Draft letter from Sir Isaac Newton probably to John Chamberlayne, defending Keill

Author: Isaac Newton

Source: MS Add. 3968, ff. 438r-443v, Cambridge University Library, Cambridge, UK

<438r>

Sir

The papers in the Acta Leipsica which gave occasion to the controversy with M^{r} Keil I did not see till the last summer , & therefore had no hand in beginning this controversy M^{r} Leibnitz thinks that one of his age & reputation should not enter into a dispute with M^{r} Keil. & I am of the same opinion, & think that it is improper for me to enter into a dispute with the author of those papers. For The controversy is between that author & M^{r} Keil

But M^{r} Leibnitz seems to say that I know how the matter stands & can put an end to the controversy if I would declare my knowledge. If he would have me declare that he is the $_{\text{author}}$ | $^{\text{inventor}}$ of the differential method so far as that method differs from the method of fluxions: all men, even M^{r} Keil himself, will allow him that. If he would have me declare that he is the author of the differential method even where the methods agree, that is, the author of the method called by him the differential method & by me the method of fluxions: the author is the first author, & I am not yet convinced that he was the first author of that method. If he would have me approve the papers in the Acta Leipsica which gave occasion to the controversy with M^{r} Keil, I know not what he means by that: for those papers call my candor in question. After that author had asserted the invention of the Differential method to M^{r} Leibnits & fortified the assertion by the credit of those that used it; he adds. Pro differentijs igitur Leibnitianis Dn. Newtonus adhibet semperque adhibuit fluxiones quæ sint quamproxime ut fluentium augmenta æqualibus temporis particulis quamminimis genita; ijsque tum in suis Principijs Naturæ Mathematicis tum in alijs postea editis eleganter est usus &c. There is some ambiguity in the words but the most proper sense is that I always used fluxions instead of the differences of M^{r} Leibnitz. And is not this to make the readers beleive that I always knew the differential method of M^{r} Leibnitz & invented the method of fluxions by using fluxions instead of his differences. This gave occasion to M^{r} Keil to represent on the contrary that M^{r} Leibnitz used his differences instead of fluxions. And if this derogates from the candor of M^{r} Leibnitz the contrary derogates from my candour & that unjustly. For By the Letters which passed between him & me in the years 1676 & 1677 he knows that I wrote a treatise of the methods of converging series & fluxions six years before I heard of his differential method. In the generation of lines & figures by motion, Fermat <438v> Barrow & Gregory considered the small particles by which the quantities increase every moment of time & thereby drew tangents. D^{r} Barrow called those particles moments & from him I had the language of momenta & incrementa momentanea & this language I have always used & still use as may be seen in my Analysis per æquationes infinitas communicated by D^{r} Barrow to M^{r} Collins A.C. 1669 & in my Principia mathematica & Quadratura Curvarum. And by putting the velocities of the increase of quantities proportion all to the incrementa momentanea I found out the demonstration of the method of moments & thence called it the method of fluxions. This demonstration you have in the end of the Analysis per æquationes infinitas & in the first

Proposition of the book of Quadratures. But I do not know that M^r Leibnitz has demonstrated the differential method. So then the method of moments & the method of Fluxions is one & the same method variously named in several respects as I have always used it & M^r Leibnits by calling the moments differences has given it the name of the differential method. In the year 1664 I learnt Fermats method of drawing tangents.

<439r>

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To Leibnitz

Sir

Since you shewed me the passage in M^r Leibnitz letter concerning M^r Keil I have discoursed the matter with M^r Keil & he represents to me the injustice done to me in the Acta Leipsica gave him occasion to write the words complained of. That by your Letter to M^r Collins dated & published by D^r Wallis he was convinced that you did not then use the methodus differentialis. That the next year in my letter dated I represented that I had a method of solving direct & inverse Problemes of tangents, & others more difficult, that this method stuck not at fractions & surd quantities & that I had written a treatise of it five years before & had invented it some years before that, (which method was that of fluxions:) & that before you received this Letter from M^r Oldenburg you made no discovery of your knowing the methodus differentialis.

That in my first Letter which was sent to you by M^r Oldenburg & dated 1676, I described at once the foundation of the differentiall method & of the method of infinite series by setting down this series
$\overline{P+PQ}\big|^{\frac{m}{n}}=P^{\frac{m}{n}}+\frac{m}{n}AQ+\frac{m-n}{2n}BQ+\frac{m-2n}{3n}CQ+\frac{m-3n}{4n}DQ+\&c$
For if $P^{\frac{m}{n}}$ be any indeterminate or fluent Quantity $\frac{m}{n}AQ$ will be its first difference $\frac{m-n}{2n}BQ$ will be its second difference, $\frac{m-2n}{3n}CQ$ will be its third difference & so on perpetually.

Or if according to the six last examples of this rule set down in that Letter you put
$\overline{d+e}\big|^{\frac{m}{n}}=d^{\frac{m}{n}}+\frac{m}{n}d\frac{m-n}{n}\times e+\frac{mm-mn}{2nn}eed^{\frac{m-2n}{n}}+\&c$, & suppose d to be any indeterminate quantity simple or compound whose difference is e & desire the difference of $d^{\frac{m}{n}}$ that is the difference of any power quotient or radical of d whose index is $\frac{m}{n}$, the second quantity of the series viz^t $\frac{m}{n}ed^{\frac{m-n}{n}}$ will be the first difference & the third quantity $\frac{mm-mn}{n}eed^{\frac{m-2n}{n}}$ will be the second difference & so on.

As for example if the differences of the quantity $\overline{aa+xx}\big|^{m}$ be desi**{red}** & the letter o be put for the first difference of the fluent quantity x, then by **{this}** rule ^{2}xo will be the difference of $aa+xx$ & putting $aa+xx$ for d & **{illeg}** for e, the Rule will give you the first difference $^{2}mxo\times\overline{aa+xx}\big|^{m}$ **{illeg}** & the second difference $\overline{^{2}mm-{}^{2}mm}\times ee\times\overline{aa+xx}\big|^{m-2}$ And this is done without sticking at fractions or surds.

Thus in the first of my two letters which M^r Leibnitz received from M^r Oldenburg before he discovered any thing to me of his knowing the methodus differentialis the foundation of that method being described & in the second of those letters the nature & use thereof being mentioned, tho he might not be able to decipher the sentence [Data æquatione: quotcunque fluentes quantitates involvente fluxiones invenire & vice versa] set down in the second letter: yet M^r Keil thinks that he had more reason to write what was published in the transactions concerning this matter, then the author of the papers published in the Acta Leipsica against me had to tell the world that what I published in the Treatise de Quadratura Curvarum was either the methodus differentialis of which M^r Leibnitz was the author, or what had been published before by M^r Sheen & M^r Craig. I desire therefore that

These are to certify that the bearer hereof Edward Carter is Waterman & Servant to the Mint & one of that corporation & on that account is exempted from all Parrochial Services by the Charters of the Mint that he may attend her Majestites service there. And as these privileges are of ancient standing & have ever been allowed & were granted in our Charters for enabling the Officers & Ministers of her Majesties Mint to perform their duties without interruption & to carry on the coinage with dispatch for the publick service, so & their services are not wanted in their respective Parishes, there being great choise of other people to perform parish duties: so tis hoped that her Majesties Officers in all other stations will have that regard to her Majesties government & to the rights of the Crown & services under it as not to give her Office of the Mint any trouble in this matter. For if the Constitution of the Mint be disturbed in this case, the people imployed in the coinage will soon become liable to be taken from the service at such times as we cannot spare them without putting a stop to the coinage till we can get others capable of serving in their room. For if the coinage be stopt in any one part thereof it must stand still in every part to the dammage of the Merchant & the disabling of the Master & Worker to perform his contract with her Majesty. And hereof all her Majesties Iustices of the peace & all other her Officers herein concerned are desired to take notice

Is. Newton Master & Worker of her Majesties Mint.

And in another MS composed in October 1666 in which the Elements of solving Problems by motion were laid down in eight Propositions the sevent of which conteined the method now described of deducing fluxions from fluents & the eighth the **{contrary}** method of deducing fluents from fluxions: I added to the seventh this improvement thereof: Si in æquatione &c

$\mathrm{y}^4 = \mathrm{aaxx} - \mathrm{x}^4$ $4\mathrm{qy}^3 = {}^2\mathrm{aapx} - 4\mathrm{px}^3$. $2\mathrm{qy} = \frac{\mathrm{aap}-2\mathrm{xxp}}{\sqrt{\mathrm{aa}-\mathrm{xx}}} = \mathrm{p}\sqrt{\mathrm{aa}-\mathrm{xx}} - \frac{\mathrm{pxx}}{\sqrt{}}$

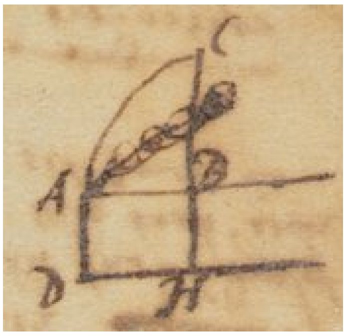
ea vero per Regulam tertiam id est per methodum serierum, generalis evasit. Has methodos anno 1665 inveni, anno proximo conjunxi et ex utraque per mutuum subsidium Analysin unam generalem conflavi.

And in an earlier Manuscript composed in October 1666 there is this Precept. Si in æquatione quavis occurrat quantitas aliqua vel fracta vel surda, vel mechanica (id est quæ Geometrice inveniri non potest sed per **{illeg}**ream aliquam curvilineam definitur aut per longitudinem Curvæ alicujus aut **{s}**olidum contentum figuræ superficiem curvam habentis, aut per gravitates eorum **{illeg}**) ut inveniatur proportio in qua quantitates indeterminatæ augentur vel **{illeg}**crescunt, ita procedas. Litera aliqua (qualis ξ) designetur quantitas illa fracta vel surda vel mechanica, & litera alia (qualis π) designetur quantitatis illius motus incrementi vel decrementi seu velocitas qua augetur vel diminuitur. Et facta æquatione inter literam ξ & quantitatem quam significat: quære (per Prop. 7 si quantitas illa sit Geometrica, vel per alias methodos si mechanica sit) valorem literæ alterius π. Deinde in æquatione prima pro quantitate per ξ significata nova involvens incrementorum velocitates. Et in hac nova æquatione pro literis illis ξ et π substituantur earum valores. et habebitur æquatio quam invenire oportuit.

Exempl. 1. Si Quantitatum x et y quarum relatio ad invicem per hanc æquationem $\mathrm{yy} = \mathrm{x}\sqrt{\mathrm{aa}-\mathrm{xx}}$ designatur quaruntur motus seu crescendi velocitates p et q: Primo sit $\xi = \sqrt{\mathrm{aa}-\mathrm{xx}}$, seu $\xi\xi + \mathrm{xx} - \mathrm{aa} = 0$. Et inde per Prop. 7, prodibit $2\pi\xi + 2\mathrm{px} = 0$ seu $\frac{-\mathrm{px}}{\xi} = \pi = \frac{-\mathrm{px}}{\sqrt{\mathrm{aa}-\mathrm{xx}}}$. Deinde in æquatione prima $\mathrm{yy} = \mathrm{x}\sqrt{\mathrm{aa}-\mathrm{xx}}$ pro $\sqrt{\mathrm{aa}-\mathrm{xx}}$ scribatur ξ et habebitur æquatio $\mathrm{yy} = \mathrm{x}\xi$ & inde (per Prop. 7) prodibit æquatio relationem velocitatum p, q, et π definiens, viz[t] $2\mathrm{qy} = \mathrm{p}\xi + \pi\dot{\mathrm{x}}$ in qua si pro ξ et π scribantur earum valores, proveniet æquatio quæsita $2\mathrm{qy} = \mathrm{p}\sqrt{\mathrm{aa}-\mathrm{xx}} - \frac{\mathrm{pxx}}{\sqrt{\mathrm{aa}-\mathrm{xx}}}$.

Exempl. 2. Si quantitatum x et y relatio ad invicem definiatur per hanc æquationem $\mathrm{x}^3 - \mathrm{ayy} + \frac{\mathrm{by}^3}{\mathrm{a}+\mathrm{y}} - \mathrm{xx}\sqrt{\mathrm{ay}+\mathrm{xx}} = 0$, & quæratur relatio velocitatum p et q quibus quantitates illæ augentur vel diminuatur ponantur $\mathrm{x}^3 - \mathrm{aay} = \tau$, $\frac{\mathrm{by}^3}{\mathrm{a}+\mathrm{y}} = \varphi$, et $-\mathrm{xx}\sqrt{\mathrm{ay}+\mathrm{xx}} = \xi$. Et si velocitates quibus <440r> τ, φ, et ξ mutantur nominantur β γ et δ respective æquatio prima $\mathrm{x}^3 - \mathrm{ayy} = \tau$ (per Prop. 7) dabit $3\mathrm{pxx} - {}^2\mathrm{qay} = \beta$, secunda $\mathrm{by}^3 = \mathrm{a}\varphi + \mathrm{y}\varphi$ dabit $3\mathrm{qbyy} = \mathrm{a}\gamma + \mathrm{y}\gamma + \mathrm{q}\gamma$ seu $\frac{3\mathrm{qbyy}-\mathrm{q}\varphi}{\mathrm{a}+\mathrm{y}} = \gamma = \frac{3\mathrm{qabyy}+2\mathrm{qby}^3}{\mathrm{aa}+{}^2\mathrm{ay}+\mathrm{yy}}$ tertia $\mathrm{ayx}^4 + \mathrm{x}^6 = \xi\xi$

dabit $qax^4 + 4payx^3 + 6px^5 = 2\delta\xi$, seu $\frac{-qaxx-4payx-6px^3}{2\sqrt{ay+xx}} = \delta$. Denique $-\frac{qaxx+4payx+6px^3}{2\sqrt{ay+xx}} = 0$ æquatio est quam invenire oportuit.



Exempl. 3. Curvæ cujus vis AC sit Abscissa $AB = x$ Et Ordinata rectangula $BC = y = \sqrt{ax - xx}$ & superficies inclusa ABC dicatur z, et relatio inter x, y et z definiatur per æquationem $zz + axz - y^4 = 0$ et ipsarum motus seu crescendi vel decrescendi velocitates sint p, q & r respective, et quæratur relatio inter p et q: Æquatio $zz + axz - y^4 = 0$ (per Prop 7) dat æquationem novam $2rz + rax + paz - 4qy^3 = 0$. Ad ipsius AB terminos A et B erigantur perpendicula unitati æqualia AD et BH et compleatur parallelogrammum ADHB. Et si abscissa AB augeatur, superficies duæ ADHB et ACB augebuntur in ratione Ordinatarum BH et BC id est ita ut p sit ad r ut $BH = 1$ ad $BC = \sqrt{ax - xx}$, adeoque $r = p\sqrt{ax - xx}$. Quo ipsius r valore in æquationem $2rz + rax + paz - 4qy^3 = 0$ substituto prodit æquatio quam invenire oportuit $\overline{2pz + pax} \times \sqrt{ax - xx} + paz - 4qy^3 = 0$.

In octava Propositione docebam vicissim quomodo ex æquatione velocitates augmentorum vel decrementorum involvente quantitates crescentes vel decrescentes deduci possent, idque reducendo Problema ad quadraturam Curvarum, et quadranda Curvam per tres illas Regulas quas postea etiam descripsi in principio Tractatus de Analysi per Æquationes numero terminorum infinitas, ut et per Catalogum Curvarum quæ vel quadrari possent vel cum Conicis Sectionibus comparari & quarum Ordinatas posui postea in Epistola mea ad Oldenburgum 24 Octob. 1676 data. Et ex his intelligi potest. quid sibi voluit Collinius noster scribendo ad D. Thomam Strode 26 Iulij 1672 in hæc verba. Mense septembri 1678 Mercator Logarithmotechniam edidit suam, quæ specimen hujus methodi in unica tantum figura, nempe quadraturam Hyperbolæ continet. Haud multo postquam prodierat liber, exemplar ejus **{**ad**}** Cl. Wallisio Oxonium misi (qui suum de eo judicium in Actis Philosophicis statim fecit,) aliudque Barrovio Cantabrigiam, qui quasdam Newtoni chartas [qui jam Barrovium in Mathematicis Prælectionibus publicis excipit)] extemplo remisit: e quibus ET EX ALIIS, QVÆ OLIM AB AVTHORE CVM BARROVIO COMMVNICATA FVERANT, patet illam Methodum a dicto Newtono ALIQVOT ANNIS ANTEA EXCOGITATAM & modo universali applicatam fuisse: ita ut ejus ope in quavis . . . . obtineri quæant. Hactenus Collinius. Et hæc est Methodus a Leibnitio summatoria , a me vero inversa methodus fluxionum et momentorum dicta. Quinetiam ex his manifestum est quod methodum fluxionum et methodum serierum ab anno 1666 in unam methodum conjunxi et quod ope methodo serierum inversam methodum fluxionum ab eo tempore generalem reddidit et vicissim ope methodi fluxionum methodus serierum ab eo tempore generalis evasit.

Quæ in his Manuscriptis derbis brevioribus complexus sum fusius explicui in Tractatu quem anno 1671 composui

<440v>

Sir

M^r Leibnits referring the difference between him & M^r Keel to me, I have spoke with M^r Keel about it & he represents that by the Letter of M^r L. to M^r C. dated

Since you shewed me the passage in M^r Leibnitz letter which relates to M^r Keil, I have spoke to him about it & he represents that by the letter of M^r L. to M^r Collins dated & published by D^r Wallis he was satisfied that M^r Leibnitz did not at that time use the differential method & that in my two Letters sent to the next year by M^r Oldenburg to M^r Leibnitz & since printed by D^r Wallis I sufficiently described the nature uses & elements of that method . [which M^r Leibnits has since called the differential method & of which I there represented that I had written a treatise five years before. & that the method of fluxions published in the book of Quadratures is that very method the first term be the indeterminate or fluent quantity the second will be the first difference, the third will be the second difference the fourth will be the third difference & so on in infinitum.

M^r Keil further shewed me some passages in the Acta Leipsica in which I find my self & my friends constantly sleighted & injured & represents that that injuries there done to him & me put him upon writes what M^r Leibnitz complains of.. And since in those Acta the method in dispute is taken from me & given to M^r Leibnits & yet I never could learn that he himselfe ever pretended to be the first author, I desire that you would send him this] And since I there say that I had written a treatise of it above five years before & set down the first proposition of the book of Quadratures in letters put out of due order, he beleives that the method of fluxions described in that book is that very method & therefore was invented by me long before M^r Leibnitz began to use the methodus differentialis.

Sir

Vpon speaking with M^r Keil about the complaint of M^r Leibnitz concerning what he had inserted into the Ph. Transactions, he represented to me that what he there said was to obviate the usage which I & my friends met with in the Acta Leipsica, & shewed me some passages in those Acta, to justify what he said. I had not seen those passages before, but upon reading them I found that I have more reason to complain of the collectors of the mathematical papers in those Acta then M^r Leibnitz hath to complain of M^r Keil. For the collectors of those papers every where insinuate to their readers that the method of fluxions is the the differential method of M^r Leibnitz & do it in such a manner as if he was the true author & I had taken it from him, & give such an account of the booke of Quadratures as if it was nothing else then an improvement of what had been found out before by M^r Leibnitz D^r Sheen & M^r Craig. Whereas he that compares that book with the Letters which passed between me & M^r Leibnitz by means of M^r Oldenburg before M^r Leibnitz began to discover his knowledge of the differential method will see that the things conteined in this book were invented before the writing of those Letters. For the first Proposition is set down in those letters ænigmatically,

In alio MS Maij 16 1666 composito methodum solvendi Problema per motum comple**{**x**}**us fui Propositionibus septem quarum ultima fuit Regula jam descripta deducendi incrementorum **{**vel**}** decrementorum velocitates ex æquatione quantitates crescentes vel decrescentes involvente. Et in alio schediasmate quod mense Octobri ejusdem anni composui descripsi easdem Propositiones septem & octavam addidi [deducendi quantitates augescentes vel decrescentes ex æquatione velocitates crescendi vel decrescendi involvente]

Septimam vero auxi additis ijs quæ sequunte

<441r>

The papers in the Acta Lipsica which gave occasion to the controversy with M^r Keil I did not see till the last summer & therefore had no hand in beginning this controversy. The controversy is between the author of those papers & M^r Keil. And I have as much reason to complain of that author for questioning my candor as to desire that M^r Leibnitz would set the matter right without engaging me in a dispute which that author as M^r Leibnitz has to complain of M^r Keil for questioning his candor & to desire that I would set the matter right without engaging him in a controversy with M^r Keil. For after that author had asserted the invention of the Differential method to M^r Leibnitz & fortified the assertion by the credit of those that used it he adds. Pro differentijs igitur Leibnitianis Dn. Newtonus adhibet semperque adhibuit fluxiones quæ sint quamproxime ut fluentium augmenta æqualibus temporis particulis quamminimis genita; ijsque tum in suis Principijs Naturæ Mathematicis tum in alijs postea editis eleganter est usus &c. The words are ambiguous but most properly import that I always knew the Differential method & borrowed every thing from it: whereas M^r Leibnitz by the Letters which passed between us in the years 1676 & 1677 knows that I wrote a treatise of the methods of fluxions & infinite series Six years before I heard of the differential method. The truth is, I always used & still use the language of momenta, & augmenta or incrementa momentanea & particulæ nascentes [as may be seen in my Analysis per æquationes infinitas communicated by D^r Barrow to M^r Collins A.C. 1669 & in other Tracts And by putting the velocities of the increase of quantities proportial to the incrementa momentanea, I demonstrated the method of moments & from thence called it the method of fluxions giving the name of fluxions to those velocities. [The Demonstration you have in the end of my Analysis per æquationes infinitas & in the first Proposition of my Treatise of Quadratures.] Those momenta or augmenta M^r Leibnits calls Differences & thence named the method the Differential method but has not yet demonstrated it. I know that he had that method in the year 1677, but when & how he found it I do not know. That must come from himself.

I had the hint of this method from Fermats way of drawing Tangents & by applying it to abstracted Æquations directly & invertedly I made it general. M^r Gregory & D^r Barrow & improved the same method in drawing of Tangents. A paper of mine gave occasion to D^r Barrow to shewed me his method of Tangents before he inserted it into his 10^th Gemetrical Lecture. For I am that friend which he there mentions.

<441v>

For M^r Leibnitz affirms that that Author has every where given every man his own & for that author in giving an account of my book of Quadratures to give every man his own is to tell the world that I have borrowed from other men & thereby to tax my candor. Whereas in that book there is nothing but what I had invented some years before I heard of the name of M^r Leibnitz, or of any of those authors from whom it can be pretended that I have borrowed any thing.

For M^r Leibnits

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		2339556	0,7838	0,3919	702	706
		3572124	1,19666	0,593	7.20	726
		500	1,67416	0.83508	7.49	750
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19491
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21765

228.3 ∷ 56875

245329
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100∟214

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175∟032

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142884
25005
1072
168961

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2632
4606
1974
1429
25005
107163
133597

246

82635
374
247905
57844
3305
309∟054

11,4	5∟7
44,9	22∟45
100,2	50∟1
175,0	87,5
	133∟6
374,0	17.
	246
	309
	374

diametri Lunæ. . . . . . . id est hexapedarum Parisiensium 57303 Quoniam Cassinus intervallum omnium maximum mensuravit idque maxima ut opinor cum diligentia et invenit gradum unum esse haxapedarum 57293 et medium intervalli ab 10 mensurati incidat in latitudinem 45.41′ in condenda Tabula superiore posui mensuram gradus in Latitudine illa esse hexapedarum 57292, in latitudine vero 45^{gr} esse hexapedarum 57284. Et hæc est mensura gradus unius in æquatore pergendo ab oriente in occidentem. Et propterea diameter Terræ a centro ejus ad æquatorem ducta æqualis est hexapedis 3282131 seu pedibus Parisiensibus 19692789

$2rx - xx = yy . 2r\dot{x} - 2x\dot{x} = 2y\dot{y} . rrx + zzx = 2r^3 . rr\dot{x} + zz\dot{x} + 2z\dot{z}x = 0 . xz = ry . \dot{x}z + x\dot{z} = r\dot{y} . \dot{x}y = \dot{z}t .$
$t = \frac{\dot{x}y}{\dot{z}} = \frac{\dot{x}xz}{r\dot{z}} . \frac{\dot{x}z+x\dot{z}}{r} = \frac{r\dot{x}-x\dot{x}}{y} = \frac{rr\dot{x}-rx\dot{x}}{xz} . 2rx - xx = \frac{xxzz}{rr} . 2r^3 - rrx = xzz . \frac{r\dot{x}-x\dot{x}}{\dot{y}} = \frac{xz}{r}$
$\dot{x}xz^2 + x^2z\dot{z} = r^3\dot{x} - rrx\dot{x} . x\dot{x}z = r\dot{z}t . \dot{x}xz^2 + \frac{x^3\dot{x}z^2}{rt} = r^3\dot{x} - rrx\dot{x} . xz^2 + \frac{x^3z^2}{rt} = r^3 - rrx . r^3 + \frac{x^3z^2}{rt} = 0 .$
$t + \frac{x^3z^2}{r^4} = 0 . -t = \frac{8r^5z^2}{\overline{rr+zz}|^3} \frac{2r^3}{rr+zz} = x . \frac{2rrz}{rr+zz} = y . 2r^3 = rrx + zzx . rr\dot{x} + zz\dot{x} + 2z\dot{z}x . rr + zz + \frac{{}^2zxy}{t} = 0 .$
$-t = \frac{2zxy}{rr+zz} . t + \frac{r^5z^3}{\overline{rr+zz}|^3} = 0 .$

<442r>

And by these letters it seems to me that Gallia was at this time subject to the Pope & that the bishop of Rouen was his Vicar or one of them. For he directs him to refer the greater causes to the sea of Rome according to custome. But the Bishop of Arles soon after was made his Vicar over all Gallia: for

Honored Sir.

Your saying yesterday that your coming to the mi**{illeg}**day or twesday was **{illeg}**

<442v>

I shewed your Letter to Sir Is. Newton at a meeting of the R. Society & Mr Keil showing somethings in the Acta Leipsica which gave occasion to what he wrote in the Transactions he was thereupon desired by the Society to draw up an Account of that matter, which account I herewith send you

<443r>

Copy of Leibnitzs Letter to Mr Chamberlayn

Sir

I am obliged to you as well for the communication of the Letter of the excellent Mr Wotton (who is more favourable to me then I could hope, & I pray return my thanks for his good opinion) as for your obliging offer to mediate a good understanding between Mr Newton & me. It was not I that interrupted it. One Mr Keil inserted something against me in one of your Philosophical Transactions. I was much surprized at it & demanded reparation by a Letter to Dr Sloane Secretary of the Society. Dr Sloane sent me a discourse of Mr Keil where he justified what he said after a manner which reflected even upon my integrity. I took this for a private animosity peculiar to that person, without having the least suspicion that the Society & even Mr Newton himself took part therein And not judging it worth the while to enter into a dispute with a man ill instructed in former affairs & supposing also that M^r Newton himself being better informed of that which had passed would do me justice, I continued only to demand that satisfaction which was due to me. But I know not by what chicanry & foul play some brought it about that this matter was taken as if I was pleading before the Society, & submitted my self to their jurisdiction, which I never thought of. And according to justice they should have let me know that the Society would examin the bottom of this affair & have given me opportunity to declare if I would propose my reasons & if I did not hold any of the Iudges far suspected. So they have given sentence, one side only being heard, in such a manner that the nullity is visible. Also I do not at all beleive that the judgment which is given can be taken for a final judgment of the Society. Yet M^r Newton has caused it to be published to the world by a book printed expresly for discrediting me, & sent it into Germany, into France, & into Italy as in the name of the Society. This pretended judgment, & this affront done without cause to one of the most ancient members of the Society it self & who has done it no dishonnour, will find but few approvers in the world. And in the Society it self I hope that all the members will not agree to it. The able men among the French, Italians, & others disapprove highly of this proceeding & are astonished at it, & I have several Letters upon it in my hands. The proofs produced against me appear to them very short.

As for me I have always carried my self with the greatest respect that could be towards M^r Newton. And tho it appears now that there is great room to doubt whether he knew my invention before he had it from me; yet I have spoken ~ ~ as if he had of himself found something like my method: but being abused by some flatterers ill advised, he has taken the liberty to attaque me in a manner very sensibly. Iudge now, Sir from what side that should principally come which is requisite to terminate this controversy. I have not yet seen the book <443v> published against me, being at Vienna which is in the furthest part of Germany where such books come very slowly, & I have not thought it worth the while to send for it by the Post. So I have not yet been able to make such an Apology as the affair requires. But others have already took care of my reputation. I abhor disobliging disputes among men of Letters & have always avoyded them. but at present all meanes possible have been taken to engage me in them. If the evil could be redressed, Sir, by your interposition, which you offer so obligingly, I should be very glad, & I am already very much obliged to you for it.