The publication of Newton's *Opera Omnia* in Geneva and Lausanne (1739-1761): a chapter in the reception of Newtonianism

Abstract

During the eighteenth century, several towns located in what is known today as the *Suisse romande* were extremely receptive towards scientific culture, and most notably Newtonianism. In this paper I deal with a nine-volume publication of Newton's *Opera Omnia* that was planned in Geneva and Lausanne during the late 1730s and 1740s. This publication has not received the attention it deserves. To the best of my knowledge, even an awareness of its existence is lacking in the literature devoted to the reception of Newtonianism. This paper examines the circumstances of the publication of a complete set of all of Newton's works known at the time, and the motivations of the editors, mathematicians, and publishers who were involved in this editorial enterprise.

Keyword

Isaac Newton, Gottfried Wilhelm Leibniz, Johann Bernoulli, Gabriel Cramer, Jean-Louis Calandrini, Marc-Michel Bousquet, Giovanni Francesco Salvemini (Jean de Castillon), Newtonianism, Switzerland, Enlightenment

Introduction

Newton's scholars are familiar with a three-volume annotated edition of the *Principia* that appeared in Geneva between 1739 and 1742. Also well-known is a three-volume collection of Newton's shorter essays, the *Opuscula Mathematica, Philosophica et Philologica* printed in Lausanne in 1744. Less known, perhaps, are the 1740 Latin edition of the *Opticks*, printed in Lausanne, and the two-volume annotated edition of the *Arithmetica Universalis*. The latter appeared only in 1761 in Amsterdam; however, it was ready for publication by the mid-1740s, and was conceived and planned for publication in the Pays de Vaud by the same editor of the *Opuscula*. So far this nine-volume edition of Newton's *Opera Omnia* has not received the attention it deserves; actually, even an awareness of its existence is lacking in the literature devoted to the European dissemination of Newton's works, even though in some booksellers' catalogues a nine-volume set of Newton's works is sometime put on sale. Who were the editors

and publishers who made it possible? And what can we learn about the reception of Newtonianism in the Calvinist region of the *Suisse romande* by studying the circumstances of its publication?

As we shall see, the *imprimeurs*, *libraires*, literati, journalists, mathematics tutors and professors who joined forces in the production of the Newtonian *Opera Omnia* formed a loose network active in between Geneva, Vevey, and Lausanne. The members of this network shared their competences in such a way that they gradually made it possible for all the then-known works by Newton to be printed, and for the most part also commented upon. Even though this was not the result of an agreed plan, all those involved in such a complex and time-consuming task worked in close contact, exchanging information, and cooperating in several ways to the establishment of the texts, commentaries, and other paratexts. Such a remarkable editorial enterprise took place in a francophone cultural environment that was extremely receptive towards the ideals of a politically moderate and religious Enlightenment as well as towards the promotion of scientific culture.[1]

The alliance between the moderate theology in vogue in eighteenth-century Geneva and science has been studied extensively by scholars such as Virginia Dawson, Helena Rosenblatt, René Sigrist, and David Sorkin.[2] Less researched is the occurrence of a similar cultural phenomenon in Lausanne: in this paper I shall attempt some forays in that direction. Genevan theologians such as Jean-Alphonse Turrettini and Jacob Vernet "elevated reason as the primary arbiter in theological inquiry," in an effort to contrast the growing popularity of deist, or even atheist, philosophies on the one hand, and the "equally distressing appearance of religious enthusiasm in the form of Pietism" on the other.[3] The leitmotiv in Turrettini's highly influential sermons was that reason is compatible with Christian religion and Revelation; it is more necessary, he surmised, in theology than in jurisprudence.[4] It is no chance that, as we shall see in the next section, in the 1710s and 1720s Turrettini was instrumental both in the abrogation of the Formula Consensus (1706), which his father François had put in place in defence of orthodox Calvinist theology, and in promoting the teaching of science and mathematics at the Genevan academy. Similarly, Vernet, who succeeded Turrettini as a professor of theology at the academy and became Geneva's dominant theologian during his long life spanning the whole eighteenth century, promoted the optimistic, and anti-deist, view that the God-given power of reason could not contradict the truth of the Scripture.[5]

These theological positions, and the ways in which they smoothed the path to an integration of Christianity with Newtonianism, and with Leibnizian and Wolffian philosophies,

are familiar to historians of eighteenth-century religious culture: they are a constitutive element of what has been described as "moderate Enlightenment" in Jonathan Israel's imposing trilogy.[6] What is important for us is to study how these theological positions resonated with Newtonian natural philosophy in the specific context considered in this paper. As we shall see, Turrettini was instrumental in installing in 1723 Jean-Louis Calandrini in a Chair of mathematics in Geneva, while his younger disciple Vernet sided with Calandrini in defending Newtonianism in the pages of the *Bibliothèque italique* in between 1729 and 1734. Thus the support these theologians provided to Newtonian science in Geneva in the 1720s and 1730s is evident not only from the words of their sermons, which drew upon the argument from design as expounded in the Boyle lectures, but is revealed also by their actions in the academic and journalistic enterprises they embarked on. It should be added that, throughout the eighteenth century, the moderate theology of Turrettini and Vernet was adopted as the dominant ideology by a patrician class that defended its political and economic privileges, not only in Geneva, but also in the other Calvinist areas of the *Suisse romande*. One should just consider the insistence with which Vernet praised "dependence" and "obedience" as Christian virtues in his sermons, and the considerations on the proper degree of luxury which is morally allowed to each social class in his *Instruction chrétienne* (1754). Francophone Switzerland, especially Geneva, was the theatre of clashes, in some cases violent ones (the *troubles* of 1707 and 1734-38), aimed at contesting the patricians' dominance. Eventually, the French Revolution and the Napoleonic wars, will sweep away the patrician culture of Turrettini, Vernet, and Calandrini. [7]

In this paper we shall see how the francophone editors of Newton's works interacted with some members of the Bernoulli family, who were based in German-speaking Basel; which is to say, in a rather different political, religious and scientific context. In broad brushstrokes, one might say that the elder brothers, Jacob and Johann, Bernoulli, had been profoundly influenced by Leibniz: indeed, they were the main promoters of the early development of the Leibnizian calculus. The Leipzig-based *Acta Eruditorum*, founded by Leibniz in 1682, was very much the main venue for their publications. The younger members of the family (Daniel, Nicolaus I and II, Johann II), and Johann's and Jacob's pupils, Leonhard Euler and Jacob Hermann respectively, found a privileged audience, and at times even employment, in the Academies of Berlin and Saint Petersburg, and in the University of Frankfurt an der Oder. The German-speaking world was of paramount importance for the Bernoullian *entourage*, and in general for the Swiss intelligentsia of Basel, Zürich and Bern. We may recall Albrecht von Haller's influence in the University and the botanical garden of Göttingen and his decisive contribution to German pre-Romantic poetry; or Johann Jakob Bodmer's and Johann Jakob Bretinger's confrontation with

the Leipzig literary school. It is no chance that Johann Bernoulli, during his polemic with the English mathematicians, carried forward in the early decades of the eighteenth century, frequently self-styled himself as a mathematician speaking in defence of the German nation. Just to quote a typical statement occurring in one of his abrasive letters to George Cheyne in 1704: "[A]dulari nescio; consideres me esse Germanum qui ut sentit ita loquitur" (I am unable to flatter, you should consider me as a German, who says just what he thinks) he defiantly stated.[8]

By contrast, eighteenth-century Lausanne and Geneva were galvanized by anglophilia. To a contemporary observer, Geneva appeared as a town that "speaks and writes French, but reads and thinks English."[9] Such predilection for English culture was motivated by several factors. One might mention: ~~**the analogies between the religious outlook of some of the leading Genevan theologians and English Latitudinarianism;**~~ the network of Huguenot refugees that connected London, the United Provinces (an early Newtonian hotspot), and the *Suisse romande*; the economic exchanges with London due to the flourishing enterprises of banking, the book trade, silk manufacture, and clock making; and, at the middle of the century, the presence of Voltaire, a eulogist of English culture, at Ferney. The favourable orientation towards English, and, as we shall see, Italian and Dutch Newtonian cultures in Lausanne and Geneva, which marked a difference from the Leibnizian cultural influences in Basel, should not be seen, for sure, as a sharp divide. After all, acceptance of some tenets of Newtonian natural philosophy eventually reached Basel, and even the Bernoulli family. Rather, these somewhat contrasting orientations in French- and German-speaking Switzerland should be seen as diverging vector fields, **to use Pierre Bourdieu's terminology,** forming the cultural backdrop in which the events narrated in this paper might be set.

As Sorkin has demonstrated, the moderate and tolerant theology, ~~**as we just noted similar to English Latitudinarianism,**~~ of the "middle way" promoted by Vernet translated into a political theory that interpreted natural law as giving moral support to "just subordination."[10] The success of Vernet's theology depended in part on political implications licensing the patricians' supremacy. This success was due also to the fact that it provided a conceptual space in which all Protestant confessions could be accommodated and in which moderate Calvinists could engage into a dispassionate confrontation with more radical philosophical ideas, such as those endorsed by Voltaire, leading proponent of the Enlightenment, who took residence on the outskirts of Geneva. Vernet's theology was called into question by those opposing the *ancien régime*, who will be represented, a few decades after the period considered in this paper, by Jean-Jacques Rousseau.

The Republic of Geneva was an independent city-state since Jean Calvin's times. Its proud political independence did not imply isolation. Geneva's contacts with Paris and with Huguenot French culture were deep and pervasive. The territories of the Pays de Vaud, whose main towns were Lausanne and Vevey, had been dominated by German-speaking Bern, which, along with Zürich, had expelled the Duke of Savoy by military force in the sixteenth century. This situation generated some frustration, a desire to gain political autonomy, and ultimately protest with the celebrated sacrifice of Abraham Davel in 1723, whose attempt to free Lausanne ended in torture and execution. Neuchâtel on the other hand, had been under Prussian rule since 1707. In that year, the Orléans-Longueville (a branch of the Valois), who had ruled Neuchâtel for two centuries, remained without heirs. The investiture of the successors was in the hands of the city council, which opted for Frederick I of Prussia, ending Catholic rule for this small Reformed city and territory. This political situation favoured contacts of the Neuchâteloise intelligentsia with the vibrant cultures of Bern and Berlin. During the eighteenth century, the above-mentioned Swiss cantons were under republican regimes. Although elected councils governed them, only a minority could vote and be elected to the ruling political institutions or act as magistrates. The society was hierarchically structured, the *citoyens* (citizens) being at the top. Below the citizens were the *bourgeois* – the sons of *citoyens* born outside the town, or the sons of *bourgeois*. The three lower classes, the *natifs* (natives), the *habitants* (residents), and the *sujets*, lacked any political rights.[11]

One of the economic activities in which towns such as Lausanne, Geneva and Yverdon excelled in the eighteenth century was the book trade. The number of *imprimeurs* and *libraires* active in these three French-speaking towns is really impressive.[12] Scholars of the Enlightenment are familiar with these Swiss printers and publishers who promoted the diffusion of many works, written not only by local worthies such as Albrecht von Haller, but also by leading representatives of the French and Italian Enlightenment. One can think of the so-called *Encyclopédie d'Yverdon* (58 vols, 1770-1780), edited by the Italian refugee Fortunato Bartolomeo De Felice, or of the cooperation between Voltaire and the printing house of the brothers Cramer, who were amongst his friends and correspondents after he moved close to the Swiss border.[13] One of these *imprimeurs* and *libraires*, Marc-Michel Bousquet will deserve our attention, since he played a prominent role in the printing of scientific works, most notably those by Leonhard Euler, the Bernoullis, and indeed Isaac Newton.[14]

The annotated edition of the *Principia*

[fig. 1]

fig. 1 Frontispiece of the first volume of the annotated edition of the *Principia* published in Geneva in 1739. Calandrini's name does not appear in any of the frontispieces of the three volumes: he is mentioned in the Monita signed by Le Seur and Jacquier that are prefaced to each volume, and authored an *Editoris Monitum* (editor's **notice**) and an *Editor Lectori* (the editor to the reader).

The annotated edition of the *Principia*, an imposing work in which the annotations are as long as the text itself, was published by Jacques-François Barrillot in three volumes respectively in 1739, 1740 and 1742.[15] It should be noted that Barrillot was often chosen as a printer by Bousquet, who – as we shall see below – published the *Optice* and the *Opuscula*. The edition of the *Principia* was supervised by Calandrini, then professor at the Academy of Geneva, who availed himself of the contribution of two French Minim friars based in the convent of Trinità dei Monti in Rome, Thomas Le Seur and François Jacquier.[16]

Calandrini was born in 1702 in Geneva into a family of rich and influential citizens.[17] His family had left the Italian town of Lucca in the second half of the sixteenth century, since they had converted to the Calvinist faith.[18] Calandrini received his education in the Genevan Academy and was appointed Professor of Mathematics there in 1724, sharing the chair with a young and talented mathematician, Gabriel Cramer. The Academy had just undergone a deep reform thanks to its rector Turrettini, who, as I wrote in the previous section, was a theologian who defended harmony between natural and revealed religion and elevated reason as a decisive arbiter in theological inquiry. The academy had originally been set up for the training of Calvinist pastors. In the second half of the seventeenth century, Louis Tronchin and Jean-Robert Chouet, two professors influenced by the theology promoted at the French academy of Saumur, a compromise between Arminianism and Calvinist orthodoxy, began to teach – somewhat clandestinely – scientific subjects, including some Cartesian doctrines.[19] In 1708 Turrettini, the newly appointed rector, sought to free the Academy of the influence of the Venerable Company of Pastors and instituted a chair of mathematics, which eventually fell into the able hands of Cramer and Calandrini. Calandrini remained in the Academy until 1750, after being appointed Professor of Philosophy in 1734.[20] Upon quitting the Academy, he embarked on a political career as member of the Small Council (1750), Treasurer (1752) and Syndic (1754), the highest office in the Genevan Republic. He died in 1758.

Calandrini was one of the most influential early supporters of Newtonianism in Geneva. The evidence that Calandrini taught Newtonian philosophy at the academy is convincing, but indirect. Calandrini's extant lecture notes tell more about his teaching on pure and mixed mathematics: they concern conic sections, plane and spherical trigonometry, and motion in resisting media. Virginia Dawson has studied a 162-page long notebook she has found in a private archive. It is in the hand Calandrini's student Abraham Trembley, who in 1730 defended a thesis on the infinitesimal calculus under Calandrini's supervision. In Trembley's notes, probably written after 1736, one of the authors most consistently and extensively cited is Samuel Clarke. More relevant information can be drawn from Charles Bonnet's autobiographical recollections of his studies under Cramer and Calandrini.[21] From Bonnet's *Mémoires autobiographiques* we learn that the physico-theology of William Derham and Clarke's Boyle lectures were familiar to the students of the two Genevan professors, who – Bonnet recalls – "were faithful in heart and spirit to Revelation, and since they were laymen, and were enjoying the greatest fame in our Academy, what they said in favour of Revelation did not fail to impress the students, and contributed in no small degree to protect them against the dangerous sophisms of faithlessness."[22] Indeed, Jean Sénebier reports that Calandrini in his lectures on logic, in order to show that the "best philosopher is always the best Christian," proposed the belief in Christ's Resurrection as the most convincing example of the trustfulness of testimony.[23]

Calandrini's philo-newtonianism is in evidence in his contributions to two journals published in Leiden and in Lausanne. Calandrini and Cramer, during their European tours, had established contacts with Willem Jacob 's Gravesande, who encouraged them to contribute to the new series of the *Journal Littéraire* (1712-1722), by that time published in Leiden as the *Journal Historique de la République des Lettres* (1732-33).[24] Most notably, Calandrini contributed papers on the *vis viva* controversy, appreciated by 's Gravesande, in which he sided with the Newtonian party.[25]

Cramer and Calandrini actively collaborated with another periodical, the *Bibliothèque Italique*, a journal founded in Lausanne in 1725. The initiative came from Gabriel Seigneux de Correvon and a group of literati that included Charles-Guillaume Loys de Bochat and Louis Bourguet – an erudite antiquarian and geologist, and a member of a family of Huguenot refugees based in Neuchâtel – who became interested in Italian culture after several tours of Italy. The *Bibliothèque Italique* was published by Bousquet in 18 volumes from 1728 until 1734: the journal aimed to introduce the works of Italian philosophers and men of science into the French-speaking world.[26] From 1729 onwards, a philo-Newtonian turn was impressed by two new contributors to the *Bibliothèque*, the theologian Vernet and Calandrini, who were later

joined by Cramer. Calandrini took quite an open stance in favour of Italian Newtonians, most notably with his reports of the dispute incepted by Giovanni Rizzetti, whose optical experiments (1722, 1727) were aimed at contradicting Newton's theory of colours. This move generated tensions within the journal, which included some philo-Cartesian contributors.[27] Yet, what caused the conflict with Vernet, Cramer and Calandrini was their enthusiasm in endorsing Newtonianism. Other editors of the *Bibliothèque*, such as Seigneux and Bourguet, highly valued journalism as a means to produce a balanced and non-sectarian report on literary and scientific matters.

After the demise of the *Bibliothèque*, caused by internal frictions among the editors, Calandrini took the bold initiative of publishing an annotated edition of the *Principia*. A more ambitious task aimed at promoting Newtonianism could not be envisaged. Such a project was of course a major operation. The mathematical competence necessary for commenting such an impervious work line by line was the purview of very few. Calandrini sought the help of two experts in mathematical Newtonianism, Le Seur and Jacquier. The notes of the French Minims help the reader to fill the lacunae in Newton's terse style, they go to length in explaining the most difficult passages, provide further information and experimental data, and often end with a list of works that can be consulted. Calandrini's notes are often more ambitious. Calandrini aimed to bring Newton's work up to date, most notably by including in the third volume some of the prize-winning essays on the theory of tides submitted to the French Academy of Sciences in 1740, and even by contributing some original research. Calandrini's notes on the force of a magnet and his note on conic sections (actually a short treatise) are particularly significant. In other cases, such as in his attempt to improve on Newton's theory of the motion of the Moon, Calandrini was less successful. Indeed, his theory of the Moon was considered wrong by the great expert on the subject that he consulted via Cramer, namely Alexis-Claude Clairaut.[28]

By the middle of the eighteenth century, the *Principia* had become an obsolete work: the out-dated and idiosyncratic geometric language in which it was written constituted a major hurdle for many readers, who were rather trained in algebra and calculus. The footnotes provided a commentary in the language of Leibniz's calculus that made Newton's demonstrations more accessible to mid-eighteenth century readers. Yet, in the 1740s cutting-edge mathematical research was carried out by using concepts and methods, such as the notion of function, partial differential equations and the calculus of variations, that went far beyond the limits not only of Newton's text, but also of the mathematical horizon of its commentators.[29] Their mathematical limitations notwithstanding, Calandrini's, Le Seur's and Jacquire's notes reveal something important about the reception of Newtonianism in Geneva.[30] It is important to bear in mind that

the mathematical methods employed in the *Principia* had been a hot issue in the fierce polemic over the invention of the calculus. Most notably, Johann Bernoulli had mounted an attack against Newton based on the claim that there were mistakes in the *Principia* due to its author's lack of knowledge of calculus: in particular, according to Bernoulli, Newton lacked competence in integration techniques and in the handling of higher-order infinitesimals. In his view, these mistakes proved that Newton did not have the calculus in 1687, three years after Leibniz's publication of it in the *Acta Eruditorum*. Bernoulli's claims were countered by English mathematicians, such as Brook Taylor, John Keill and Abraham De Moivre. In the 1710s and 1720s, the *Acta Eruditorum* and the *Journal Litéraire* were flooded with papers in which the details of Newton's proofs, and Bernoulli's corrections of them, were analysed and disputed in an increasingly offensive language.

After Leibniz's death, Bernoulli had shied away from taking an openly polemic stance against Newton. Indeed, there is ample evidence to suggest that, at this juncture, he sought to re-establish a friendly correspondence with the president of the Royal Society. Furthermore, even during the calculus priority controversy, Bernoulli carved out for himself a role that was not that of Leibniz's watchdog. He was deeply conscious of the importance of his outstanding mathematical results, and often made the Republic of Letters know that it would be reductive to consider him as merely an acolyte of Leibniz. Given the close relationship between Calandrini and Cramer and the Bernoulli family (the two Genevan professors had been schooled in calculus during their residence in Basel and had remained in friendly correspondence with the members of the *bâloise* family), it was important to tone down the differences that divided the Newtonians and Johann Bernoulli. Cramer's membership of the Bernoullian entourage becomes apparent in a letter to Giovanni Poleni, dated 1731, in which Johann Bernoulli refers to Cramer as "my former disciple."[31] And indeed, in the footnotes to the *Principia* Bernoulli's papers concerning the errors in the *Principia* are cited alongside Keill's and Taylor's rebuttals.[32]

Thus, the papers written in the context of one of the fiercest mathematical polemic in the history of mathematics were used as a commentary, indeed as a confirmation, of Newton's demonstrations. Every effort was made to downplay the altercation that had seen Bernoulli pit himself against Newton's mathematical acolytes. Furthermore, in the same pages we find notes in which the conservation of *vis viva* is defended and ones in which the conservation of momentum is deployed. We also find a note in which the two calculus notations of Newton and Leibniz are presented side by side, with no further comment on the polemic that had divided the Newtonian and Leibnizian mathematicians as regards the conservation laws in physics and the merits of the different symbolism for the calculus.[33] Such irenicism was in line with the Genevan

moral ideals of *juste milieu* and moderation defended by Turrettini and Vernet, as well as with the Helvetic image of Switzerland as a cultural place where the schools and sects that divided the European Republic of Letters could peacefully coexist and interact.[34] As we shall see in the next sections, also other volumes of the Swiss *Opera Omnia* portray Johann Bernoulli, and the Bernoulli family more generally, as playing a leading role in the reception of, rather than in the opposition to, Newton's work.

The *Optice*

[fig. 2]

fig. 2 Frontispiece of Bousquet's Latin edition of Newton's *Optice* (1740).

I have mentioned Marc-Michel Bousquet as the editor of the *Bibliothèque Italique*. Indeed, he was one of the most prolific publishers of the eighteenth century. He was born in 1696 in Grancy, the son of a *réfugié* from the Languedoc. In 1724, after a period of apprenticeship in the service of the *libraires* Cramer et Peranchon, he established a company with Pierre Gosse of The Hague. He had the economic support of the bankers Henry and Jean-Antoine Pellissari. The same year he was admitted into the Genevan *bourgeoisie*. Through his experience with the *Bibliothèque Italique*, Bousquet got in touch with Lausannese literati and jurists, such as Seigneux de Correvon and Loys de Bochat. The Italian network associated with the *Bibliothèque Italique* allowed Bousquet to get involved with the Enlightenment in the peninsula, so much so that in 1735 he helped Pietro Giannone, the famous historian of the Kingdom of Naples, to flee from Italy and settle in Geneva in order to escape the Inquisition.

In 1736 Bousquet, who sided with the conservative party during the *troubles* that led some members of the *bourgeoisie* to threaten a civil war, left Geneva for Lausanne after a fierce legal dispute with the Pellissaris. In the *vaudoise* city he established himself as *libraire* of a *société d'édition* supported by the city council and founded by a group of men of letters (which included Loys de Bochat, professor of law and history at the academy). Bousquet made recourse of the printer Antoine Chapuis and the *société* remained in operation until 1758. A personal enterprise founded in 1758 was short lived, as Bousquet died in 1761.[35] Among the almost two hundred titles that Bousquet published, we might mention the following as particularly interesting for the history of science: Leonhard Euler's *Methodus inveniendi lineas curvas maximi minimive proprietate gaudentes* (1744) and *Introductio in analysin infinitorum* (1748); Christian Wolff's *Compendium elementorum matheseos universae* (1742) and *Logique ou*

réflexions sur les forces de l'entendement humain (1744); Johann Bernoulli's *Opera* (1742) and the Bernoulli-Leibniz correspondence (1745); Newton's *Optice* (1740) and *Opuscula* (1744); Jean-Philippe Loys de Cheseaux's *Traité de la comète* (1744); and numerous works by Albrecht von Haller (1755-58).

In 1740 Bousquet took the initiative of publishing Newton's *Optice*. The text was based on the 1719 emended edition of Samuel Clarke's first Latin translation (1706) of the *Opticks*. [36] Bousquet did not play merely the role of bookseller and printer: he fashioned himself as a protagonist of the Newton-revival in Switzerland by enriching the volume with a long dedication somewhat incongruously addressed to Johann Bernoulli. As noted above, Bernoulli had played a prominent role in the Leibniz-Newton controversy, the well-known priority dispute. After Leibniz's death in 1716 Bernoulli had been one of the main protagonists in a confrontation with some English mathematicians, most notably John Keill and Brook Taylor, of unprecedented verbal violence.[37] In publishing a major work by Newton, Bousquet found himself in the same situation, which, as we have seen, was causing some embarrassment to Calandrini in his edition of the *Principia*. The policy adopted by the Swiss editors of Newton's works was, on the one hand, to tone down Bernoulli's siding with the Leibnizian faction, and, on the other, to pay due tribute to Bernoulli's achievements.

The dedication must be read as a defensive move, which might have stemmed not only from Bousquet but also from the entourage in which he operated, aimed at appeasing the elder ember of the Bernoulli family. In the initial dative address, Bernoulli is defined as "viro longe celeberrimo … nulli secundo" (a most renowned man …. second to nobody). Indeed, the purpose of Bousquet's dedication was a celebration of Bernoulli, who was depicted as a Swiss hero in mathematics equal to Descartes, Huygens, Leibniz, and Newton. Bernoulli, Bousquet surmised, had been able to see and emend the errors of Newton and Leibniz, but in doing so he had taught the world how to "rightfully praise them, by imitating and trying to surpass their mathematical genius."[38] The idea that Johann, the "praeceptor Europae," was on a par with the great French, Dutch, German and English geniuses enjoyed wide currency in Basel, so much so that in the epitaph that can be admired in the Peterskirche in Basel one finds Bernoulli eulogized as "the Archimedes of his century, not inferior in mathematical knowledge to those luminaries of Europe, Descartes, Newton, and Leibniz."[39] Of course, in 1740 these great men were dead and so, Bousquet surmised, only Bernoulli was left with no equals alive.[40] While praising the works by Bernoulli that criticized the mathematics of Newton's *Principia* and that had generated so much heat in the Leibniz-Newton priority controversy, Bousquet did not hesitate to include Bernoulli in the circle of Newton's friends.[41] Indeed, after Leibniz's death, Bernoulli had made a

desperate attempt to rehabilitate himself in the eyes of Newton, by disavowing any activity in favour of Leibniz in the priority controversy. Newton was not convinced, but had let the matter rest so that the expulsion from the Royal Society, which Bernoulli feared so much, did not occur.

Bousquet's dedication in the *Optice* reveals a policy that we also encounter in the other volumes of the Swiss *Opera Omnia*. Namely, the introduction of Newton's works in the catalogues of the Swiss *libraires* went hand in hand with a respectful tribute addressed to the now ageing *pater familias* of the Bernoulli family. Indeed, Bousquet was soon to embark on a celebration of the achievements of Bernoulli, the edition of his *Opera*,[42] and from the correspondence between Cramer and Johann II Bernoulli, it is apparent that every effort was made to put Johann Bernoulli into the best possible light. When Cramer, Bousquet, and Johann II Bernoulli planned the publication of the correspondence between Leibniz and Johann Bernoulli,[43] one of their aims was to underline the superiority of Bernoulli over Leibniz as far as the advancements in the integral calculus and the discovery of the *calculus exponentialis*. Cramer was too busy in writing his treatise on the theory of curves,[44] and thus he addressed an invitation to an Italian who had just arrived in the Pays de Vaud, Jean de Castillon to whom we turn in the next sections, as a suitable editor for the *commercium epistolicum* exchanged between the German *homo universalis* and the Swiss mathematician.

The *Opuscula*

[fig. 3]

fig. 3 Frontispiece of the first volume of de Castillon's edition of Newton's *Opuscula* (1744).

Jean de Castillon was the nom de plume of Giovanni Francesco Salvemini, another émigré who had just found refuge in Calvinist Switzerland. He was born in Florence in 1709 into a family originally from Castiglion Fiorentino, a small town close to Arezzo. His father was a jurist and the ambassador in Florence of Castiglion Fiorentino. After receiving private tuition at home and in a Florentine seminar, Giovanni Francesco moved to Pisa where he graduated in civil and canon law in 1730. The mathematician Guido Grandi was one of his teachers. In Pisa the young student found a vibrant environment still influenced by the epigones of the Galilean school, most notably Alessandro Marchetti, the translator of Lucretius' *De Rerum Natura* and the proponent of a Christianized version of atomism.[45] These were dangerous ideas that apparently must have fascinated Salvemini. During his studies at Pisa Salvemini became a member of the literary

academy of the *Apatisti*. Indeed, rather than law it was mathematics and literature that fascinated him. Salvemini became a competent mathematician and an accomplished linguist, able to read and translate from ancient Greek and Latin, French and English. In 1732 he moved to Florence where he was nominated *sottocancelliere* of the *Opera di Santa Maria del Fiore* (the renown Florentine cathedral).[46]

This position was not to last long, since in 1736 Salvemini, for reasons that are shrouded in mystery, precipitously left the Grand Duchy of Tuscany. It is interesting to note that exactly in that period the Florentine masonic lodge led by a circle of "inglesi" (Charles Sackville, Earl of Middlesex, Henry Fox, Sewallis Shirley, Horace Mann) and the Prussian antiquarian and spy at the Stuart Court in Rome, Baron Philipp von Stosch, was closed down: its members, including the poet Tommaso Crudeli, were prosecuted by the Inquisition with implacable violence. Crudeli is believed to have died as a consequence of his imprisonment.[47] During his life, Salvemini/de Castillon had contacts with the masonic lodges in Amsterdam[48] and when he moved to Berlin in 1763 he became the neighbour and friend of the baron's nephew,[49] Heinrich-Wilhelm Muzell-Stosch. Further, his electoral certificate for membership to the Royal Society is signed by four prominent members of London Masonry (Martin Folkes, John Machin, Cromwell Mortimer, and Richard Mead).[50] One might add that de Castillon's son, Fréderic, became the great master of the Berlin masonic lodge.[51] Be that as it may, Salvemini had to leave Tuscany in a hurry and the letters to his brothers reveal an acute concern about his safety. The swiftness with which he settled and found a job makes it likely that he was helped by a network supporting Italian refugees. He first found refuge in Vevey, where he became principal of the local college. In 1737 he was admitted into the Calvinist faith by the *Chambre des prosélytes* in Geneva.[52] He changed his name to Jean de Castillon, apparently to satisfy the request of his mother who was worried that he might bring "dishonour" to the Salvemini family, either because of his adherence to Calvinism or for the reason behind his flight from Tuscany.[53]

In his period in the *Suisse romande*, Salvemini, now Jean de Castillon, acquired a certain celebrity by translating Pope's *Essay on Man* into Italian, a work that had aroused the interest of Jean-Pierre de Crousaz and Loys de Bochat.[54] He also worked as a private tutor in mathematics for a number of aristocrats, including Friedrich August d'Anhalt-Zerbst (his elder sister will become the Empress Catherine the Great), Friedrich Wilhelm and Carl Eduard de Hessenstein, and the earl Simon August de Lippe-Detmold. It is interesting to note that from 1742 to 1747 a society of literati, which partly overlapped with those who had been involved in the *Bibliothèque Italique* (1728-1734), gathered weekly around the young Graf von Lippe, in order to instruct and prepare him to the government of his small *Reichsgrafschaft*. De Castillon was

thus active in an environment interested in transmitting enlightened ideas to the ruling aristocracy. In this milieu he had many chances to correspond with publishers, such as Bousquet, and mathematicians, such as Calandrini and Cramer. Indeed, as we have seen in the previous section, it is Cramer who recruited him as editor of the Leibniz-Bernoulli correspondence. In the early 1740s de Castillon began an annotated edition of Newton's *Arithemica Universalis*, but its publication was postponed to 1761, after de Castillon's move to Utrecht in 1751. Undoubtedly, the most important publication produced by de Castillon during his stay in the Pays de Vaud is the three-volume set of Newton's *Opuscula Mathematica, Philosophica et Philologica* [hereafter cited as *Opuscula*], which Bousquet published in 1744.[55]

This was a thorough edition of Newton's smaller works. Cramer helped de Castillon find some essays of Newton's that had been either published anonymously or were not so easy to locate (for example, the *De natura acidorum* had been published in the second volume of Harris's *Lexicon Technicum* (1710)).[56] De Castillon, who knew English, also had to translate some of Newton's English tracts, most notably John Colson's English translation of Newton's so-called *De Methodis Serierum et Fluxionum*, which appeared as *The Method of Fluxions and Infinite Series* in 1736. [57] The only major Newtonian tract that was absent from de Castillon's collection (apart, of course, from the Newton manuscripts published after 1744) was the *Lunae Theoria*.[58] The first volume is dedicated to the Royal Society.[59] Indeed, de Castillon's election as fellow of the Royal Society was mainly motivated by the role he played in the diffusion of Newton's ideas promoted by the *Opuscula*.[60] The second and third volumes are dedicated to senators and magistrates of Bern and Lausanne.

The first volume of mathematical essays includes: the *De Analysi per Aequationes Numero Terminorum Infinitas* as published by William Jones in 1711;[61] the *Methodus Fluxionum et Serierum Infinitarum*, a Latin translation of Colson's English version of 1736;[62] the *Enumeratio Linearum Tertii Ordinis* (published as an appendix to the *Opticks*, but de Castillon also cites and uses works by James Stirling, François Nicole and Christophe-Bernard de Bragelogne);[63] the *De Quadratura Curvarum* (that de Castillon found appended to the 1706 Latin translation of the *Opticks*); the *Methodus Differentialis* as published by Jones in 1711;[64] Newton's anonymous paper on the brachistochrone problem; and a number of extracts of letters that had appeared in the *Commercium Epistolicum* and in works edited by Pierre Des Maizeaux, and Joseph Raphson (see p. viii-ix).[65] This first volume was particularly helpful because of the Latin version of Newton's masterpiece on fluxions and series. The mathematical reader schooled in Latin, who could not read neither Colson's English nor Buffon's French translations, must have appreciated de Castillon's effort. The only mathematical paper not included was, of course,

the anonymous "Account" on the *Commercium Epistolicum* that Newton infamously published in 1715.[66]

The second volume consists of *De Mundi Systemate* (1731); *Lectiones Opticae* (1729); Latin translations of papers from the *Philosophical Transactions* on the reflecting telescope, on the experimentum crucis, as well as the "Tabula Refrationum" that had appeared *in calce* to a paper by Halley on atmospheric refraction;[67] *De Natura Acidorum* (Harris 1736); and *Scala Graduum Caloris* (1701).[68] By providing a Latin translation of the papers concerning the *experimentum crucis* (the papers by Newton, as well as excerpts of papers of his critics such as Christiaan Huygens, Robert Hooke, Ignace-Gaston Pardies and Francis Linus (Line)), de Castillon made this important debate available to the reader schooled in Latin, but who could not read English. As noted above, the only philosophical essay that is lacking here is the *Lunae Theoria Newtoniana* that had appeared in Gregory's astronomy (1702) and, the same year, as a separate pamphlet in English.

The third volume consists of the *Brevia Chronica* (a Latin translation by de Castillon of the 1728 English edition),[69] the *Chronologia Veterum Regnorum Emendata* (a Latin translation by de Castillon of the 1728 English edition),[70] the *Animadversiones in Observationes Factas in Brevia Chronica* (a Latin translation by de Castillon),[71] *Ad Danielis Profetae Vaticinia, nec non Sancti Joannis Apocalypsin Observationes* (Wilhem Suderman's translation, Amsterdam, 1737),[72] and the "Dissertatio de Sacro Juadaeorum Cubito et de Cubito Aliarum Gentium" (a Latin translation by de Castillon of Thomas Birch's English edition, 1737).[73]

The *Opuscula* are notable for the completeness with which Newton's smaller works, other than the trio of great monographs, the *Principia*, the *Opticks*, and the *Arithmetica*, are collected and rendered into reliable Latin, when necessary. But there are two more notable features of the *Opuscula*. The first is a life of Newton, "De Vita Isaaci Newtoni Commentariolus" (pp. xxi-xxxiii), which while derivative from Bernard de Fontanelle's *éloge* and Henry Pemberton's *View*, should be considered an original biography,[74] since de Castillon adds new information derived from his experience as editor of Newton's essays. Most notably, his explanation of Newton's mathematical derivation of the inverse square law from the Keplerian laws of planetary motion improves on Fontanelle and is actually impeccable from a mathematical viewpoint (p. xxvi). It is interesting to note (on p. xxvi) the importance given to an episode of Newton's life that must have pleased the Protestant milieu in which de Castillon thrived: namely, Newton's active role in 1687 in the University's opposition to the King's

request that Sidney Sussex College confer the title of Magister Artium on a Benedictine monk, exempting him from swearing to uphold the thirty-nine articles of the Church of England.

The second feature that is worth noting are the Lucretian citations that de Castillon inserts in his "De Vita Isaaci Newtoni Commentariolus." These occur on p. xxvi and also as the very opening epigraph (facing p. i) premised to de Castillon's address "to the reader" (Joh. Castillioneus Lectori S[alutem dicit]). Thus, de Castillon opens his collection of Newtoniana with some verses of the eulogy of Epicurus in Lucretius's masterpiece.[75] Such a dedication would have worried Newton greatly, who often underlined the distance separating his natural philosophy from Epicureanism,[76] and indeed it seems that Richard Bentley, while supervising the second edition of the *Principia*, emended Edmond Halley's opening ode in order to avoid associations between Newton and Epicurus.[77] Nonetheless, associations between Newton and Epicurus occurred frequently in the eighteenth century: we might recall the Lucretian verse again addressed to Epicurus ("qui genus humanum ingenio superavit"), inscribed on the front of the plinth of Louis François Roubiliac's statue in the Ante-Chapel of Trinity College.[78] Yet, as I said above, quotations from *De rerum natura* and references to Lucretius, Epicurus, and Democritus are too pervasive in de Castillon's works to be considered as mere literary conventions.

It is difficult to assess the reasons behind de Castillon's predilection for Lucretius, Epicurus and Democritus (whom, as we shall see, he cites with enthusiasm also in the preface to his edition of the *Arithmetica Universalis*). Perhaps these Lucretian overtones are residual of a Tuscan cultural heritage, since in the years in which de Castillon was a student in Pisa, Marchetti's Italian translation of the *De rerum natura* was still circulating amongst the late exponents of the Galilean school. It should be also underlined that in the very same years in which de Castillon was citing Lucretius, another Swiss Newtonian, Georges-Louis Lesage, was proposing a corpuscular theory of universal gravitation that incorporated Lucretian ideas. Le Sage set it out it in his essay "Lucrèce Newtonien."[79] A corpuscular approach to gravitation similar to Le Sage's was considered by several Genevan men of science, including Nicolas Fatio de Duillier, Cramer, and Jean Jallabert.[80] A relation between de Castillon's Lucretian image of Newton and the Genevan penchant for a corpuscular explanation of Newtonian gravitation might be taken into consideration. De Castillon's "Lucretian" citations do not prove, when all is said and alone, his association with deist, or in general un-religious, positions. De Castillon's more philosophical works, such as his books critical of Rousseau's and d'Holbach's philosophies, the critical position he took towards Charles Blount's deism, the favourable reception of his work at the Berlin academy by the pious Calvinist pastor and perpetual secretary Johann Heinrich Samuel Formay, as well as the correspondence with his brothers, indicate that after a probable

association with the Florentine freemasons, he developed a sincere adherence to the ethos of what is often labelled the "Religious Enlightenment."[81]

The *Arithmetica Universalis*

[fig. 4]

fig. 4. Frontispiece of de Castillon's edition of Newton's *Arithmetica Universalis* (1761).

The late 1740s were difficult years for de Castillon. In 1748 he was sacked from the college in Vevey because his teaching methods were considered too harsh.[82] In the meantime, de Castillon had married and he and his wife had a son to take care of. In 1747 the Earl of Lippe-Detmold returned to Germany and the de Castillon family lost this source of income. In 1750 chances to obtain the Chair of mathematics in Bern or the Chair of philosophy and mathematics at the academy of Lausanne (vacant after the death of Jean-Pierre de Crousaz) did not materialize. And neither were attempts to find positions in the academies of Berlin or St. Petersbuorg via the offices of Bousquet and Euler successful.[83] Thus in 1751 de Castillon accepted an offer from the University of Utrecht. Here he was first employed as extraordinary professor of mathematics, experimental physics and astronomy, since his doctoral degree in Pisa was not recognized, much to de Castillon's frustration. In 1754, de Castillon defended a doctoral dissertation under the direction of Johannes Horthemels, and this allowed him to be promoted ordinary professor of mathematics and philosophy.[84] He moved to Berlin in 1763 where he taught at the *Artillerieschule* and was elected (1764) a member of the academy. The years in Berlin were extremely productive for de Castillon: he published many translations (most notably of Philostratus and Cicero) and contributed many papers to the *Mémoires* of the academy.[85] When, in 1787, Lagrange left Berlin, he succeeded him as president of the mathematical class. He died a few years later, in 1791.

In Utrecht, de Castillon published his commented edition of the *Arithmetica Universalis* (1761) [hereafter cited as *Arithmetica*].[86] As we stated above, its preparation had begun during the author's first years in the Pays de Vaud.[87] In the preface to the reader, de Castillon writes that he began working on the commented edition when he was asked by an English ('anglus') student, Latinised as "Stephanus Seignorettus," to explain Newton's work to him. This occurred "twenty years" before, that is, in the early 1740s.[88] This student must have been a particularly gifted one, since he is described by de Castillon as a study companion who contributed with his

observations to the commentary itself. A few years later, in 1744, de Castillon informed one of his brothers that a publication in Leiden was imminent.[89] In that year, Bousquet had just published Johann Bernoulli's four-volumes *Opera* (1742) and the three-volumes *Opuscula* (1744), and was planning the Bernoulli-Leibniz correspondence (1745): thus, it is unlikely that he wished at that time to embark on the expensive project of the *Arithmetica*.[90] The publication, however, was deferred. In 1749 and 1750 de Castillon circulated a printed flysheet in an aborted attempt to publish it by the end of 1750. From this flysheet, in which he was asking for subscriptions, we learn that he had in mind as a model the typographic characters and format of the *Opuscula* and the *Optice*, both printed by Bousquet. In the flysheet, de Castillon offered subscribers the work at a reduced price. After circulating the flysheet he called the "prospectus," de Castillon sent a letter to the September 1752 issue of the *Journal des Sçavans*, describing the work and its gestation.[91] As he explains, he took inspiration from 's Gravesande's *Matheseos Universalis Specimina* (1727), a set of algebra lectures which contains a partial comment on the *Arithmetica*.[92] De Castillon further thanks 's Gravesande for his help (indeed, he had used 's Gravesande's 1732 edition as the reference text, adding three new appendices),[93] help which was interrupted by the Dutchman's death in 1742 and by the commitment to prepare the *Opuscula* for publication.[94] In the end, it was only in 1761 – by which time de Castillon had become professor in Utrecht – that his "closest friend,"[95] Marc-Michel Rey (an apprentice of Bousquet who had moved in the Low Countries), printed the annotated edition in Amsterdam.[96] De Castillon, always attentive to patronage, dedicated the two volumes to the "Illustribus ac praepotentibus populi trajectini ordinibus electis equitibus magistratibus patriae patribus atque amplissimis consulibus et senatoribus Academiae curatoribus."

In the Preface, de Castillon praises the study of mathematics as a means to train the mind to rigorous reasoning. The mathematics tutor here indulges in some rather predictable tropes. Yet, there are some passages that deserve our attention. In one, de Castillon launches into a vehement invective against those philosophers, physicians, jurists and theologians who with their empty speculations have compromised the peace guaranteed by the Christian religion. De Castillon addresses his accusation to a broad range of philosophers and theologian (Catholic as well as Protestant) and the inclusion of Calvin is particularly striking for a work published in Amsterdam. It would be problematic, however, to consider this passage as anti-religious, or proving a support for **the** Radical Enlightenment **studied by** Israel. De Castillon is stressing his desire to restore a pristine, simple, Christian faith, immune of the sterile complications of theology. In fact, his position might be regarded as a logical consequence drawn from Turrettini's theology, even though the Genevan pastor would have, for sure, avoided a critical

reference to Calvin. Turrettini, and his pupil Vernet, abhorred metaphysical, dogmatic and abstract speculations in theology, and often stated that peace would have been guaranteed to Christianity only after purging it of dogmatic contrapositions about Grace, Free Will and Predestination. De Castillon proved to be in agreement with the Swiss milieu that gave him shelter from Catholic Inquisition, even though his words, somewhat hidden in a preface to a treatise on algebra, would have pleased those who claimed that Genevan theology bordered Socinianism.[97]

Equally interesting is a *laudatio* addressed to Democritus, a philo-Epicurean feature that, as we have noted above, colours de Castillon's paratext to the *Opuscula*. Mathematics, we are told, prepares the mind of adolescents to more readily accept the truth that can be drawn from Democritus's well.[98] Castilllon declares his preference for geometrical demonstrations: Wolff, and Newton himself, he claims, preferred geometry to algebra. Indeed, the disputes among mathematicians that punctuate the early-modern period were unknown to the ancients, de Castillon, citing here Wolff, surmises.[99] The utility of mathematics, de Castillon continues, consists in its application to natural philosophy: Newton applied conic sections to astronomy and Huygens the cycloid to horology. Leibniz and Bernoulli also made use of the cycloid in their solution of the brachistochrone problem, yet Bernoulli solved the problem in a more perfect way compared to Leibniz, de Castillon concludes. Once again, we find Leibniz downgraded in comparison to the Basel celebrity.[100]

The footnotes to the text adopt the same characteristic typographic features of the annotated edition to the *Principia* (they are set in two-columns, refer to the main text via italic letters ordered alphabetically on each page, and they are subdivided into numbered sections to allow cross-referencing). The reader is immediately struck by the similarity between the three volumes printed by Barrillot and the two volumes printed by Rey: one gets the strong impression that these works were produced as a set. De Castillon's aim is very similar to that envisaged by Calandrini, Le Seur and Jacquier; that is, he aims to fill the gaps, explain some obscure passages, and update Newton's text with new results. This last task is achieved by requiring the cooperation of other, more expert mathematicians, such as Nicolaus I and Daniel Bernoulli, Cramer and Calandrini.[101] While in the first volume one finds footnotes (sometime quite long ones) in the second volume de Castillon adds *commentarii*, in the form of short essays that complement Newton's work. A predilection for geometrical demonstrations surfaces in many of de Castillon's comments.

Some of the comments, most notably those in which de Castillon makes use of the advice of his Swiss and German correspondents, are particularly interesting from a mathematical point of view. In Volume 1 we find a note authored by Daniel Bernoulli on the second *articulus* of chapter 8 devoted to *de inventione divisorum*. In this chapter, Newton presents several applications of his method for finding divisors of polynomials. As often in the *Arithemetica*, Newton explains his method by imparting examples to the reader, while Daniel Bernoulli's note provides a general demonstration.[102] In the *commentarius* to Chapter 5, volume 2, de Castillon presents a rule for finding "surd" divisors of polynomials communicated to him by Nicolaus I Bernoulli, as it is explicitly stated in the *Arithmetica*. Indeed, in Chapter 5 Newton deals with several techniques for solving equations whose factors might contain surd quantities (namely, square roots of negative numbers).[103] Volume 2 opens with Newton's celebrated rule for finding the number of "impossible" (imaginary) roots. In Newton's text, the rule is explained by worked out examples. How to prove it was a major problem left to Newton's readers. In the late 1720s, the Scottish mathematicians George Campbell and Colin Maclaurin had provided demonstrations in the *Philosophical Transactions*. Latin translations of their papers are reproduced in appendices (which were already added by 's Gravesande in his 1732 edition).[104] In the third chapter, devoted to the transformation of equations (*De transmutationibus aequationum)*, Newton treated the "composition of the coefficients from the roots" and stated a set of rules.[105] His rules are "exactly equivalent to those given by [Albert] Girard in 1629 but in more easily memorable form [in the *Arithmetica universalis*]."[106] A demonstration of the Girard-Newton rules can be found in an appendix, added by de Castillon, and provided by Georg Friedrich Baermann, a mathematics professor in Wittenberg.[107] Thus, de Castillon's commentary contained some material, which we have just reviewed, that went beyond the didactic purpose of elucidating Newton's work for the sake of beginners.

Conclusion

In studying the Genevan and Lausanne editorial activities related to the *Opera*, we have encountered a version of Newtonianism that was promoted by means of epigraphs, dedications, prefaces, footnotes, commentaries, and monita. Editors, such as Calandrini and de Castillon, who by virtue of their background and profession could boast a respectable competence in mathematics, co-operated with more creative mathematicians – such as Gabriel Cramer, Daniel and Nicolaus Bernoulli – who contributed to the commentary, and with publishers – especially the Cramers and Bousquet – who were deeply engaged in promoting the Enlightenment (suffice

it to think about the relationship between the Cramers and Voltaire or between Bousquet and Giannone). Most of the paratexts we have considered in this paper were the result of a cooperation among the Swiss editors in such a way that it is often difficult to attribute them to a single author. Such multiplicity of authorship was indeed sought as a value in such journalistic and editorial enterprises: let it suffice to say that the name of Calandrini does not even appear on the title page of the annotated edition of the *Principia*.

Newtonianism was conceived by its francophone Swiss promoters as a seamless continuation of the integration of Cartesianism and religion that had taken place in the French Protestant academies, most notably that of Saumur, and then in Geneva with Chouet and Lausanne with Crousaz. The Swiss editors were also open to integrate Newton's natural philosophy with some of Leibniz's and Wolff's ideas. It is on this optimistic integration of science – first Cartesian and then Newtonian – and religion that theologians such as Turrettini and Jacob Vernet based their programmes, aimed at finding a middle way [*juste milieu*] between Radical Enlightenment, deism, atheism, and the dogmatism of religious orthodoxy, be it Catholic or Calvinist.

This Swiss variety of Newtonianism had to be integrated within the context of a celebration of the Helvetic scientific results achieved by the Bernoullis, a family that remained too prestigious in the Swiss context to be ignored. Irenism was the programme that was given voice by the Swiss *Opera Omnia*. In the pages of its nine volumes there was no room for a fight between Descartes and Newton, Newton and Leibniz, or Newton and Bernoulli: rather, as a mathematician Bernoulli was often ranked higher than Leibniz. In fact, Johann Bernoulli's works, written with belligerent purposes in the context of the Newton-Leibniz controversy, were used to comment upon and confirm Newton's demonstrations. The editors of the Swiss Newtonian *Opera Omnia* were mathematicians engaged in an effort to promote mathematicized Newtonianism, but they were Leibnizian as well, or better, Bernoullian mathematicians. And this tension, a resolved tension, and hence a sort of integration between Newton's natural philosophy and the Bernoullian mathematical heritage, teaches us once more just how fragmented and complex the reception of the Newton-Leibniz controversy in Europe was, a controversy which all too often has been described in geographical and military terms as a split between two warring lands. Studying the editorial activities surrounding Bousquet instead suggests the image of a complex archipelago, in which actors who did not brandish one of the two flags peacefully navigated, following routes dictated by their own idiosyncratic agendas.

In this paper, the word *réfugié* has cropped up frequently. Most of the people involved in the production of the *Opera Omnia* were *réfugiés*, sons of *réfugiés*, or distant descendants of those who constituted the first sixteenth-century wave of adherents to the Reformed Church, fleeing Catholic lands to find shelter in the Protestant Swiss cantons. As I have just claimed, the Newtonianism we have encountered in this paper has a Swiss character, but there is also a larger, transnational, context that is equally important to consider. This larger, European, context, is that of the *république des réfugiés,* or what Herbert Lüthy used to call the *internationale huguenote*.[108] We cannot study the making of the Swiss *Opera Omnia* without taking into consideration the network of relations, in some cases even family relationships, linking the Netherlands, England and the *Suisse romande*; nor can we do so without taking into consideration the peaceful cooperation, which in this climate of tolerant, irenic, moderate conjunction of Enlightenment values and religion, was possible between patricians in Calvinist Geneva, such as Calandrini, and Catholic inquisitors in Rome, such as Le Seur and Jacquier, as well as between the French Minim Jacquier and French mathematicians and philosophes, such as Madame du Châtelet and Voltaire, who were the promoters of more radical philosophical and political positions, rather removed from those endorsed by the pious Calvinists and the *cattolici illuminati* we have met in our paper.

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[1] See, Cléopâtre Montandon, *Le Développement de la Science à Genève aux XVIIIe et XIXe Siècles, le Cas d'une Communauté Scientifique* (Vevey: Éditions Delta, 1975); Samuel S. B. Taylor, "The Enlightenment in Switzerland," in Roy Porter and Mikuláš Teich (eds) *The Enlightenment in National Context* (Cambridge: Cambridge University Press, 1981), pp. 72-89; Simone Zurbuchen, *Patriotismus und Kosmopolitismus: Die Schweizer Aufklärung zwischen Tradition und Moderne* (Zürich, Chronos, 2003).

[2] René Sigrist, *L'Essor de la Science Moderne à Genève* (Lausanne: Presses polytechniques et universitaires romandes, 2004); Virginia P. Dawson, "Foundations of Natural Philosophy in Eighteenth-century Geneva," in Patrick Coleman, Anne Hoffmann and Simone Zurbuchen (eds) *Reconceptualizing Nature, Science, and Aesthetics – Contribution à une Nouvelle Approche des Lumières Helvétiques* (Geneva, Editions Slatkine, 1998), pp. 31-62.

[3] Martin I. Klauber, *Between Reformed Scholasticism and Pan-Protestantism, Jean-Alphonse Turrettin (1671-1737) and Enlightened Orthodoxy at the Academy of Geneva* (Selingsgrove: Susquehanna University Press, 1994), p. 15; Helena Rosenblatt, "The Language of Genevan Calvinism in the Eighteenth Century," in Patrick Coleman, Anne Hoffmann and Simone Zurbuchen (eds) *Reconceptualizing Nature, Science, and Aesthetics: Contribution à une Nouvelle Approche des Lumières Helvétiques* (Geneva: Editions Slatkine, 1998), pp. 69-78 (on p. 70).

[4] "Abrégé de Leçons de Théologie de Mr. T[urrettini]" quoted in Maria-Cristina Pitassi, "L'Apologétique Raisonnable de Jean-Alphonse Turrettini," in M-C. Pitassi (ed.) *Apologétique 1680-1740: Sauvetage ou Naufrage de la Théologie?* (Geneva: Labor et Fides, 1991), pp. 99-118 (on p. 101).

[5] On Vernet, see David Sorkin, *The Religious Enlightenment: Protestants, Jews, and Catholics from London to Vienna* (Princeton: Princeton University Press, 2011), pp. 69-111.

[6] See, for example, the brief discussion of Turrettini in Jonathan Israel, *Enlightenment Contested: Philosophy, Modernity, and the Emancipation of Man 1670-1752* (Oxford: Oxford University Press, 2006), p. 83.

[7] Sermon delivered on 18 November 1736, Archives d'État de Genève, Ms hist 71, f. 192v and 193r (cited in Rosenblatt, "The Language of Genevan Calvinism," p. 73 (note 3)); Corinne Walker, "Images du Luxe à Genève," *Revue du Vieux Genève* 16 (1987), pp. 23-4; Jacob Vernet, *Instruction chretienne* (La Neuveville: J. J. Marolf, 1754), 3, pp. 410-21. **On how Genevan theologians and political thinkers reacted to the corruption caused by the pursuit of wealth, see Richard Whatmore, *Against War and Empire: Geneva, Britain, and France in the Eighteenth Century* (New Haven, London: Yale University Press, 2012).**

[8] Johann Bernoulli to George Cheyne (21 October 1704). L Ia 673: Bl. 169-176 (University Library, Basel).

[9] Cited in Dawson, "Foundations of Natural Philosophy in Eighteenth-century Geneva", p. 51 (note 2).

[10] The implications between theology and politics in Vernet are discussed in Sorkin, *Religious Enlightenment*, pp. 85-97 (note 5).

[11] In Geneva in the middle of the eighteenth century, out of a population of some 24,000 people, only about 1,500 adult males were ranked as *citoyens* or *bourgeois* and could, therefore, vote. Similar proportions are to be found in Neuchâtel and Lausanne. Alfred Perrenoud, *La Population de Genève, XVI^{e}-XIX^{e} Siècles* (Geneva: Jullien, 1979); Thomas Maissen, *Geschichte der Schweitz* (Baden: Hier + Jetzt Verlag für Kultur und Geschichte, 2010).

[12] For Geneva, see John Rochester Kleinschmidt, *Les Imprimeurs et Libraires de la République de Genève, 1700-1798* (Genève: Imprimerie du Journal de Genève, 1948).

[13] On the *Encyclopédie* and De Felice, as well as for bibliographic references, see http://encyclopedie-yverdon.org (11 October 2016). On the Cramers, publishers and friends of Voltaire's, see Lucien Cramer, *Une Famille Genevoise, les Cramer, Leurs Relations avec Voltaire, Rousseau et Benjamin Franklin-Bache* (Geneva: Droz, 1952).

[14] On Bousquet, see Antoinette Dufour, "Le Libraire Imprimeur Marc-Michel Bousquet, 1696-1762: Essai Biobibliographique," *Musée Gutenberg Suisse* (décembre 1939): 197-206; Silvio Corsini, "Vingt-cinq Ans d'Édition et d'Imprimerie à Lausanne au Siècle des Lumières: le Libraire Marc-Michel Bousquet, 1736-1761," *Revue Historique Vaudoise* 120 (2012): 23-53.

[15] *Philosophiae Naturalis Principia Mathematica: Auctore Isaaco Newtono Eq. Aurato, Perpetuis Commentariis illustrata, communi studio PP. Thomae Le Seur & Francisci Jacquier ex Gallicanâ Minimorum Familiâ Matheseos Professorum* (Genevae: Typis Barrillot & Filii Bibliop. & Typogr., 1739, 1740, 1742). The three volumes are as follows: 1739: *Tomus Primus* (pp. xxxvi + 1-548); 1740: *Tomus Secundus* (pp. ii + 1-422); 1742: *Tomi Tertii Pars I* (pp. iv + 1-374), *Tomi Tertii Continuatio, Continens Lunae Theoriam Newtonianam* (pp. viii + 375-536), *Philosophiae Naturalis Principia Mathematica, Libri Tertii Continuatio II* (pp. 537-703).

[16] On the edition and the question of the authorship of the footnotes, see Niccolò Guicciardini, "Editing Newton in Geneva and Rome: The Annotated Edition of the *Principia* by Calandrini, Le Seur, and Jacquier," *Annals of Science* 72(3) (2015): 337-380. Further information can be drawn from Paolo Bussotti and Raffaele Pisano, "On the *Jesuit* Edition of Newton's *Principia*: Science and Advanced Researches in the Western Civilization," *Advances in Historical Studies* 3(1) (2014): 33-55, "Newton's P*hilosophiae Naturalis Principia Mathematica* 'Jesuit' Edition: the Tenor of a Huge Work," *Rendiconti Lincei: Matematica e Applicazioni* 25(4) (2014): 413-44, and "A Newtonian Tale: Details on Notes and Proofs in Geneva Edition of Newton's *Principia*," *BSHM Bulletin: Journal of the British Society for the History of Mathematics*, 31(3) (2016): 160-78.

[17] Biographical information on Calandrini can be found in Jean Senebier, *Histoire Littéraire de Genève* (Geneva: Barde, Manget et co., 1786), Vol. 3, pp. 112-26; and in the "éloge" published in *Journal Helvétique* (January 1759): 30-4.

[18] On the Calvinist emigration from Lucca, see Ole Peter Grell, *Brethren in Christ: a Calvinist Network in Reformation Europe* (Cambridge: Cambridge University Press, 2011).

[19] Michael Heyd, *Between Orthodoxy and the Enlightenment: Jean-Robert Chouet and the Introduction of Cartesian Science in the Academy of Geneva* (The Hague, Boston: Martinus Nijhoff,; Jerusalem: Magnes Press, 1983).

[20] Charles Borgeaud, *Histoire de l'Université de Genève: l'Académie de Calvin (1559-1789)* (Geneva: Georg & Co, 1900-); Michael Heyd, "The Genevan Academy in the Eighteenth Century: a Calvinist Seminary or a Civic University?" in Thomas Bender (ed.) *The University and the City: from Medieval Origins to the Present* (New York, Oxford: Oxford University Press, 1988), pp. 79-99.

[21] On the religious content of Calandrini's (and Cramer's) lectures, see the study of Trembley's and Bonnet's notebooks and diaries in the section "Education under Cramer and Calandrini," in Virginia P. Dawson, *Nature Enygma: The Problem of the Polyp in the Letters of Bonnet, Trembley and Réaumur* (Philadelphia: American Philosophical Society, 1987), pp. 64-83. Calandrini's extant lectures are Ms. fr. 654 (Bibliothèque de Genève).

[22] Translated in Dawson, *Nature Enygma*, p. 65 (note 21), from Charles Bonnet, *Mémoires Autobiographiques de Charles Bonnet de Genève*, edited by Raymond Savioz (Paris: Vrin, 1948), p. 44.

[23] Jean Sénebier, *Histoire Littéraire de Genève*, tome 3eme (Genève: Barde, Manget, & co.. 1786), p. 124.

[24] Calandrini contributed a "Dissertation sur la Force des Corps," *Journal Historique de la République des Lettres* 2 (1732): 230-9. 's Gravesande criticized Calandrini's paper in "Nouvelles Expériences sur la Force des Corps en Mouvement; Précédés d'une Réponse à la Dissertation sur la Force des Corps, Insérée dans le Tome II de ce Journal, page 230," *Journal Historique de la République des Lettres* 3(1) (July-August 1733): 374-97. Both are reprinted in Willem 's Gravesande, *Oeuvres Philosophiques et Mathématiques, Première Partie*, edited by Jean N. S. Allamand (Amsterdam: Marc-Michel Rey, 1774), pp. 269-73 and 273-84.

[25] On the relationships between Calandrini and 's Gravesande and their discussions concerning the *vis viva* controversy, see Jip van Besouw, "The Wedge and the *Vis Viva* Controversy: How Concepts of Force Influenced the Practice of Early Eighteenth-Century Mechanics," *Archive for History of Exact Sciences* 71(2) (2017): 109-56.

[26] According to Crucitti-Ullrich, the initial project was conceived by Seigneux de Correvon and its execution was left to Bourguet. See Francesca Bianca Crucitti-Ullrich, *La "Bibliothèque Italique": Cultura "Italianisante" e Giornalismo Letterario* (Milano/Napoli: Ricciardi, 1974).

[27] In 1732 the *Bibliothèque* published a long critique of a letter against the vortex theory of planetary motions printed anonymously in Turin, most probably the work of two pupils of Celestino Galiani, Bernardo Andrea Lama and Joseph Roma. See Simone De Angelis, *Von Newton zu Haller: Studien zum Naturbegriff zwischen Empirismus und Deduktiver Methode in der Schweizer Frühaufklärung (*Tübingen: Max Niemeyer, 2003).

[28] Clairaut to Calandrini (6 March 1748), in Pierre Speziali, "Une Correspondance Inédite entre Clairaut et Cramer," *Revue d'Histoire des Sciences et de Leurs Applications* 8(3) (1955): 193-237 (on pp. 233-7).

[29] On the developments of mid-eighteenth century calculus and mechanics, see Sandro Caparrini and Craig Fraser, "Mechanics in the Eighteenth Century," in J. Buchwad and R. Fox (eds.) *Oxford Companion to the History of Physics* (Oxford: Oxford University Press, 2013), pp. 358-406.

[30] On the significance of the annotated edition for the introduction of Newtonianism in Rome, see Guicciardini, "Editing Newton in Geneva and Rome" (note 16).

[31] Johann Bernoulli to Giovanni Poleni (21 September 1731) cites the Genevan mathematician in the genitive case as "Gabrielis Crameri, Matheseos Professoris, mei quondam Discipuli." Ms. It. 284 (= 6576), fo.1 (Biblioteca Marciana (Venice)).

[32] For example, in the same footnote (vol. 1, pp. 109-110) Le Seur and Jacquier cite the paper by John Keill that gave rise to the Leibniz-Newton controversy, since there Keill accused Leibniz of having plagiarized Newton. Just a page before, they cite a paper by Johann Bernoulli that was instrumental in Leibniz's polemic against Newton, since there Bernoulli stated that Newton had not solved the inverse problem of central forces in Corollary 1 to Proposition 13, Book 1, of his *Principia*. See John Keill, "Epistola ad Clarissimum Virum Edmundum Halleium Geometriae Professorem Savilianum, de Legibus Virium Centripetarum," *Philosophical Transactions* 26 (1708): 174-8; and Johann Bernoulli, "Extrait de la Réponse de M. Bernoulli à M. Herman, Datée de Basle le 7. Octobre 1710," *Mémoires de l'Académie des Sciences* (1710): 521-33. On the heated polemic between Bernoulli and Keill, see Niccolò Guicciardini, "Johann Bernoulli, John Keill and the Inverse Problem of Central Forces," *Annals of Science* 52(6) (1995): 537-75. On the polemic between Newton and Leibniz, see the classic study, A. Rupert Hall, *Philosophers at War: The Quarrel Between Newton and Leibniz* (Cambridge: Cambridge University Press, 1980).

[33] See, *Principia* (1739-42), note (d) 7, in vol. 1, p. 4, and note (r) 158, in vol. 1, 86.

[34] On Vernet, see Sorkin, *The Religious Enlightenment* (note 5). On Turrettini, see Pitassi, "L'Apologétique Raisonnable de Jean-Alphonse Turrettini" (note 4).

[35] On Bousquet, see Dufour, "Le Libraire Imprimeur Marc-Michel Bousquet" (note 14); Corsini, "Vingt-cinq Ans d'Édition et d'Imprimerie à Lausanne au Siècle des Lumières" (note 14).

[36] *Optice sive de Reflexionibus, Refractionibus, Inflexionibus et Coloribus Lucis, Libri Tres, Auctore Isaaco Newton, Equite Aurato, Latine Reddidit Samuel Clarke, S. T. P., Editio Novissima* (Lausannae & Genevae: sumpt. Marci-Michaelis Bousquet & Sociorum, MDCCXL [1740]). Bousquet reissued the text of *Optice: sive de Reflexionibus, Refractionibus, Inflexionibus & Coloribus Lucis, Libri Tres Authore Isaaco Newton, Equite Aurato, Latine reddidit Samuel Clarke, S.T.P., Editio Secunda, Auctior* (Londini : Impensis Gul. & Joh. Innys Regiae Societatis Typographorum ad Insignia Principis in Areâ Occidentali D. Pauli, MDCCXIX [1719]).

[37] See, Hall, *Philosophers at War* (note **32**).

[38] "Cum itaque Gallia suum Cartesium, Batavia suum Hugenium commemoret; Germania vero de Leibnitio triumphos agat, & Britannia suum Newtonum tanquam Semideum in coelos efferat; habebitne Helvetia de quo glorietur, quae Virum dedit, qui non solum errores vidit & emendavit, sed, quod mihi multo majus videtur, hos ipsos Viros recte laudare, nempe intelligere & imitari docuit?" (Since France remembers her own Descartes, Holland her own Huygens, and indeed Germany celebrates Leibniz's triumphs, and Britain elevates to the sky her own Newton as a demigod, hasn't Switzerland something about which she can glorify herself, since she generated a man who not only could see and emend the errors, but who – which seems to me even greater – taught how one should rightfully praise, indeed understand and imitate, those men), p. iv.

[39] "Saeculi sui Archimedes/non illis Europae luminibus/ Cartesiis Newtonis Leibniziis/ mathematum scientia secundus." I thank Martin Mattmüller for provinding information on the epitaph to Bernoulli.

[40] "Praeclarissima enim inventa, quibus jam ex quinquaginta fere annis Geometriam in immensum ampliasti, jam dudum in eo gradu Te constituerunt, ut hodie nemo hoc in genere Tecum se comparare ausit" (Indeed those

renowned inventions, with which for almost fifty years you have broadened the scope of geometry, have already placed you in such a high position that today nobody dares to compare himself to you in this kind of study), p. iii.

[41] "quem [Newtonum] amicum habuisti, & saepius maximis laudibus condecorasti" (you had Newon as a friend, and you often graced him with great praise), pp. vi-vii.

[42] Johann Bernoulli, *Opera Omnia, tam antea Sparsim Edita, quam hactenus Inedita* (Lausannae & Genevae: sumptibus M. M. Bousquet & sociorum, MDCCXLII [1742]). See Guicciardini, "Editing Newton in Geneva and Rome" (note 16), pp. 351-2..

[43] *Got. Gul. Leibnitii et Johan. Bernouilli Commercium Philosophicum et Mathematicum*, 2 vols (Lausannæ & Genevæ: sumptibus M. M. Bousquet & sociorum, 1745).

[44] Gabriel Cramer, *Introduction à l'Analyse des Lignes Courbes Algébriques* (Geneva: Chez les Frères Cramer & Cl. Philibert, 1750).

[45] On Marchetti and Lucretius, see Mario Saccenti, *Lucrezio in Toscana: Studio su Alessandro Marchetti* (Firenze: Olschki, 1965).

[46] The most up-to-date study of de Castillon is Joppe van Driel, *Enlightening the Matter of Science: the Anti-materialistic Enlightenment Philosophy of Jean de Castillon (1709-1791)*, Master degree thesis (Utrecht, 2011). See also: Siegfried Bodenmann, "Inroduction, Jean de Castillon," in S. Bodenmann and Andreas Kleinert (eds.) *Correspondance de Leonhard Euler avec L. Bertrand, Ch. Bonnet, J. Castillon, G. Cramer, Ph. Cramer, G. Cuenz, G. L. Lesage, J. M. von Loen et J. K. Wettstein* (Basel: Birkhäuser, in press); Stefano Ferrari, "Itinerari del Protestantesimo Italiano nell'Europa del Settecento," in G. Ciappelli, S. Luzzi, M. Rospocher (eds.) *Famiglia e Religione in Europa nell'Età Moderna: Studi in Onore di Silvana Seidel Menchi*, Atti del Convegno di Studi, Rovereto 16-18 giugno 2010 (Rome: Edizioni di Storia e Letteratura, 2011), pp. 71-84; J.C. Laursen, "Intellectual Resistance to Absolute Monarchy in Eighteenth-Century Prussia: Castillon's Translation of Blount's *Philostratus*," in H. Blom, J. C. Laursen, L. Simonutti (eds.) *Monarchism in the Age of Enlightenment* (Toronto, Toronto University Press, 2007), pp. 267-81; J. C. Laursen, "Cicero in the Prussian Academy: Castillon's Translation of the *Academica*," *History of European Ideas* 23(2) (1997): 117-27; J. C. Laursen and R. Popkin, "Sources of Knowledge of Sextus Empiricus in Kant's Time: a French Translation of Sextus Empiricus from the Prussian Academy, 1779," *British Journal for the History of Philosophy* 6(2) (1998): 261-7; Maria Chiara Milighetti, "Giovan Francesco Salvemini detto Castiglione, Esilio e Ascesa di un Matematico," *Nuncius* 18(2) (2003): 603-17; Giorgio Spini, "Giovan Francesco Salvemini 'de Castillon' tra Illuminismo e Protestantesimo," in *I Valdesi e l'Europa*, Enea Balmas (ed.) (Torre Pelice: Società di Studi Valdesi, 1983), pp. 319-50; Edoardo Tortarolo, "Giovanni Salvemini di Castiglione: Uguaglianza e Giusnaturalismo Arminiano," in Giulia Cantarutti and Stefano Ferrari (eds.) *Illuminismo e Protestantesimo* (Milano: Franco Angeli, 2010), pp. 71-86. Salvemini's letters to his brothers are still owned by the descendants and are not available to scholars. A partial transcription by Giuseppe Ghizzi (1870) and a biography written by his brother Pietro Paolo are to be found in the Biblioteca Comunale di Castiglion Fiorentino (AR), Ms 475. A useful, but again partial, transcription from the original archive is Maria Chiara Milighetti, *Lettere di un Matematico Castiglionese* (Cortona: Arti Tipografiche Toscane, 1999).

[47] Salvemini's contacts with the Florentine masonic lodge is made probable by the citations of known members, such as Luca Antonio Corsi, Ottaviano Bonaccorsi, and Antonio Maria Niccolini, that appear in the correspondence with his brothers. See, Milighetti, *Lettere di un Matematico Castiglionese* (note **46**), and Biblioteca Comunale di Castiglion Fiorentino (AR), Ms 475. On the "loggia degli inglesi," see Franco Cristelli, *Alle Origini della Massoneria Fiorentina* (Firenze: Olschki, 1999); Maria Augusta Morelli Timpanaro, *Tommaso Crudeli, Poppi*

1702-1745: Contributo per uno Studio sulla Inquisizione a Firenze nella Prima Metà del XVIII Secolo (Firenze: Olschki, 2003).

[48] For the publication of his French translation of Locke's *Elements of Natural Philosophy*, de Castillon got in touch with Johan Schreuder, master of the Amsterdam masonic lodge *La bien aimée*, who was the publisher of John Locke, *Elements de Physique, avec les Penseés du Même Auteur sur la Lecture et les Études qui Conviennent à un Gentilhomme, trad. par Jean de Castillon* (Amsterdam & Leipzig: Schreuder & Mortier le Jeune, 1757). On Schreuder, see Margaret C. Jacob, *Living the Enlightenment: Freemasonry and Politics in Eighteenth-Century Europe* (New York: Oxford University Press, 1991), pp. 97-115.

[49] See Castillon to Jean Henri van Swinden, 31 October 1781. BPL 775 (Universiteitsbibliotheek Leiden). Cited in van Driel, *Enlightening the Matter of Science*, p. 115.

[50] See EC/1745/05 (Royal Society Library, London).

[51] J. W. Simons, and R. Macoy, *The Masonic Eclectic*, vol. 2. (New York: Masonic publishing and manufacturing co., 1866), vol. 1, p. 46.

[52] Archives d'État, Genève, Prosélytes 4, pp. 204 e 206, Consistoire R 82, p. 382.

[53] Giovanni Francesco Salvemini (Jean de Castillon) to his brother Niccolò (22 September 1744): "Bisogna che adesso che me ne ricordo vi dica perché ho cambiato di nome. Ho fatto questo mosso dalle ottime parole della sig.ra Madre, che mi sono state fisse sempre nel cuore. Guardate bene di non fare disonore alla famiglia. Per essere sicuro di non fargli disonore, mi sono nascosto in sorte." (Now that I am reminded that, I should explain to you why I changed name. I did this moved by the excellent words of our Mother, which always remained fixed in my heart. Beware not to dishonour the family. In order to be sure not to cause any dishonour I have kept myself hidden). Transcribed from the original in Milighetti, *Lettere di un Matematico Castiglionese*, p. 51 (note **46**).

[54] De Castillon's translation circulated in manuscript form before being printed in 1760, enriched by a biography of Pope, a translation of *excerpta* from Petronius's *Satyricon*, a few poems, an ode dedicated to Albrecht von Haller, and four rhymes, a posthumous work of de Castillon's first wife, Élisabeth Dufresné. See, Alexander Pope, *Saggio sull'Uomo del Sig. Alessandro Pope, Tradotto dall'Inglese dal Sig. Gio. Castiglioni* (Bern: Wagner, 1760).

[55] *Isaaci Newtoni, Equitis Aurati, Opuscula Mathematica, Philosophica et Philologica: Collegit partímque Latinè Vertit ac Recensuit Joh. Castillioneus, Jurisconsultus: Tomus Primus Continens Mathematica; Accessit Commentariolus de Vita Auctoris* (Lausannae & Genevae: Apud Marcum-Michaelem Bousquet & socios, MDCCXLIV [1744]) (Tomus Secundus Continens Philosophica, Tomus Tertius Continens Philologica).

[56] De Castillon thanks Cramer in *Opuscula*, pp. iii-iv. John Harris, *Lexicon Technicum: or, an Universal English Dictionary of Arts and Sciences: Explaining not only the Terms of the Art, but the Arts Themselves*, 2 vols (London: for D. Brown, et al., 1704, 1710). De Castillon used the 1737 edition.

[57] MS Add. 3960.14 (Cambridge University Library). Untitled since the first folio is lacking, known as *Tractatus de Methodis Serierum et Fluxionum*. Date of composition: 1670-1671. Available in *The Mathematical Papers of Isaac Newton*, edited by D. T. Whiteside (Cambridge, Cambridge University Press, 1967-1981), Vol. 3, pp. 38-328. It first appeared in the English translation by John Colson: Isaac Newton, *The Method of Fluxions and Infinite Series* (London: by H. Woodfall, sold J. Nourse, 1736).

[58] Newton's "Lunae Theoria" was published as an appendix in David Gregory, *Astronomiae Physicae & Geometricae Elementa* (Oxford: e Theatro Sheldoniano, 1702), pp. 332-336. It is understandable that this tract was not republished by de Castillon since it was completely out-dated.

[59] "Illustrissimae Societati Regiae … Opuscula Haec a Viro Immortali ejusdem [the RS] Socio Clarissimo, Praeside Dignissimo, Isaaco Newtono, conscripta, dat, dicat, dedicat, seu potius reddit, retribuit, restituit, J. Castillioneus, Collector & Editor."

[60] The election certificate reads "Sign. Castiglione of Lausanne, the late publisher of Sir Isaac Newtons opuscula, presented at the last meeting of this Society, being desirous of the honour of being elected into the Same. We whose names are under written do, on the knowledge we have of his general character for Learning and merit, hereby propose him as a candidate for election into the Royal Society, and recommend him as a Gentleman of known Skill in Mathematical and Philosophical knowledge, every way worthy of being a member of the Society, and like to be a usefull correspondent of the Same. London, February 28, 1744/5. Signed by R. Mead, M. Folkes, Crom[ll] Mortimer, John Machin. Balloted and elected May 30, 1745" (EC/1745/05, Royal Society Library, London). De Castillon corresponded with Joseph de Montagny, FRS, pastor and extraordinary professor of metaphysics and natural theology at the Academy of Lausanne, in relation to his edition of the *Opuscula*. In a letter of 6 May 1742, Montagny provides a table of contents of the first two volumes and asks whether any "gentleman' at the Royal Society knows any other "little tract of Sir Isaac either printed or in manuscript." He also asks how a "genuine copy of the method of fluxions" can be obtained, and if the "Systema Mundi" and the "Tractatus de salibus" (namely, the *De natura acidorun*) are really by Newton (L&P/1/86, Royal Society Library, London). De Montagny had already written to Hans Sloane asking assistance in relation to de Castillon's *Opuscula*. In this letter dated Lausanne, 8 April 1741 (NS) (and read on 4 June 1741), De Montagny states that his "friend" is "also about a Commentary upon the same great Man's [Newton's] Universal Arithmtick, and the Plan of this Work has had the approbation of divers persons of Skill, and in particular of a great Mathematician and Philosopher well known in the Republick of Letters" (letters from foreign corresponding members were usually translated into English). (LBC, 26, ff. 330v-335r (on f. 334v), Royal Society Library, London).

[61] In Isaac Newton, *Analysis per Quantitatum Series, Fluxiones, ac Differentias: cum Enumeratione Linearum Tertii Ordinis* (London: Pearson, 1711), pp. 1-21.

[62] De Castillon translated Isaac Newton, *The Method of Fluxions and Infinite Series* (London: by H. Woodfall, sold J. Nourse, 1736) into Latin. De Castillon's "source" was thus an English translation of a Newtonian Latin treatise on series and fluxions, composed in 1670-1, carried out by John Colson, who most probably used a manuscript copy in possession of William Jones. See, *The Mathematical Papers of Isaac Newton*, vol. 3 (Cambridge: Cambridge University Press, 1969), p. 32 (n. 2) and p. 33 (n. 3). De Castillon made use also of the French translation by Georges-Louis Leclerc Buffon, *La Méthode des Fluxions et des Suites Infinies* (Paris: De Bure, 1740), which was based on Colson's version. "Illum [the *de methodis*] tandem anglice nobis impertivit Clarissimus Colsonus, unde ego hunc exhibui. Praetermittendum autem non videtur eumdem Gallica Lingua donatum a Doctissimo Buffono, typis excusum fuisse Lutetiae Parisiorum anno 1740. Quam versionem utiliter me consuluisse fateor, & eo nomine Clarissimo illius Auctori gratias multas ago" (Eventually it [Newton's *De methodis*] was communicated to us in English by the celebrated Colson, and I reproduced it. One should not overlook that the same [treatise] rendered into French by the most learned Buffon, was published in Paris in 1740. I acknowledge that consulting that version was most useful for me, and I give many thanks to the renowned name of that author). *Opuscula*, p. vi.

[63] James Stirling, *Lineae Tertii Ordinis Neutonianae, sive, Illustratio Tractatus D. Neutoni De Enumeratione Linearum Tertii Ordinis: Cui Subjungitur, Solutio Trium Problematum* (Oxford: Eduardi Whistler, 1717); François Nicole, "Traité des Lignes du Troisième Ordre, ou des Courbes du Second Genre," *Histoire de l'Académie Royale des Sciences, Année M. DCCXXIX; Avec les Mémoires de Mathématique & de Physique, pour la Même Année, Tirés*

de Registres de cette Académie, 1731, (Mémoires), pp. 194-224; Christophe-*Bernard* de Bragelogne, "Examen des Lignes du Quatrième Ordre ou Courbes du Troisième Genre," *Histoire de l'Académie Royale des Sciences, Année M. DCCXXX. Avec les Mémoires de Mathématique & de Physique, pour la Même Année, Tirés des Registres de cette Académie*, 1733, (Mémoires), pp. 226-312.

[64] Newton, *Analysis per Quantitatum Series, Fluxiones, ac Differentias*, pp. 93-101 (note **61**).

[65] *Commercium Epistolicum D. Johannis Collins, et Aliorum de Analysi Promota: Jussu Societatis Regiae in Lucem Editum* (London: Pearson, 1712); Joseph Raphson, *The History of Fluxions, Shewing in a Compendious Manner the first Rise of, and Various Improvements Made in that Incomparable Method* (London: by W. Pearson, sold by R. Mount, 1715); *Historia fluxionum, sive Tractatus Originem & Progressum Peregregiæ Istius Methodi Brevissimo Compendio (et quasi Synopticè) Exhibens* (London: by W. Pearson, sold by R. Mount, 1715, 2nd edn 1717); Pierre des Maizeaux, *Recueil de Diverses Pieces, sur la Philosophie, la Religion Naturelle, l'Histoire, les Mathématiques, &c. Par Mrs. Leibniz, Clarke, Newton & Autres Auteurs Célèbres, 2 vols.* (Amsterdam: chez Duvillard et Changuion, 1720) (2nd ed. Amsterdam: H. Du Sauzet, 1740).

[66] "An Account of the Book Entituled Commercium Epistolicum Collinii & Aliorum de Analysi Promota; Published by Order of the Royal Society, in Relation to the Dispute Between Mr. Leibnitz and Dr. Keill, About the Right Invention of the Method of Fluxions, by Some Call'd the Differential Method," *Philosophical Transactions* 29, no. 342 (1715): 173-224.

[67] Newton's papers on the prisms experiments in the *Philosophical Transactions* are listed in Rob Iliffe and George Smith (eds.), *The Cambridge Companion to Newton* 2nd edition (Cambridge: Cambridge University Press, 2016), pp. 597-8. The "Tabula Refractionum Siderum ad Altitudines Apparentes" is on p. 172 of Edmond Halley, "Some Remarks on the Allowances to be made in Astronomical Observations for the Refraction of the Air … with an Accurate Table of Refractions," *Philosophical Transactions* 31 (1721): 169-172.

[68] "Scala graduum Caloris," *Philosophical Transactions* 22 (1701): 824-9; "De Natura Acidorum" and "Some Thoughts about the Nature of Acids," in Harris, *Lexicon Technicum*, vol. 2, p. 906 (note **56**) (de Castillon used the 1737 edition); *De Mundi Systemate Liber* (London: Impensis J. Tonson, J. Osborn & T. Longman, T. Ward & E. Wicksteed, & F. Gyles, MDCCXXXI [1731]); *Isaaci Newtoni, eq. aur. in Academiâ Cantabrigiensi Matheseos olim Professoris Lucasiani Lectiones Opticæ: Annis MDCLXIX, MDCLXX & MDCLXXI, In Scholis Publicis Habitæ: et nunc primum ex MSS. in Lucem Editæ* (London: apud Guil. Innys, 1729).

[69] *A Short Chronicle from the First Memory of Things in Europe to the Conquest of Persia by Alexander the Great*, first published in an unauthorized French translation in 1725 and then in English, edited by John Conduitt (London, 1728).

[70] The *Chronology of Ancient Kingdoms Amended*, edited by John Conduitt (London, 1728).

[71] The translation is from Newton's English original paper in *Philosophical Transactions* no. 389 (1725): 315-21.

[72] *Ad Danielis Profetae Vaticinia, nec non Sancti Johannis Apocalypsin, Observationes: Opus Postumum ex Anglica Lingua in Latinam Convertit, & Annotationibus Quibusdam & Indicibus Auxit, Guiliemus Suderman* (Amsterdam: Apud Martinum Schagen, 1737).

[73] "A Dissertation upon the Sacred Cubit of the Jews: Translated from the Latin of Sir Isaac Newton," Thomas Birch (ed.) in *Miscellaneous Works of Mr. John Greaves, Professor of Astronomy at the University of Oxford: to the Whole is Prefix'd an Historical and Critical Account of the Life and Writings of the Author* (London: Published by Thomas Birch, printed by J. Hughs, for J. Brindley, and C. Corbett, 1737), vol. 2, pp. 405-33.

[74] Bernard le Bovier de Fontenelle, "Éloge de M. Neuton," *Histoire de l'Académie Royale des Sciences: Année M. DCCXXVII, Avec les Mémoires de Mathématique & de Physique, pour la Même Année, Tirés de Registres de cette Académie*, 1729, (Histoire), pp. 151-72; Henry Pemberton, *A View of Sir Isaac Newton's Philosophy* (London: by S. Palmer, 1728). De Castillon cites also from: *Commercium Epistolicum* (note **65**); Raphson, *History of* Fluxions (note **65**); des Maizeaux, *Recueil de Diverses Pièces* (note **65**); *Abregé de la Chronologie de M. le Chevalier Isaac Newton* (Paris: Guillaume Cavelier, 1725); the *Praefatio* from 's Granvesande's edition of the *Arithmetica Universalis* (Amsterdam: J. et H. Verbeek, 1732); John Woodward, *Fossils of all Kinds, Digested into a Method Suitable to their Mutual Relation and Affinity* (London: William Innys, 1728).

[75] Namely, *De Rerum Natura*, 3, 9-15. A seventeenth-century English translation runs as follows: "Thy learning brings,Thou first and noblest searcher out of things, Thy countries precepts home to us, where we Out of thy prayers, like the industrious bee In the greene woods, with new-borne flowers deckt, Gathering her sweets, thy golden sayings collect; Those golden sayings, still worthy to survive." *Lucy Hutchinson's Translation of Lucretius: De Rerum Natura*, Hugh de Quehen /ed.) (London: Duckworth, 1996), p. 86.

[76] See, the alarmed reference to Epicurus in the famous letters to Richard Bentley in Newton, *Correspondence*, III, p. 240, and pp.253–4.

[77] W. R. Albury, "Halley's Ode on the *Principia* of Newton and the Epicurean Revival in England," *Journal of the History of Ideas*, 39(1) (1978), pp. 24-43.

[78] *De Rerum Natura*, 3, 1043-1044.

[79] Georges-Louis Le Sage, "Lucrèce Newtonien", *Nouveaux Mémoires de l'Académie Royale des Sciences et des Belles-Lettres, Année MDCCLXXXII, avec l'Histoire pour la même Année (*Berlin: Decker, 1784), (*Mémoires*), pp. 404-431.

[80] In 1731 Cramer supervised Jean Jallabert's thesis on gravitation, *Theses Physico-Mathematicae de Gravitate, in Quibus Ejus Leges ex Motibus Caelestibus Deducuntur, ac Circa Ejus Causam Mechanicam Hypothesis Eruditorum Examini Subjicitur* (Geneva: Bousquet, 1731). On Fatio's theory, see Horst Zehe, *Die Gravitationstheorie des Nicolas Fatio de Duillier* (Hildesheim: Gerstenberg, 1980). On the Genevan tradition on mechanistic explanations of gravity see Sigrist, *L'Essor de la Science Moderne à Genève*, pp. 80-5.

[81] For de Castillon's confrontational position concerning Rousseau and d'Holbach, see de Castillon, *Discours sur l'Origine de l'Inegalité parmi les Hommes* (Amsterdam: Jolly, 1756), and *Observations sur le Livre Intitulé Système de la Nature* (Berlin: Decker, 1771). On de Castillon's philosophy and religion, see van Driel, *Enlightening the Matter of Science*, pp. 121-49 (note **46**). De Castillon's criticisms of Blount surface in his translation Philostratus, *Vie d'Apollonius de Tyane: Avec les Commentaires Donnés en Anglois par Charles Blount sur les Deux Premiers Livres de cet Ouvrage, Le tout Traduit en François*, 4 vols. (Berlin: Decker, 1774). See, Laursen, "Intellectual Resistance to Absolute Monarchy in Eighteenth-Century Prussia" (note **46**). On the association between de Castillon and Formay, see Edoardo Tortarolo, *La Ragione sulla Sprea: Coscienza Storica e Cultura Politica nell'Illuminismo Berlinese* (Bologna: Il Mulino, 1989), pp. 54-59. We find de Castillon reassuring his brother Niccolò about his Christian faith in a letter dated 22 September 1744 (his words seem to imply a conversion after a juvenile moment of un-religion): "grazie a Dio sono divenuto buon Cristiano e devoto, non tanto quanto dovrei, ma sinceramente più che non sono mai stato. Dio mi facesse la grazia di camminare sempre nel buon cammino e doventare [sic] migliore di giorno in giorno, però [perciò] pregate Dio per me, non che io stia bene e diventi ricco ma che sia buon Cristiano: io non manco e non mancherò di fare il medesimo per voi. Amen" (Thanks to God I have become a good Christian and pious, not as much as I should, but sincerely more than I have ever been.

Let God make me the grace to walk always along the good path and to become better day after day. Thus, pray for me, not that I will be healthy and rich, but that I might be a good Christian. I do not, and will not, fail to do the same with you. Amen). Milighetti, *Lettere di un Matematico Castiglionese*, p. 50 (note **46**).

[82] Archives communales de Vevey, série bleue I 1 e Aa 49, 52-53; and Edouard Recordon, *Études Historiques sur le Passé de Vevey*, 2e série (Vevey: Säuberlin & Pfeiffer, 1945), p. 90. Cited in van Driel, *Enlightening the Matter of Science*, p. 41 (note **46**).

[83] Bodenmann, "Inroduction, Jean de Castillon," pp. 133-4 (note **46**).

[84] In 1758/9 de Castillon was the rector magnificus of the University, and from January 15, 1759 he was ordinary professor of philosophy, mathematics and astronomy (Universiteit Utrecht, Catalogus Professorum Academiae Rheno-Traictinae e Het Utrechts Archief, Notariële akten, u237a1-90). During his period in Utrecht de Castillon published a confutation of Jean-Jacques Rousseau and a translation into French of Locke's *Elements of Natural Philosophy*: see, Jean de Castillon, *Discours sur l'Origine de l'Inegalité parmi les Hommes* (Amsterdam: Jolly, 1756); John Locke, *Éléments de Physique, avec les Pensées du Même Auteur sur la Lecture et les Etudes qui Conviennent à un Gentilhomme, trad. par Jean de Castillon* (Amsterdam & Leipzig: Schreuder & Mortier le Jeune, 1757).

[85] One should add the French translation (1765) of the *Dissertation on Miracles* by George Campbell, a refutation of the *System de la nature* of the baron D'Holbach (1771), the French translation (1772) of the *Vita di Francesco Algarotti* by Domenico Michelessi, the French translation (1774) of the life of Apollonius of Tiana by Philostratus with notes by Charles Blount, and the French translation (1779) of Cicero's *Academica*. These last two translations were carried out by order of Frederick II and de Castillon's commentary may reveal his desire to distance himself from both Blount's deism and academic scepticism: see, Laursen, "Intellectual Resistance to Absolute Monarchy in Eighteenth-Century Prussia" and "Cicero in the Prussian Academy" (note **46**). During his last years, de Castillon translated (1790) Carlo Denina, *Discours sur les vicissitudes de la littérature*. A French translation of Euclid's *Elements* (1767) is attributed to de Castillon's son, Fréderic: however, given the young age of Fréderic, one can surmise that substantial help was provided by his father. De Castillon published numerous papers in the *Mémoires* of the Berlin academy, which cover a broad spectrum of mathematical, physical, astronomical, philosophical and literary subjects. A complete list is in van Driel, *Enlightening the Matter of Science*, pp. 156-7 (note **46**). From a mathematical viewpoint, "Sur une Nouvelle Propriété des Sections Coniques," *Nouveaux Mémoires de l'Académie Royale des Sciences et Belles-Lettres, Année MDCCLXXVI* (Berlin: Decker, 1779), pp. 284-311, is particularly outstanding. In this essay de Castillon solves the so-called Cramer-Castillon problem; namely, "Given a circle *Z* and three points *A*, *B*, *C* in the same plane and not on *Z*, to construct every possible triangle inscribed in *Z* whose sides (or their elongations) pass through *A*, *B*, *C* respectively." For a generalization to *n* points, see, Alexander Ostermann and Gerhard Wanner, *Geometry by its History* (Berlin, Heidelberg: Springer, 2012), pp. 175-178.

[86] *Arithmetica universalis: sive De Compositione et Resolutione Arithmetica; Auctore Is. Newton, Eq. Aur. Cum Commentario Johannis Castillionei, in Almo Lycaeo Trajectino Philoshophiae, Matheseos & Astronomiae Professoris Ordinarii &c.*, 2 vols (Amsterdam: apud Marchum Michaelem Rey, 1761).

[87] See the letter to 's Gravesande (1st June 1740) in Prosper Marchand, *Dictionnaire Historique ou Mémoires Critiques et Littéraires, édité par J. N. S. Allamand* (La Haye: De Hondt, 1758-1759), Vol. 2, p. 236, where de Castillon informs his correspondent about the project of commenting the *Arithmetica*, so as to make it understandable to beginners (*commençants*).

[88] "Viginti anni jam sunt elapsi, ex quo eximius & optimae spei Adolescens, (cujus immaturum interitum adhuc lugeo) Stephanus Seignorettus Anglus rogavit ut ei Arithmeticam Universalem Newtoni praelegerem" (Twenty years have already passed since an adolescent, outstanding and of great hopes, whose untimely death I mourn, Stephanus Seignorettus, asked me to explain word by word to him Newton's *Arithmetica Universalis*). *Arithmetica*, 1, p. v.

[89] Giovanni Francesco Salvemini to his brother Niccolò, 22 September 1744: "adesso ne fo stampare un altro a Leida in Olanda nella stamperia dei Verbert che è l'algebra di Newton con un lungo Commentario che ci ho fatto" (Now I am printing another work in Leiden in Holland by the Verbert printing house, that is Newton's algebra with a long commentary). Milighetti, *Lettere di un Matematico Castiglionese*, p. 49 (note **46**).

[90] In the *Opuscula*, de Castillon writes "Eundem [de Arithmetica Universali librum] satis amplo Commentario, quem suadente eodem s'Gravesande [sic] jam diu perfeci, in lucem prodituram propediem, & et hoc ipso fortassis anno [1744], spero" (I hope it [the *Arithmetica Universalis*] is going to be published soon, maybe this very same year [1744], with a rather long commentary, which, with 's Gravesande's encouragement, I completed long ago) (vol. 1, p. xxviii).

[91] On pp. 553-8. The fly-sheet (the 'prospectus') was communicated to Nicolaus I Bernoulli on the 18th of July 1749. It is transcribed in Milighetti, *Lettere di un Matematico Castiglionese*, pp. 610-11 (note **46**). On the 21st August 1750, de Castillon sent the 'prospectus de souscription' to Euler too, announcing the imminent publication of volume 1 of the *Arithmetica*. See, Bodenmann and Kleinert (eds) *Correspondance de Leonhard Euler*, p. 144 (note **46**).

[92] See the letter to 's Gravesande (1 June 1740) in Marchand, *Dictionnaire Historique*, Vol. 2, p. 236 (note **87**); Willem 's Gravesande, *Matheseos Universalis Elementa: Quibus Accedunt, Specimen Commantarii in Arithmeticam Universalem Newtonii* (Leiden: Luchtmans, 1727).

[93] "Additamentum: demonstratio theorematis de potentiis radicum &c. auctore Georgio Frider. Baermanno L. A. M. & Math. Prof. Vitembergae; Additamentum: Abrahami Gottelphi Kaestner Professoris Gottingensis Demonstratio Theorematis Harriotti; Additamentum: P. Rogerii Josephi Boschovich S. I. Publici Matheseos Professoris in Collegio Romano Observatio in Problema LVI." *Arithmetica*, 2 Additamenta, pp. 110-130.

[94] *Arithmetica*, 1, p. vi.

[95] *Arithmetica*, 1, p. vi

[96] The relationship between Bousquet and Rey must have been a close one. Bousquet was Rey's godfather. After working as an apprentice of Bousquet, in 1744 Rey moved to Amsterdam to open a printing shop as an outpost for the Lausannese publishing house. When Rey printed Rousseau's *Discours sur l'Origine et les Fondemens de l'Inegalité parmi les Hommes* (Amsterdam: M-M. Rey, 1755), the relationship with Bousquet was ruined because of Rousseau's preference for Rey.

[97] "An putas, si parcius huic sensus communis imagini se credidissent, si accuratius prima principia probassent civilis & pontificij juris Scriptores, Philosophi, Theologi, non vulgares tantum sed & Grotius, Hobbesius, Pufendorfius, Democritus, Aristoteles, Plato, Cartesius, Athanasius, Hieronymus, Augustinus, Lutherus, Calvinus, tot scripti fuissent de jure libri, ut vel ad titulos legendos, vel ad errores, quibus scatent, non dicam refellendos sed detegendos, vix humana vita, quam tamvis longa, sufficiat; tot & tantis disputationibus de rerum principiis, de mundi systemate, de finibus boni & mali, de Trinitate, de gratia, de commercio animae & corporis, scholae strepuissent & adhuc streperent sine ullo scientiarum incremento; inquisitionem sensisset Galilaeus, per totam vitam timuisset Cartesius; tot & tam cruentis persequutionibus inquinata fuisset sanctissima Christi Religio, summa pacis

conciliatrix?" (Don't you think that if the writers on civil and canon law, the philosophers, the theologians, and not only the common ones, but also Hugo Grotius, Thomas Hobbes, Samuel von Pufendorf, Democritus, Aristotle, Plato, René Descartes, Athanasius, Jerome, Augustine, Martin Luther, and Jean Calvin, with more moderation had given credit to the notions of common sense, if they had proved first and with greater accuracy the first principles, they would not have written so many books about law that a whole life, even a long one, does not suffice to read all the titles and, if not refute, at least uncover their errors; and that the philosophical sects would not have quarrelled, and still quarrel with no advantage for science, with so many disputes on the principles of things, on the system of the world, on the purpose of good and evil, on the Trinity, on Grace, on the relation between the soul and the body; and that Galileo would not have suffered from the Inquisition, Descartes had not have lived his whole life in fear; and that the holy Christian religion, the great intercessor of peace, would not have been polluted by so many bloody persecutions?). *Arithmetica*, 1, pp. x-xi.

[98] "Quin et hinc fiet ut adulescentium animi ad vertitatem e Democriti puteo hauriendam aptiores evadant (So that this source makes the minds of the adolescents more suited to the truth that can be drawn out from Democritus's well)." *Arithmetica*, 1, p. vii.

[99] *Arithmetica*, 1, xv.

[100] "Testis Bernoullius, testis Leibnitius, quorum alter plenissime, alter minus perfecte curvam celerrimi descensus determinavit" (Let Bernoulli be witness, let Leibniz be witness [of the usefulness of mathematics for natural philosophy and mechanics], of whom the former to the greatest degree, the latter less perfectly, determined the curve of swiftest descent). *Arithmetica*, 1, p. ix

[101] "Nunc grates mihi sunt agendae celeberrimi viris Nicolao & Danieli Bernoulliis, quorum alter demonstrationem regulae de invenìendis Divisoribus surdis, adhuc ineditam atque huic operi inserendam humanissime communicavit; Daniel vero me regula de inveniendis divisionibus ratìonalibus a se demonstrata cumulavit, & prudentissmis monitis juvit: quo nomine multum etiam me debere fateor Joh. Ludovico Calandrini &c Gabrieli Cramero, quibus se jactat Geneva" (Now I have to express my gratitude towards the renowned men, Nicolaus and Daniel Bernoulli, the former of whom with great kindness sent me a proof, unpublished so far and to be inserted in this work, of the rules for finding surd divisors, while the latter added a rule, which he proved, for finding rational divisors, and assisted me with careful advice: in this regard, I have to disclose that I owe a great deal also to Jean-Louis Calandrini and Gabriel Cramer, of whom Geneva prides herself). *Arithmetica*, 1, p. xvii.

[102] "Demonstratio Clar. Dan. Bernoulli," in *Arithmetica*, 1, pp. 63-4.

[103] *Arithmetica*, 2, pp. 164-172. As de Castillon explains, a similar method was published by Maclaurin in his *Treatise of Algebra* (London: for A. Millar and J. Nourse 1748); yet, de Castillon adds, Bernoulli sent him his solution before the publication of Maclaurin's work.

[104] See the appendices in *Arithmetica*, 2, pp. 61-109. On Campbell's and Maclaurin's contributions and the polemic between the two, see Jaqueline Stedall, *From Cardano's Great Art to Lagrange's Reflections: Filling a Gap in the History of Algebra* (Zürich: European Mathematical Society Publishing House, 2011), pp. 81-103.

[105] *Arithmetica*, 2, p. 55.

[106] Stedall, *From Cardano's Great Art to Lagrange's Reflections*, p. 73 (note **104**).

[107] See, "Demonstratio Theorematis de Potentiis Radicum &c. Auctore Georgio Frider. Baermanno L. A. M. & Math. Prof. Vitembergae," in *Arithmetica*, 2 Additamenta, pp. 110-7. De Castillon notes that he had obtained the same theorem via another method and communicated it to Baermann in 1749. Further, de Castillon adds that the theorem is demonstrated in Maclaurin's *Algebra* (*Arithmetica*, 2, p. 77). The other appendix added by de Castillon,

"Additamentum Abrahami Gottelphi Kaestner Professoris Gottingensis Demonstratio Theorematis Harriotti," written by Abraham Gotthelph Kästner, professor of mathematics in Göttingen, perpetrates John Wallis's myth according to which Thomas Harriot was the inventor of Descartes' rule of signs. *Arithmetica*, 2 Additamenta, pp. 118-123.

[108] Herbert Lüthy, *La Banque Protestante en France, de la Révocation de l'Édit de Nantes à la Révolution*, 2 vols (Paris: S.E.V.P.E.N., 1959-1961).