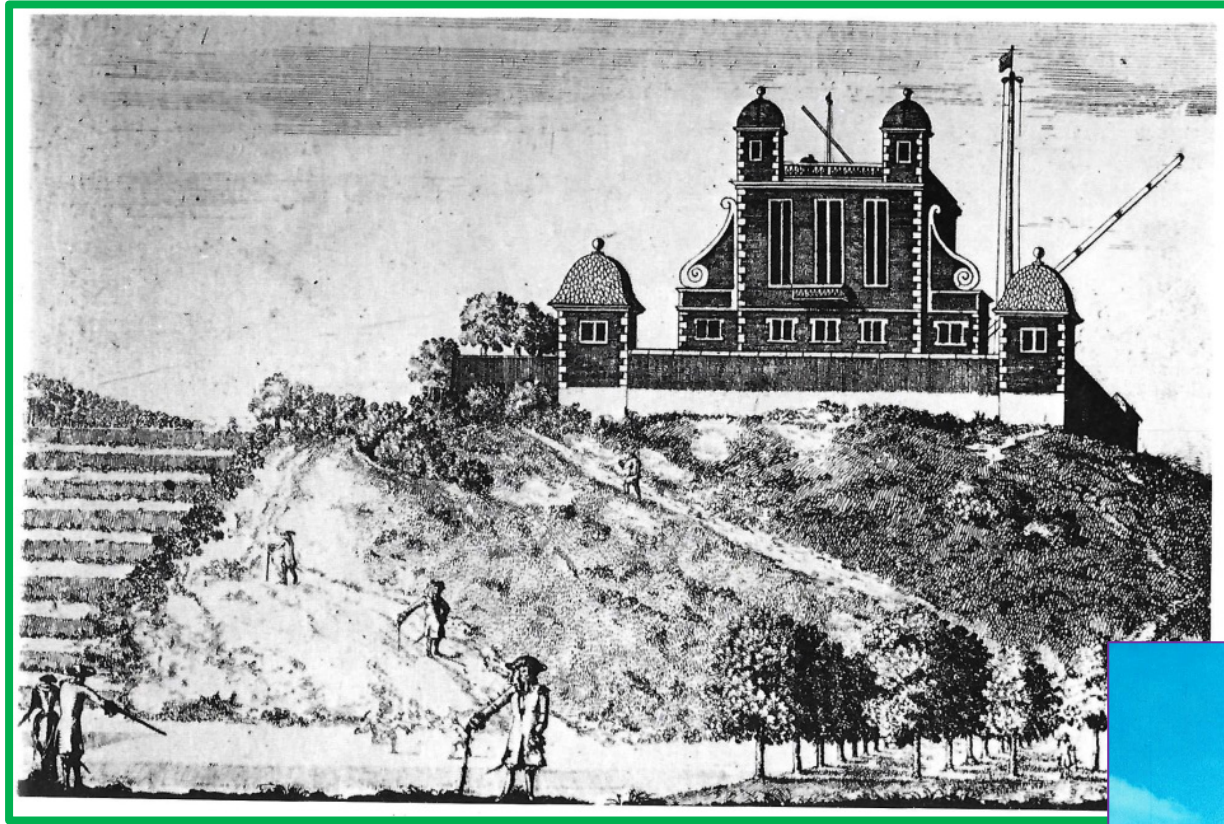
Mathematical bridge



The Royal Society

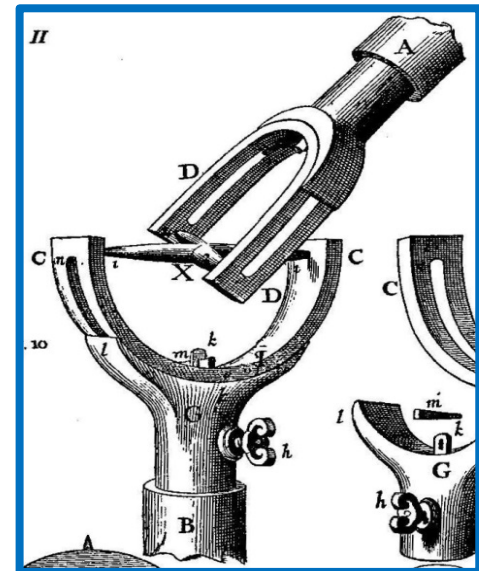
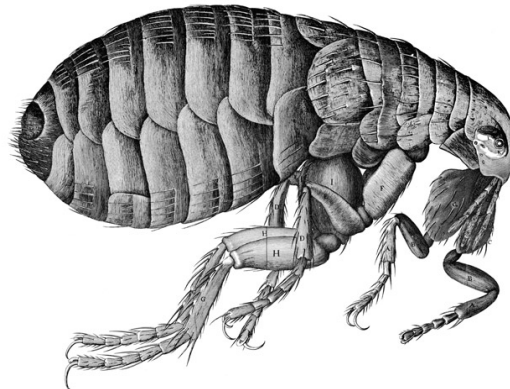
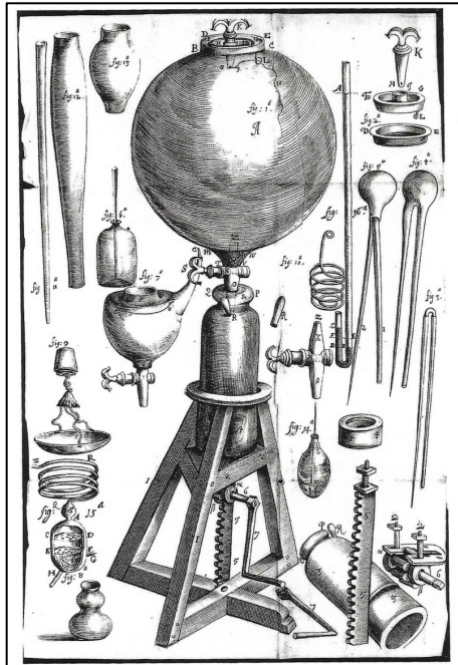
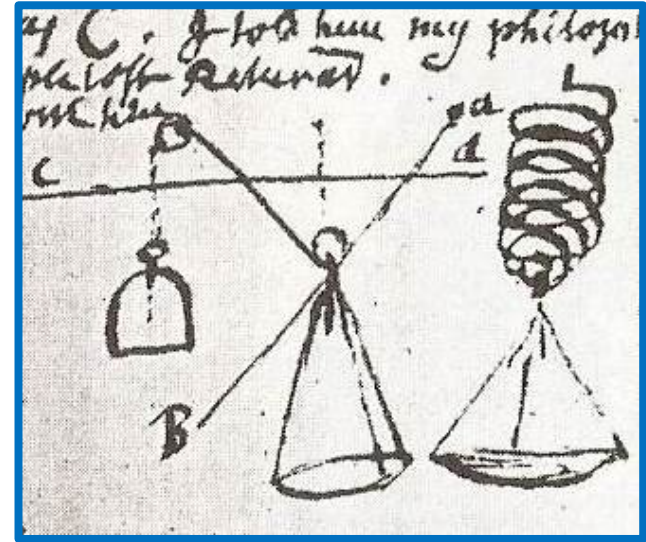


The Royal Observatory at Greenwich





Boyle & Hooke



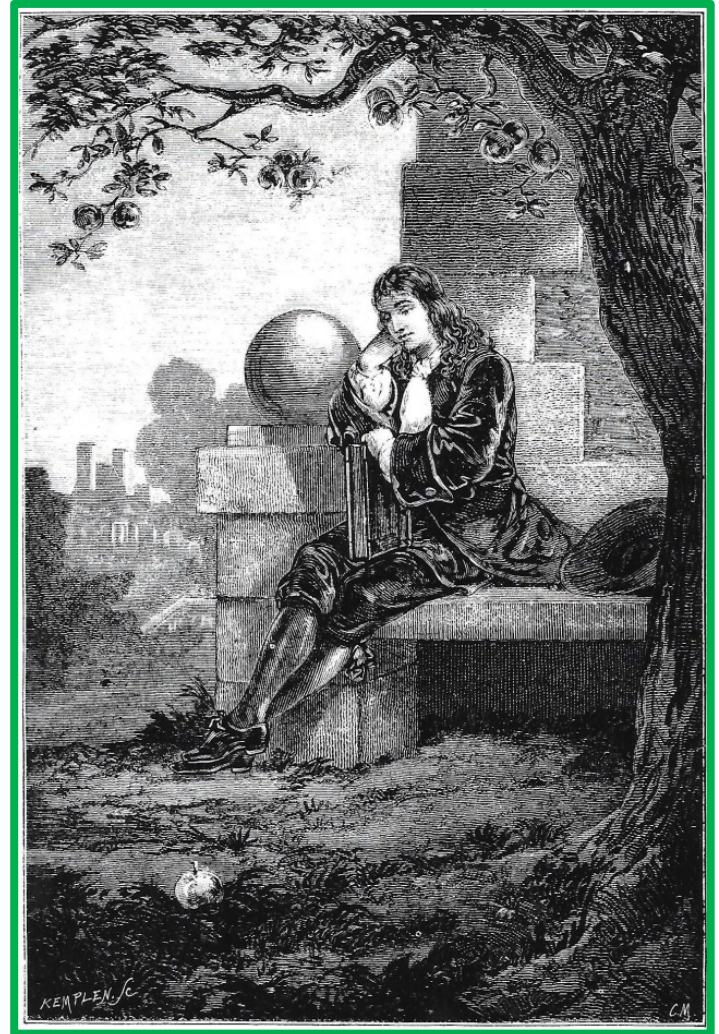
The Great Plague

Surely the loude grones of raving sicke men, the struggling panges of soules departing – Servants crying out for maisters: wives for husbands: parents for children, children for their mothers. Here he should have met same frantically running to knock up Sextons: there others fearfully sweating with Coffins to steal dead bodies.

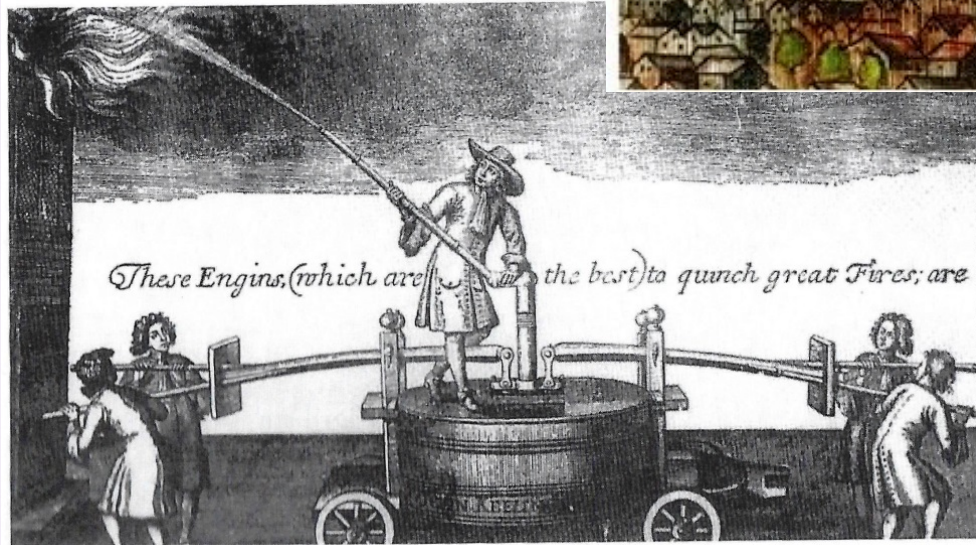




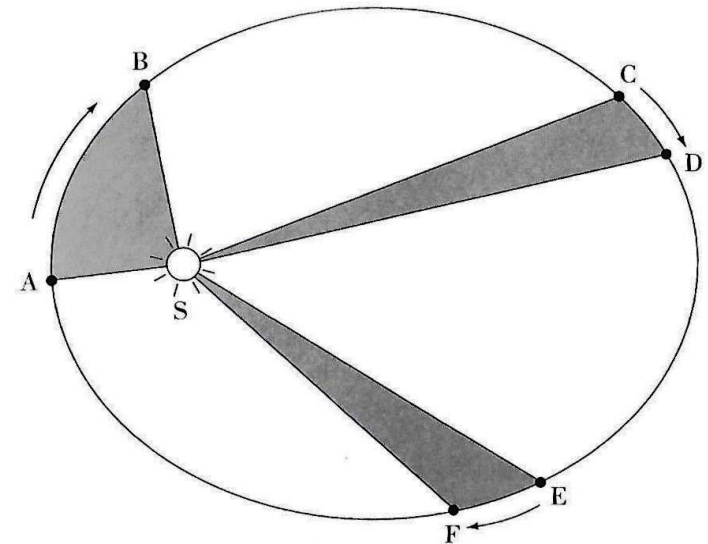
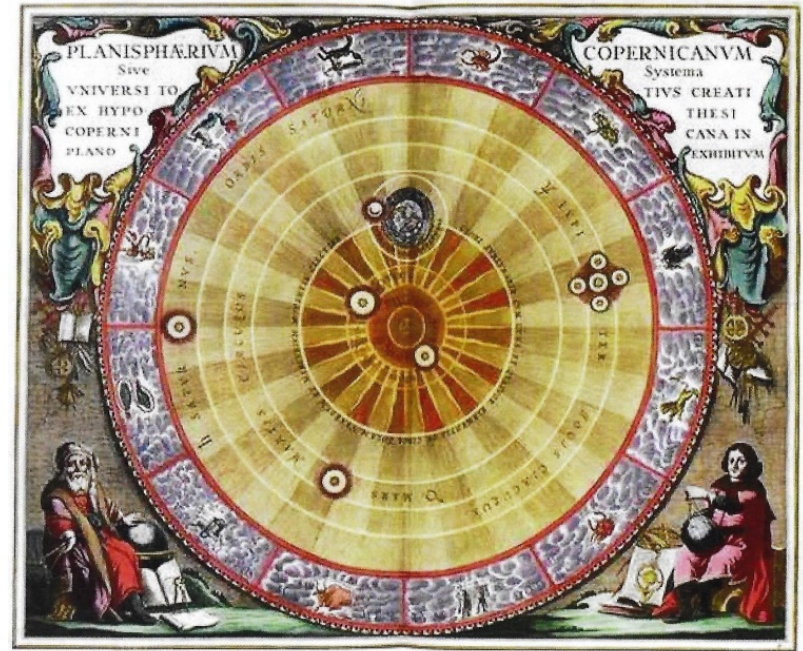
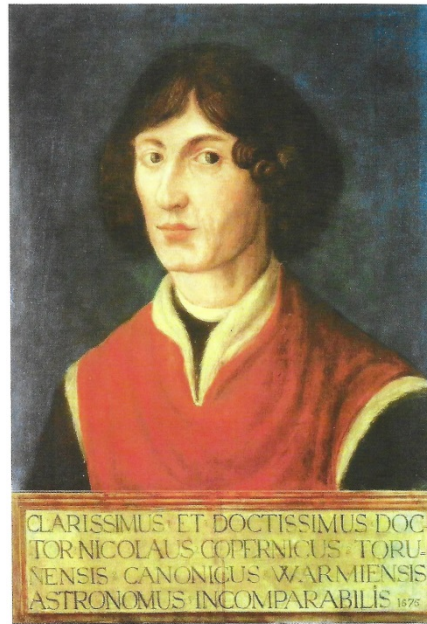
Back in Lincolnshire



The Great Fire of London



The new astronomy





Newton & the apple



after dinner, the weather being warm, we went into the garden, & drank tea under the shade of some apple-trees; only he, & my self. amidst other discourse, he told me, he was just in the same situation, as when formerly, the notion of gravitation came into his mind. why sh^d. that apple always descend perpendicularly to the ground, thought he to himself; occasioned by the fall of an apple, as he sat in a contemplative mood.

Inverse-square law: The force of attraction between two objects varies as the product of their masses, and inversely as the square of the distance between them.



Newton & the apple



Newton's
Principia
Mathematica
(1687)

PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA.

Autore ꝑ S. NEWTON, Trin. Coll. Cantab. Soc. Matheseos
Professore Lucasiano, & Societatis Regalis Sodali.

IMPRIMATUR.
S. PEPYS, Reg. Soc. PRÆSES.
Julii 5. 1686.

LONDINI,
Jussu Societatis Regiæ ac Typis Josephi Streater. Prostat apud
plures Bibliopolas. Anno MDCLXXXVII.

Newton's *Principia Mathematica*

[50]

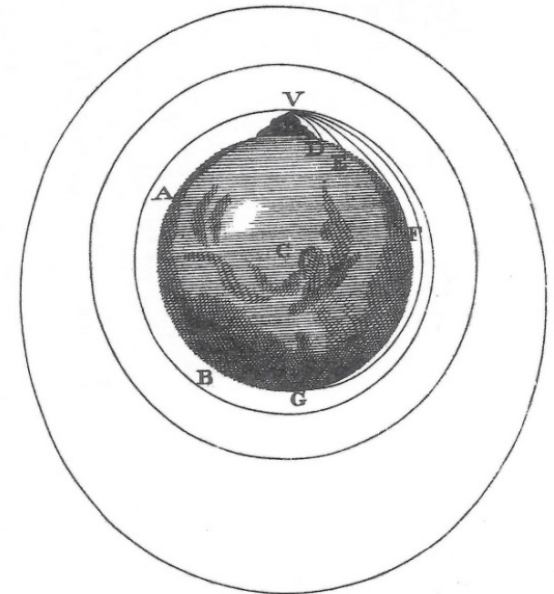
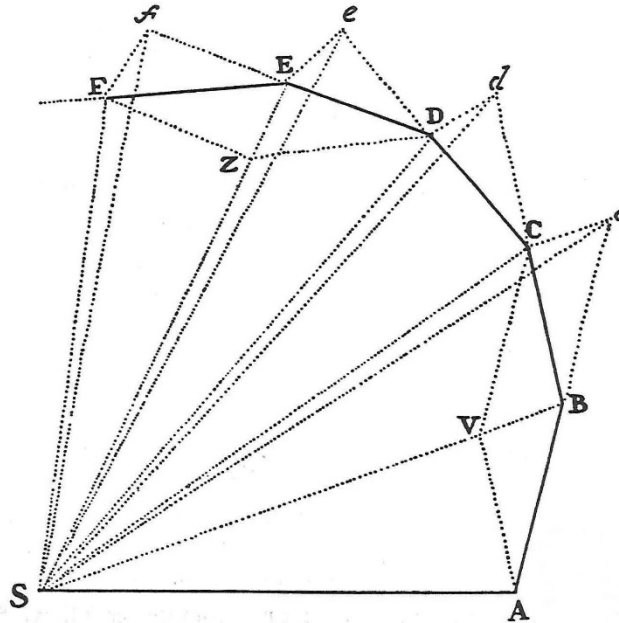
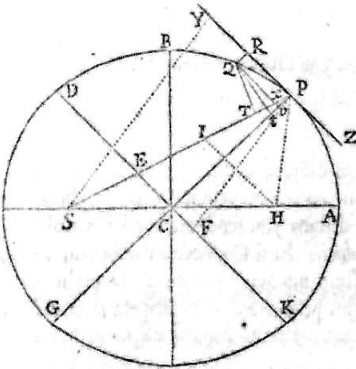
S E C T. III.

De motu Corporum in Conicis Sectionibus excentricis.

Prop. XI. Prob. VI.

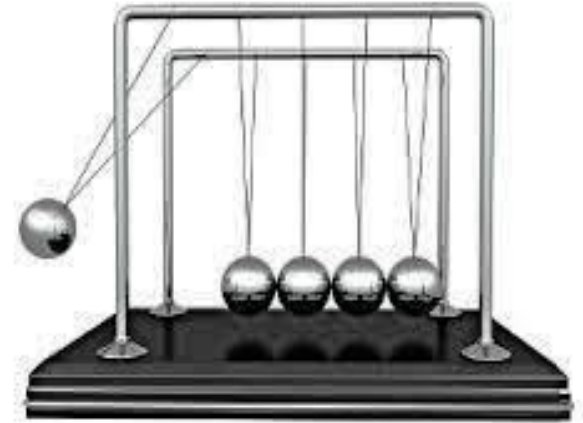
*Revolvatur corpus in Ellipsi: Requiritur lex vis centripetæ tenden-
tis ad umbilicum Ellipticos.*

Esto Ellipseos superioris umbilicus S. Agatur SP secans Ellipseos tum diametrum DK in E, tum ordinatim applicatam QP in x, & compleatur parallelogrammum QxPR. Patet EP æqualem esse semi-axi majori AC, eo quod acta ab altero Ellipseos umbilico H linea HI ipsi EC parallela, (ob æquales CS, CH) æquantur ES, EI, adeo ut EP semisumma sit ipsarum PS, PI, id est (ob parallelas HI, PR & angulos æquales IP R, HP Z) ipso- rum PS, PH, quæ conjunctim axem rotum 2 AC adæquant. Ad SP demittatur perpendicularis QT, & Ellipseos latere recto principali (seu 2 BC quad.) dicto L, erit $L \times QR$ ad $L \times Pw$ ut QR ad Pw ; id est ut PE (seu AC) ad PC: & $L \times Pw$ ad GwP ut L ad Gw ; &

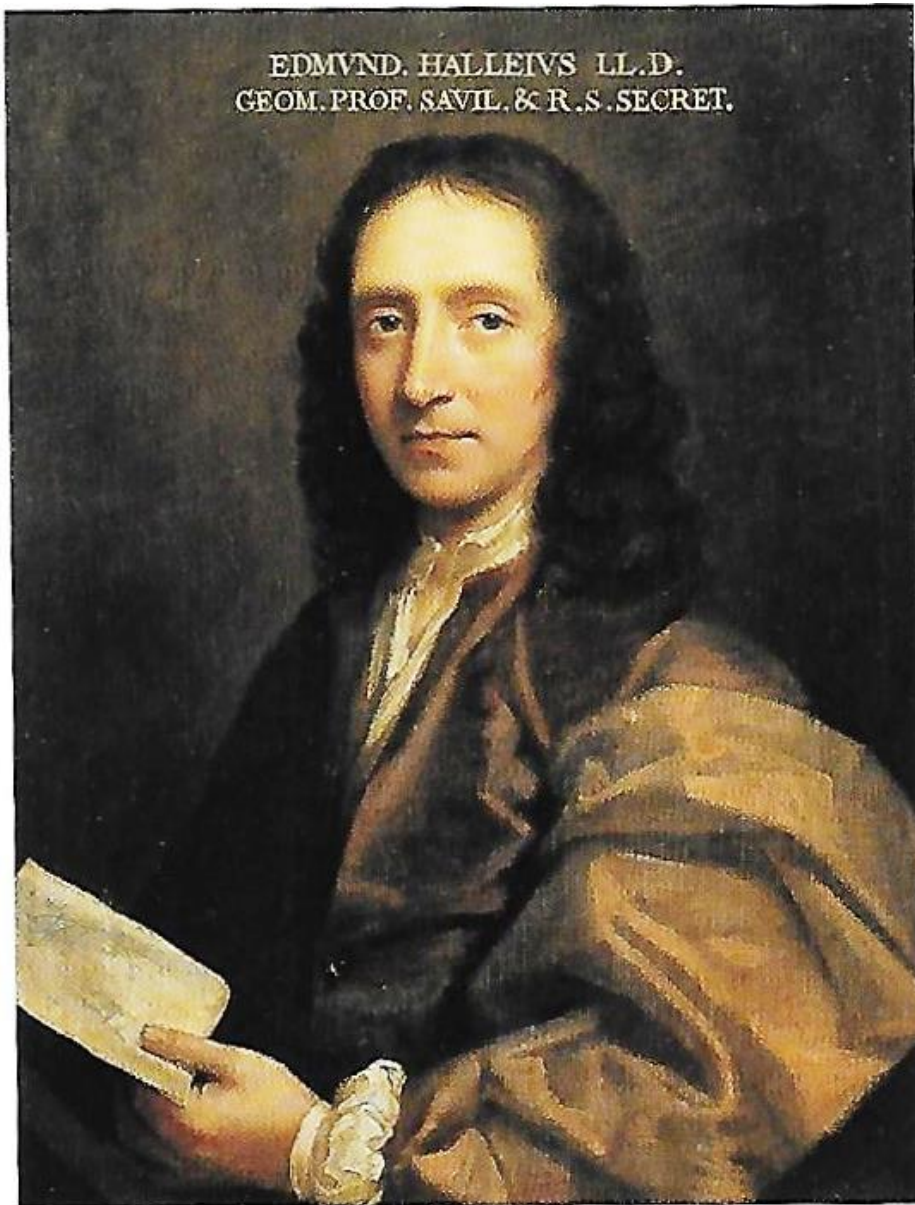


Newton's laws of motion

1. Every body continues in its state of rest, or of uniform motion in a straight line, unless it is compelled to change that state by forces impressed on it.
2. Any change of motion is proportional to the force, and is made in the direction of the line in which the force is applied.
3. To any action there is an equal and opposite reaction.



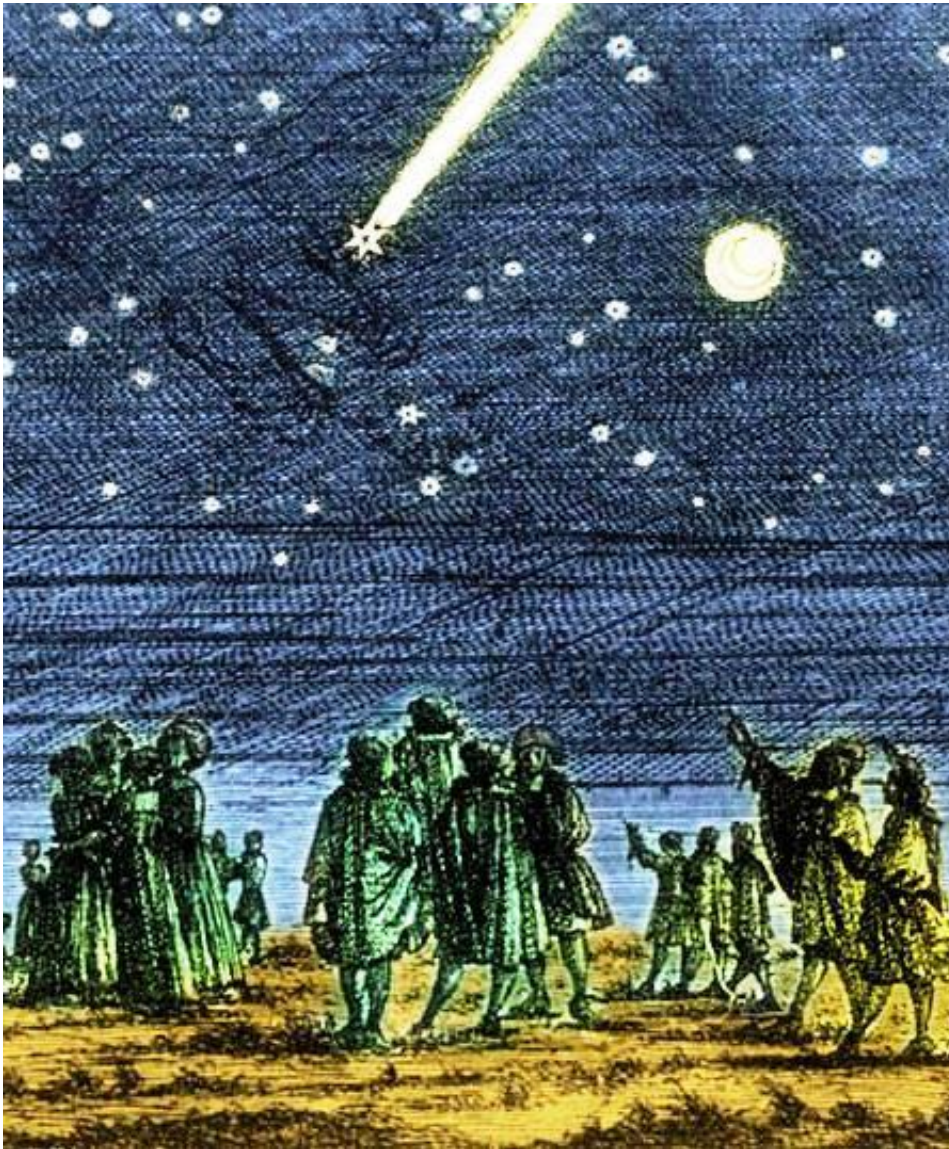
Why science teachers
should not be given
playground duty.



Edmond Halley



Halley's comet

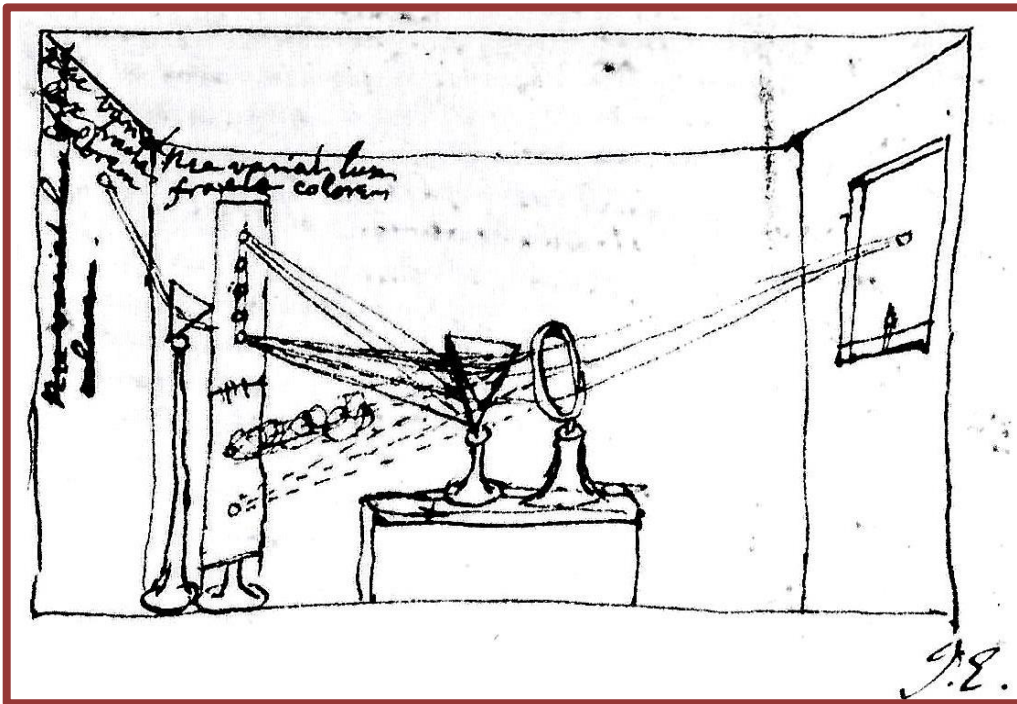
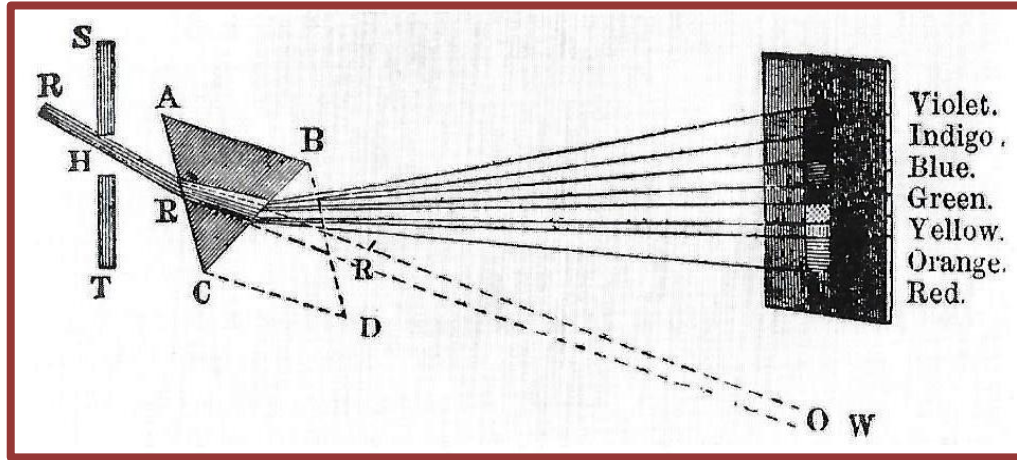


Halley's comet 1682

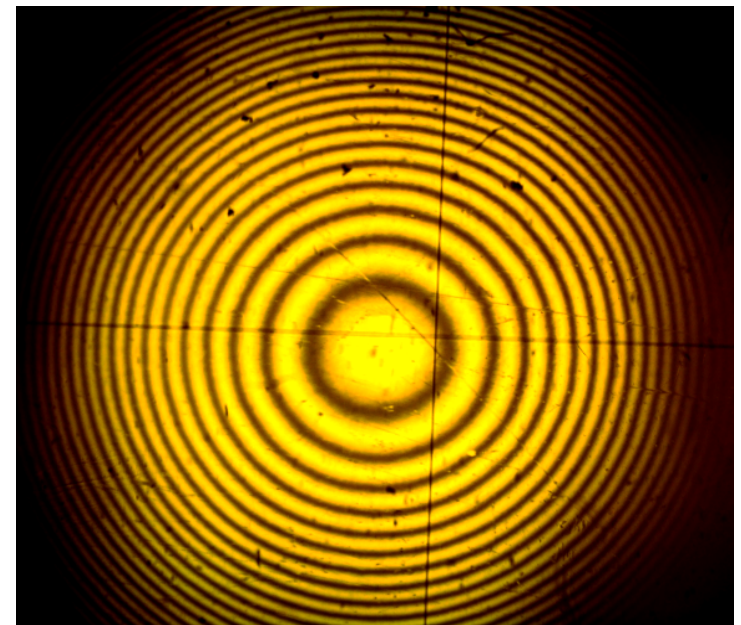
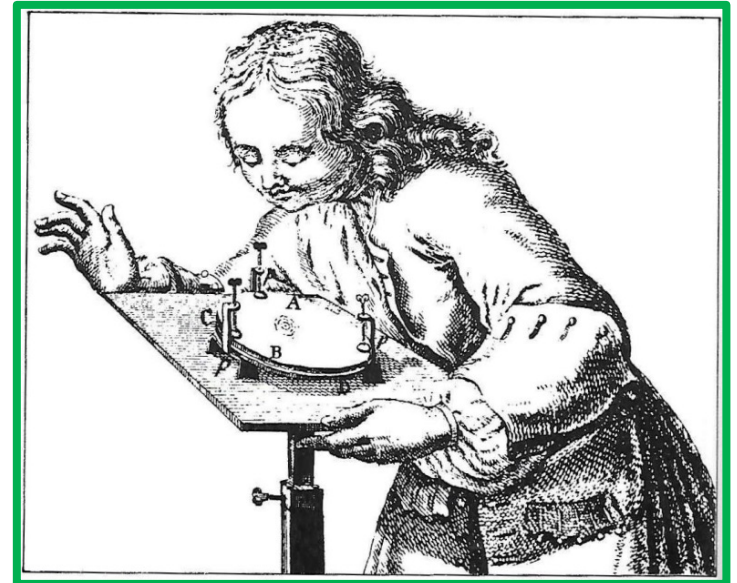
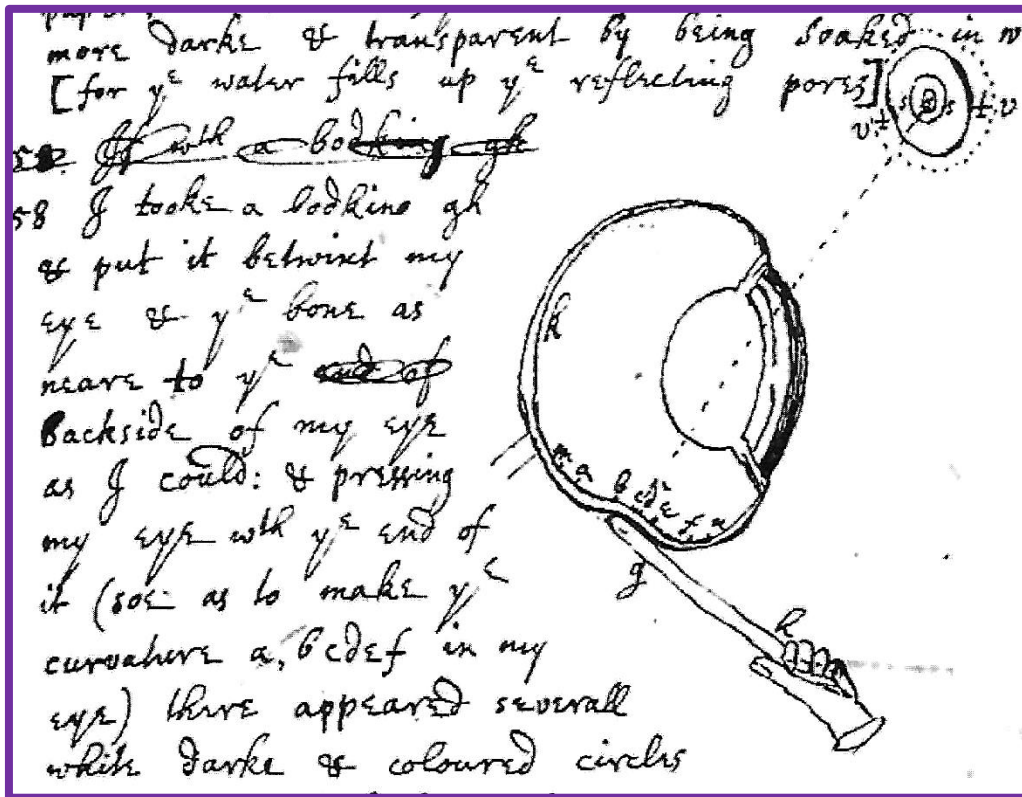


Halley's comet 1066

Optics

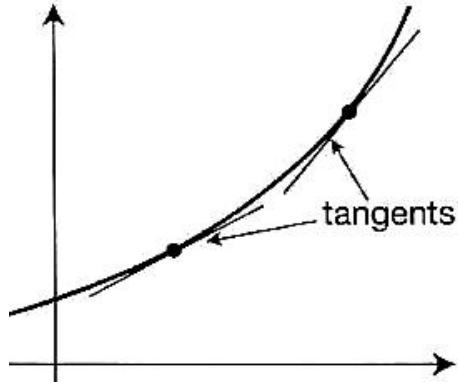


Optics

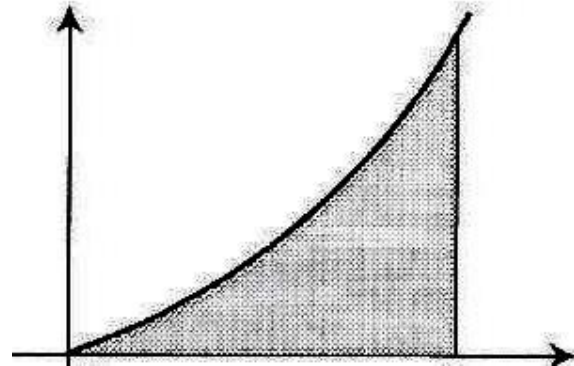


rationall.				Musical			
12.	12,000000.	12.	$\frac{1}{1}$	360	360,000000	G	
11.	10,882687.	11- $\frac{1}{12}$	$\frac{11}{12}$	384	381,406678	*	
10.	9,966900.	10- $\frac{1}{12}$	$\frac{10}{12}$	405	404,086406	F	
9.	8,843887.	9- $\frac{1}{12}$	$\frac{9}{12}$	432	428,114481	E	
8.	8,135863.	8+ $\frac{1}{12}$	$\frac{8}{12}$	450	453,571578	*	
7.	7,099550.	7+ $\frac{1}{12}$	$\frac{7}{12}$	480	480,542367	D	
6.	5,902237.	6- $\frac{1}{12}$	$\frac{6}{12}$	512	509,116882	*	
5.	4,980450.	5- $\frac{1}{12}$	$\frac{5}{12}$	540	539,390559	C	
4.	3,863137.	4- $\frac{1}{12}$	$\frac{4}{12}$	576	571,464474	B	
3.	3,156413.	3+ $\frac{1}{12}$	$\frac{3}{12}$	600	609,445467	*	
2.	2,099100.	2+ $\frac{1}{12}$	$\frac{2}{12}$	640	641,446973	A	
1.	1,117313.	1+ $\frac{1}{12}$	$\frac{1}{12}$	675	679,589514	*	
0.	0,000000.	0.	1	720	720,000000	G	
Musical half notes				Musical half notes			

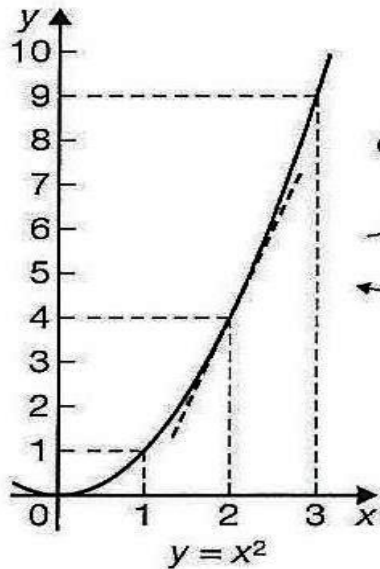
Mathematics: Calculus



differentiation

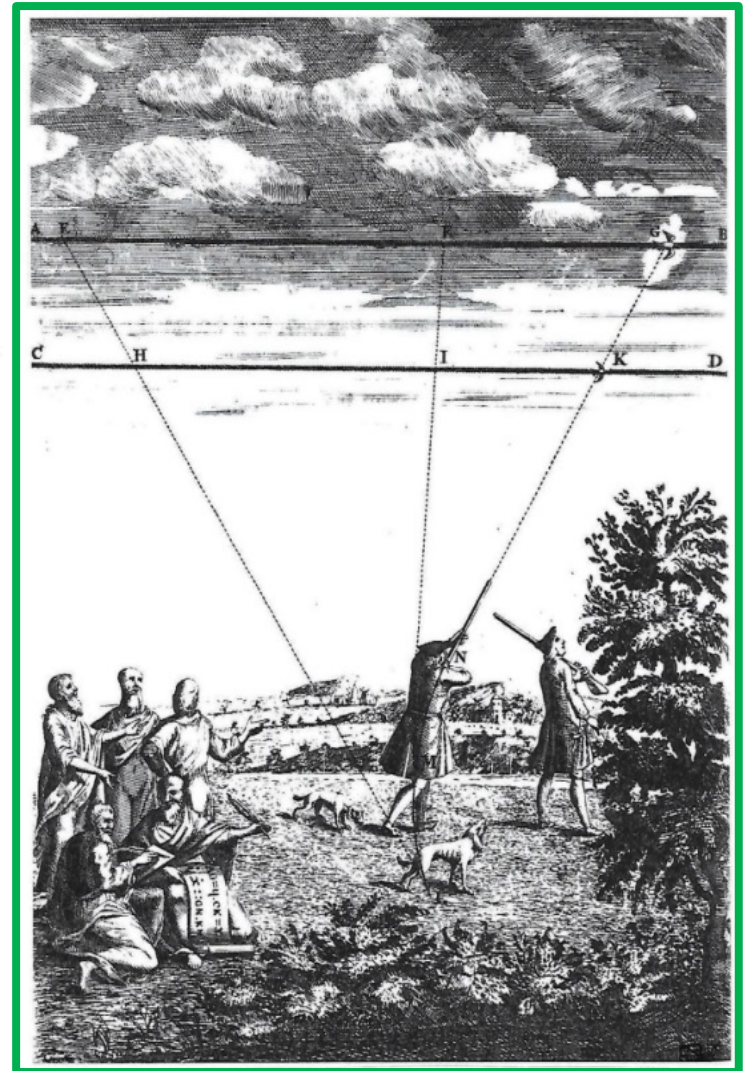
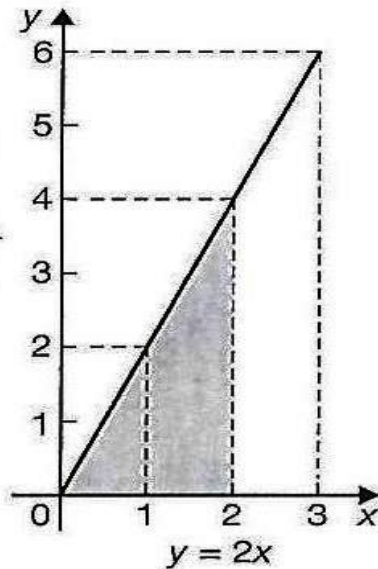


integration

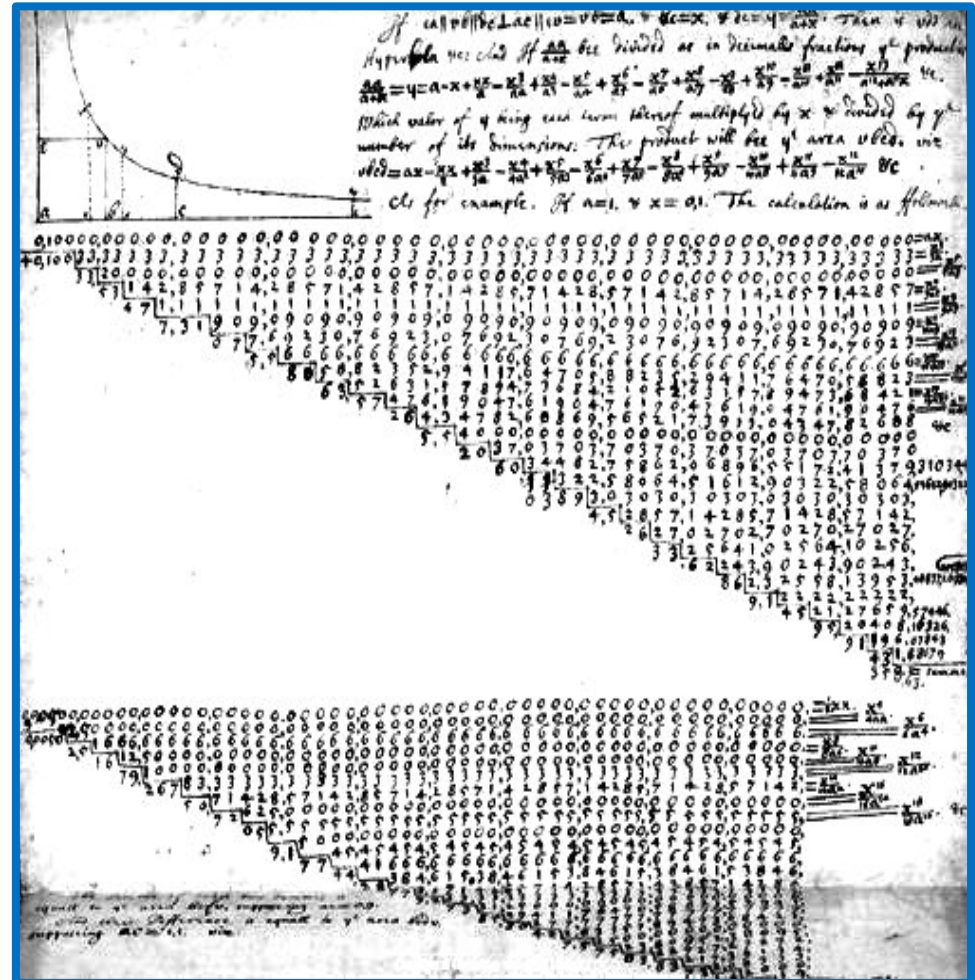
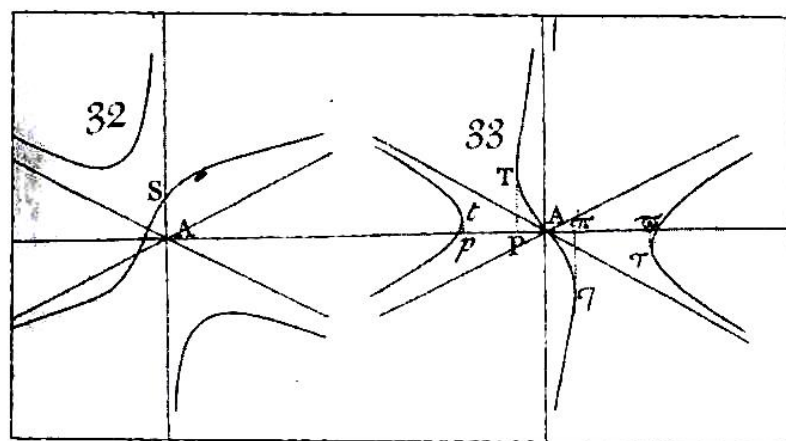
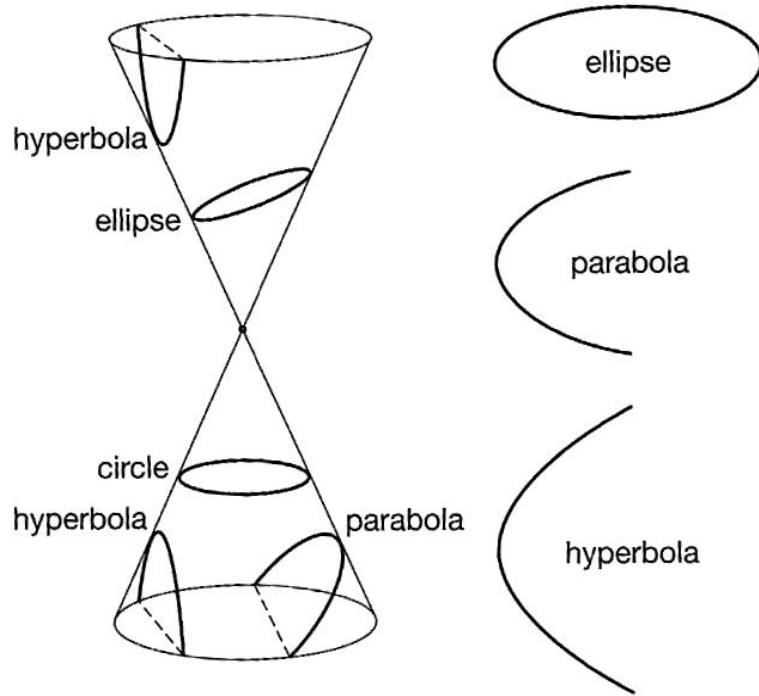


differentiate
to find
tangents

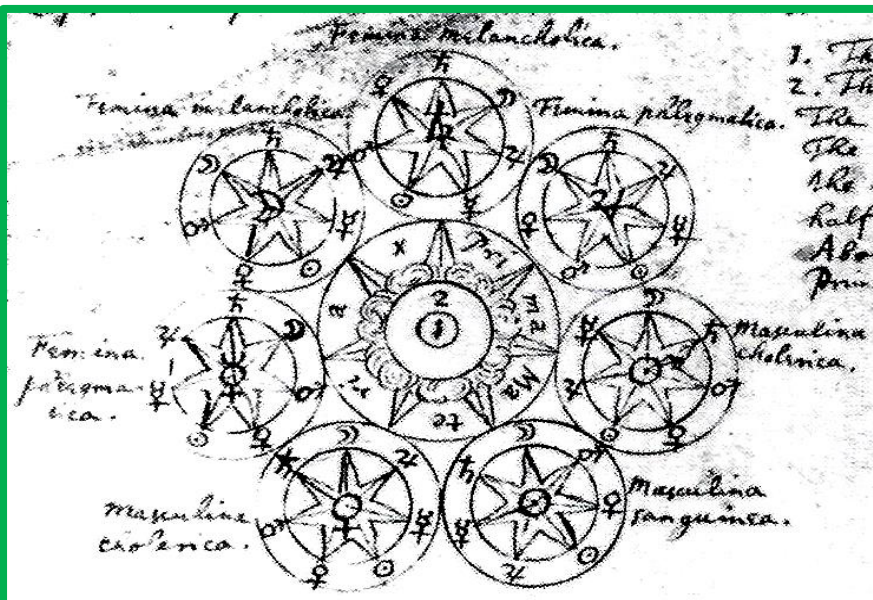
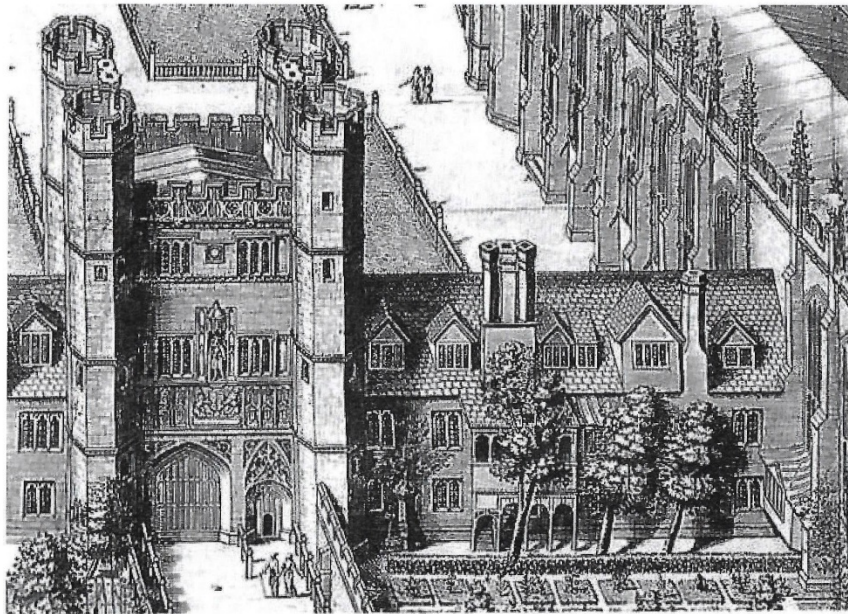
integrate
to find
areas



Mathematics: Curves

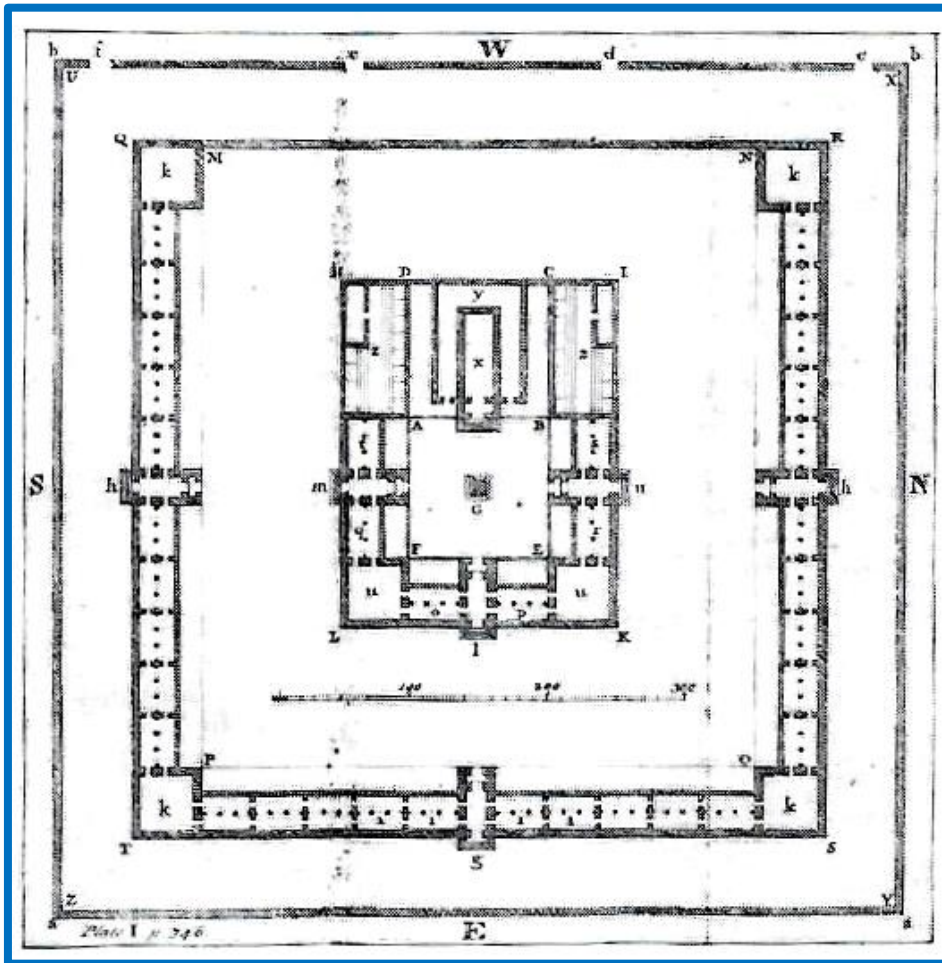


Alchemy



Gold, ☉, ♀, +, ✕, ✕, ✕, ✕
Silver ☽, ♀, ☽, ✕, ✕, ✕
Copper ♀, ✕,
Iron ♂
Tin ♄, ☽
Lead ♄, ♄, ✕, ☽
Mercury ☿, ☿, ☿, ☿, ☿, ☿, ☿, ☿
Antimony ♂
Sulphur ♀, ☿
Sublimation ☿, ♀,
Vitriol ☽, ☽
Salt ☽, ✕
Niter ☽, ☽, ☿, ☿, ☽
Tartar ☿, ☿, ☿, ☿, ☿, ☿
Sol clymoniake ✕, ✕, ✕, ✕, ✕, ✕
Rehab, Alchimia.

Divinity



OBSERVATIONS UPON THE PROPHECIES OF *DANIEL*, AND THE APOCALYPSE OF St. *J O H N*.

In TWO PARTS.

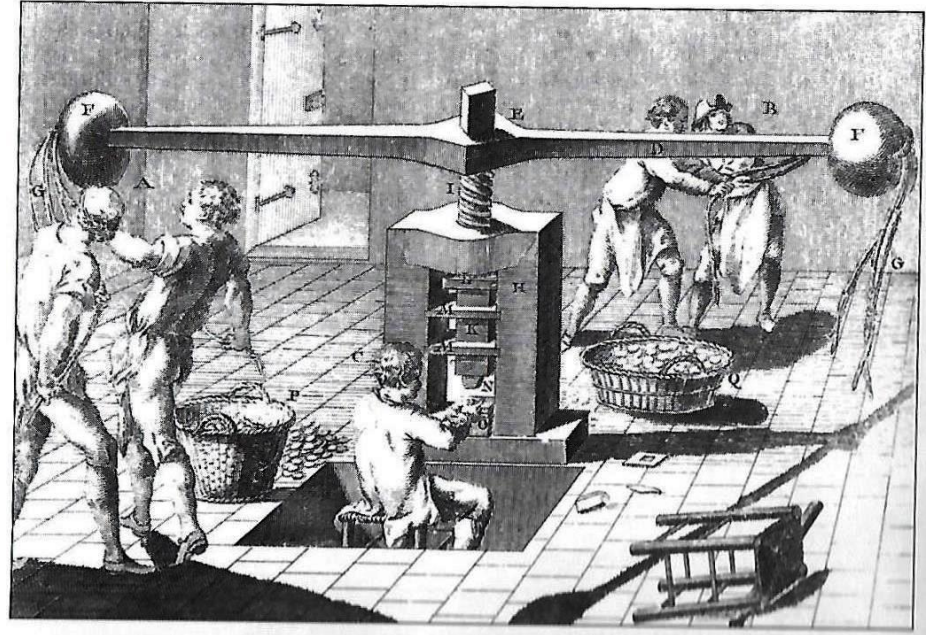
By Sir *ISAAC NEWTON*.

D U B L I N:

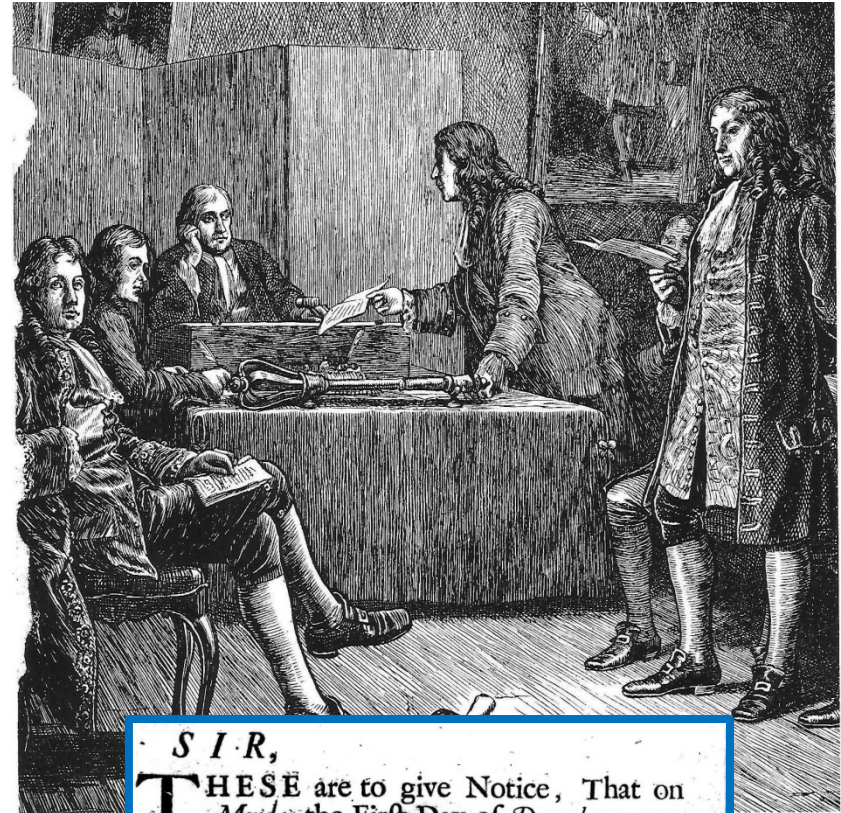
Printed by S. POWELL,

For GEORGE RISK, at the *Shakespeare's-Head*,
GEORGE EWING, at the *Angel and Bible*, and
WILLIAM SMITH, at the *Hercules*, in *Dame's-Street*,
Bookellers, M. DCC. XXXIII.

London: The Royal Mint



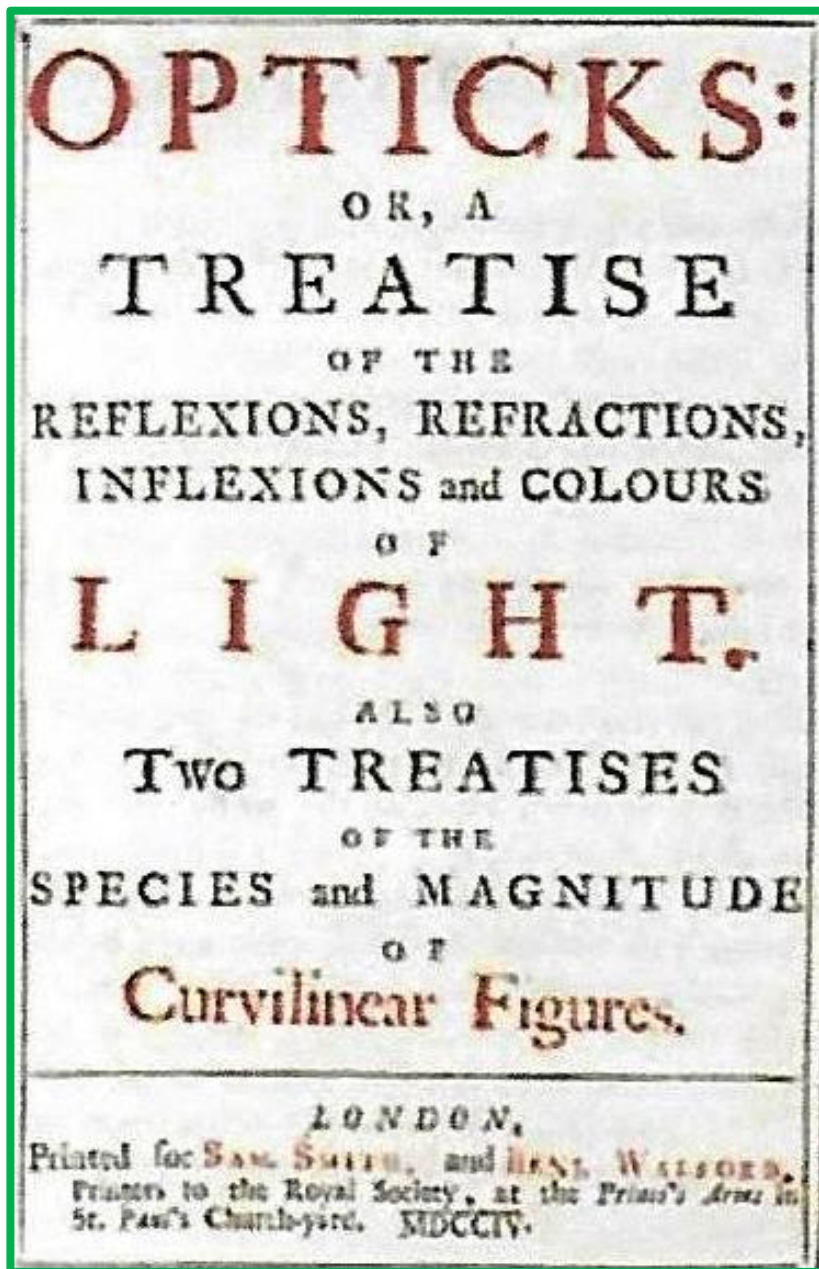
London: The Royal Society



S I R,
THESÈ are to give Notice, That on
Monday the First Day of December 1712,
(being the next after St. ANDREW'S
DAY) the Council and Officers of the ROY-
AL SOCIETY are to be Elected for the
Year ensuing; at which ELECTION
your Prefence is expected, at Nine of the
Clock in the Forenoon, at the House of
the ROYAL SOCIETY, in *Crane Court,*
Fleet Street.

To
Thomas Isted Esq; *J. Newton P.R.S.*

Achievements



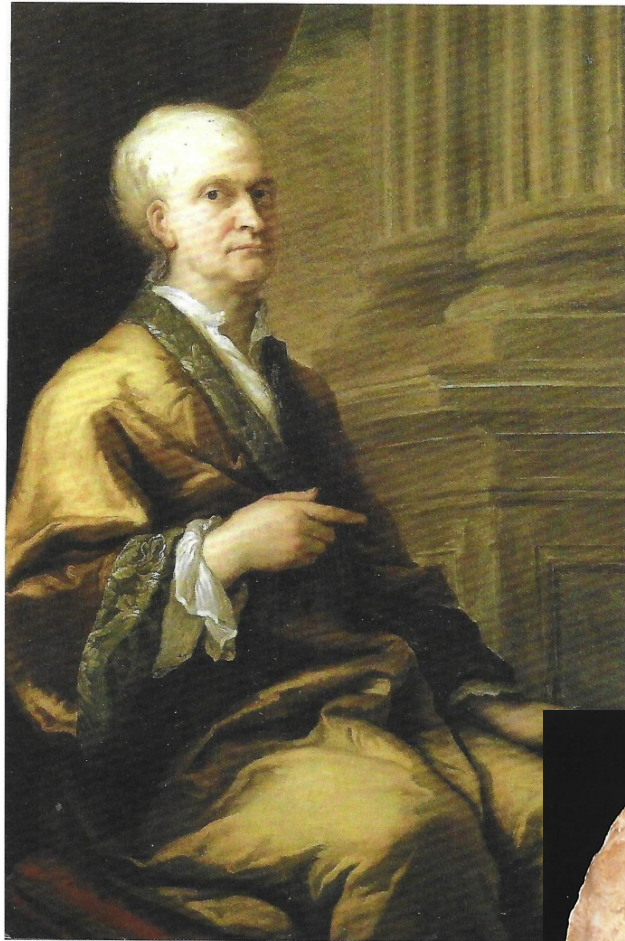
Disputes and disagreements



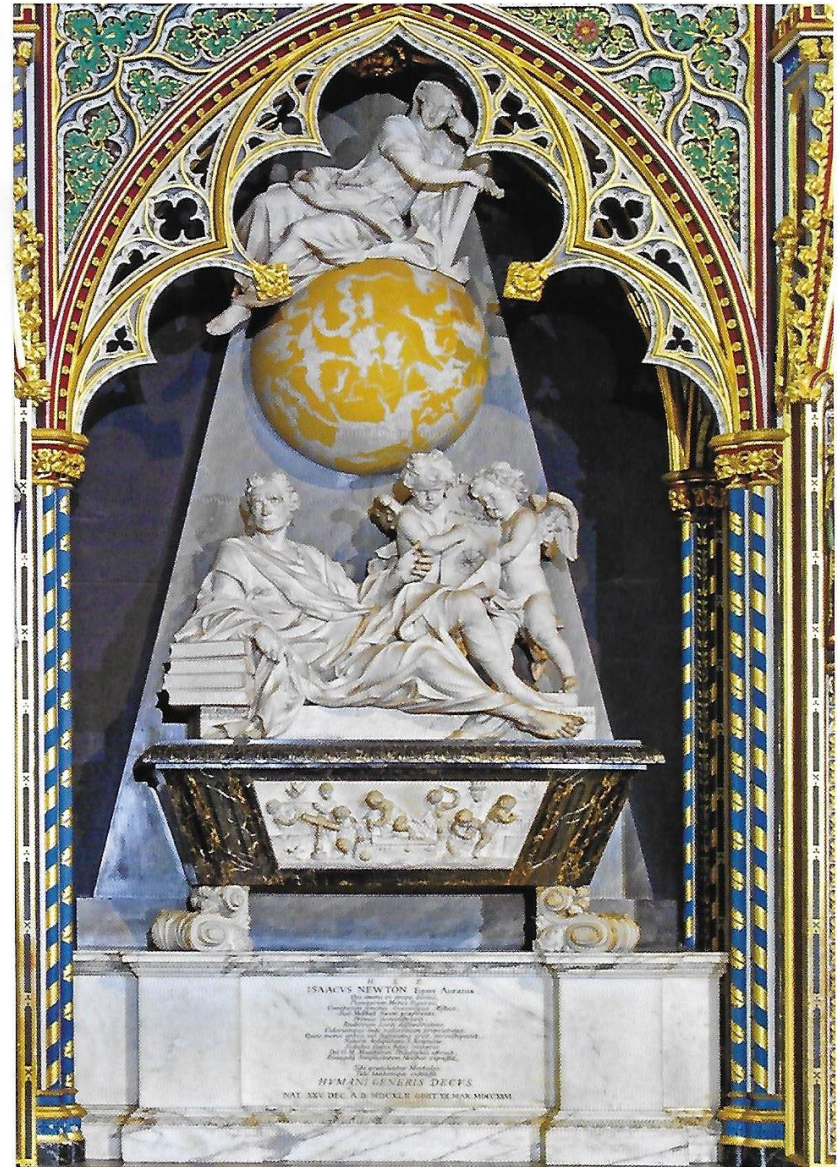
John Flamsteed



Gottfried Leibniz



**Final
years**



Westminster Abbey

Reception of the *Principia*



John Aubrey:

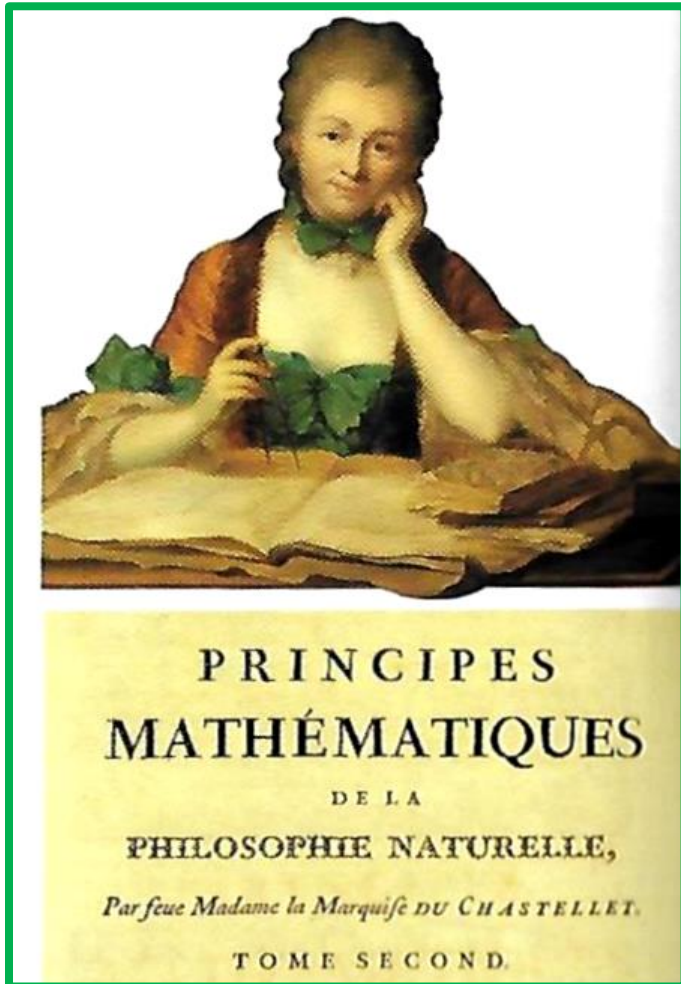
‘... the greatest Discovery in Nature that ever was since the World’s Creation. It never was so much as hinted by any man before’.



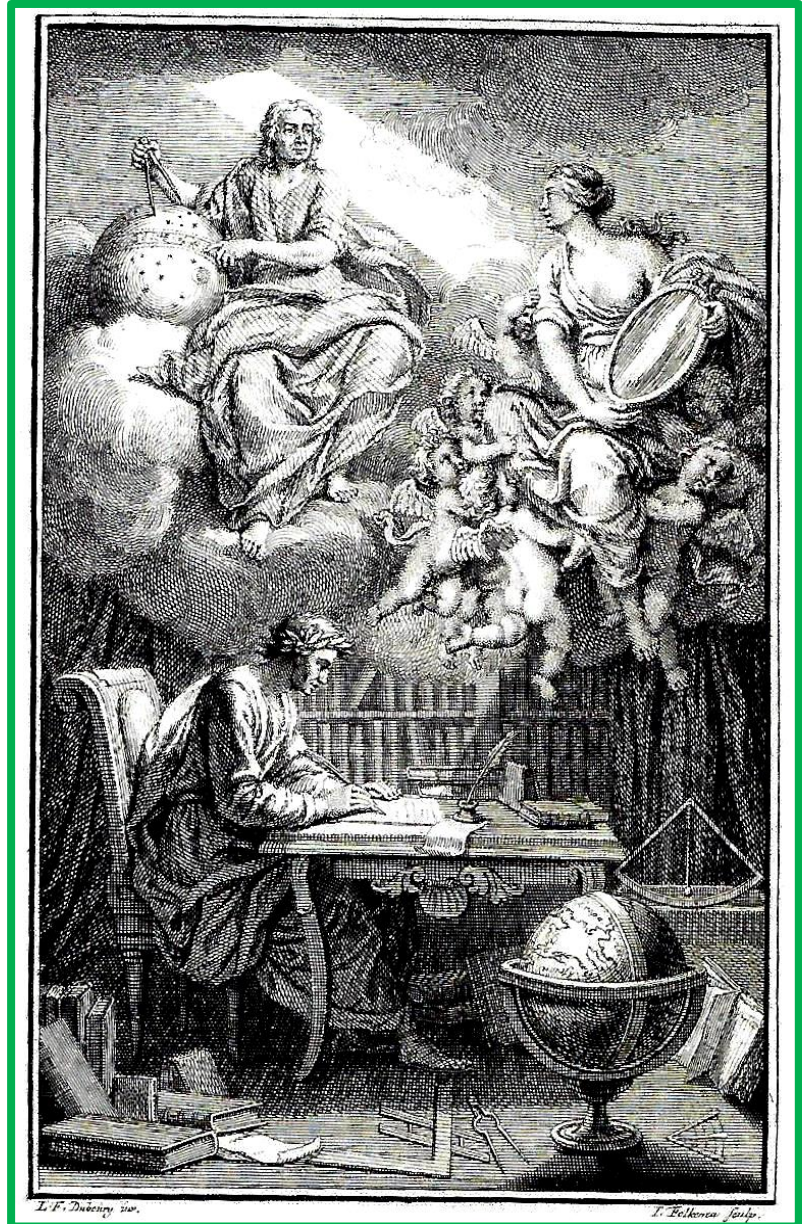
Guillaume de l'Hôpital:

‘Good God, what a fund of knowledge there is in that book’ – and asking all sorts of questions about Sir Isaac, such as the colour of his hair, and ‘does he eat & drink & sleep?’ and ‘Is he like other men?’

Translations & commentaries



Emilie du Châtelet



Voltaire

Newtonianism for the Ladies

Francesco Algarotti



IL NEWTONIANISMO
PER LE DAME,
OVVERO
DIALOGHI
SOPRA
LA LUCE E I COLORI.

— quæ legat ipsa Lycoris. —

Virg. Egl. X.



IN NAPOLI

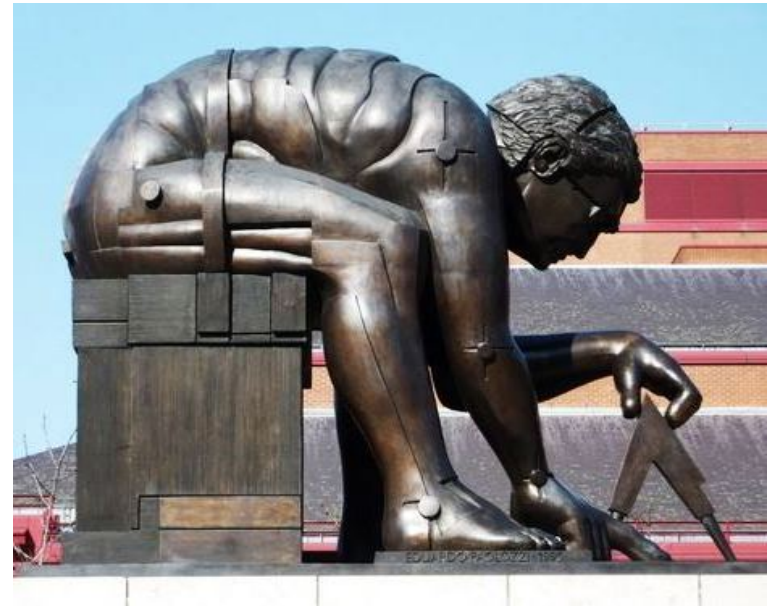
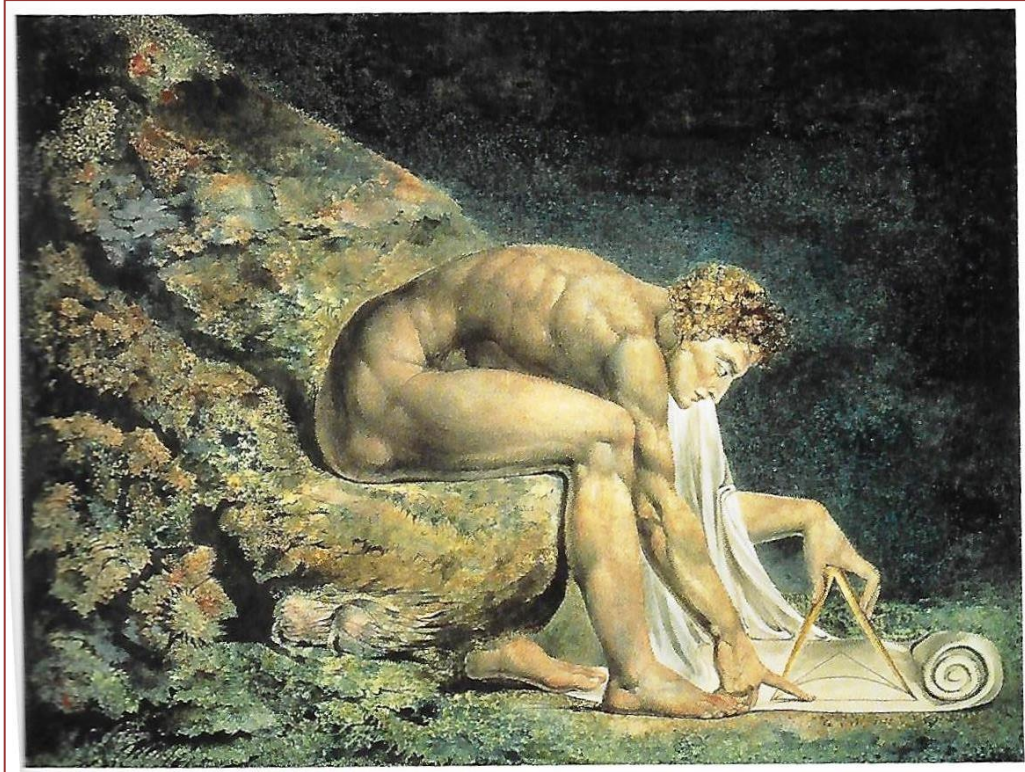
MDCCXXXVII

Newton for the young

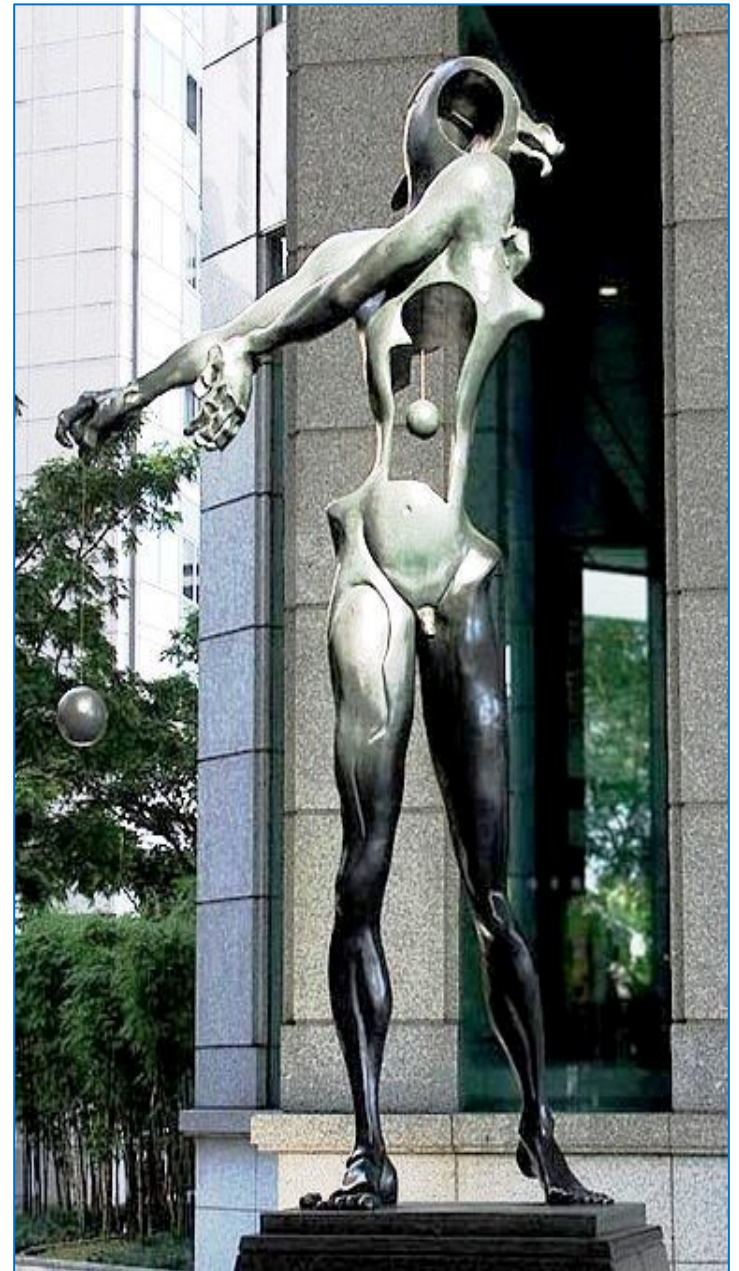
Tom Telescope



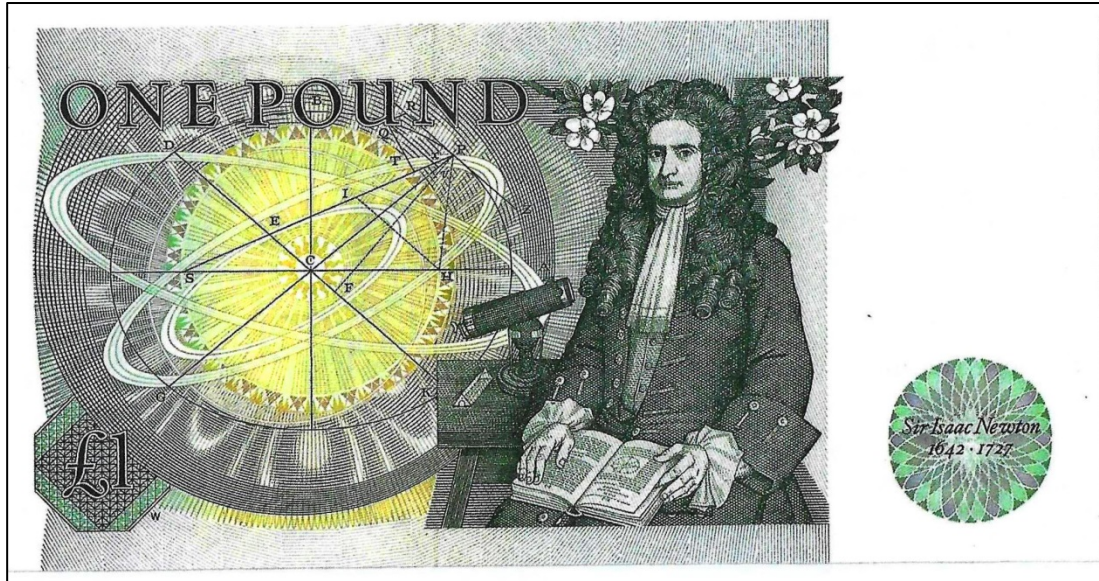
Blake and Paolozzi



Salvador Dali's *Homage to Newton*



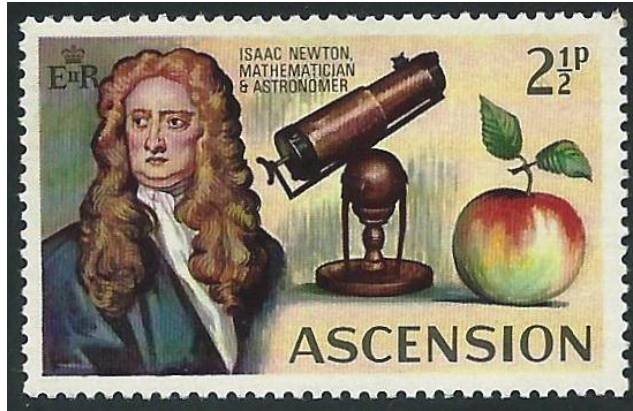
Money & medals



**British
postage
stamps
1987**



Some world-wide postage stamps



Two quotations



I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all discovered before me.

Isaac Newton

Nature and Nature's Laws
lay hid in Night.
God said, *Let Newton be!*
and All was *Light*.

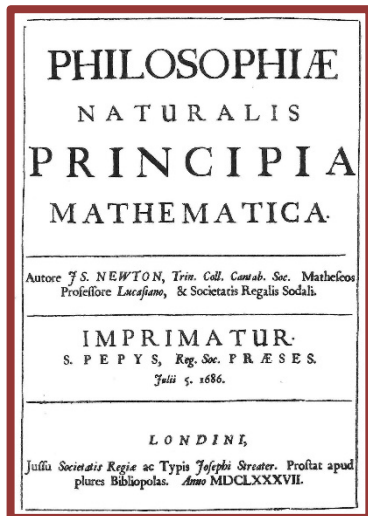
Alexander Pope



Halley's *Ode to Isaac Newton*

Then ye who now upon heavenly nectar fare,
Come celebrate with me in song the name
Of Newton, to the Muses dear; for he
Unlocked the hidden treasures of Truth:
So richly through his mind had Phoebus cast
The radiance of his own divinity.
Nearer the gods no mortal may approach.

Edmond Halley



Further reading

