

# Natural Philosophy, Inventions and Religion in the Correspondence between John Locke and Nicolas Toinard (1678-1704)

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The paper examines the copious correspondence between the English philosopher John Locke (1632-1704) and the French intellectual Nicolas Toinard (1629-1706); Locke made the acquaintance of Toinard in Paris in 1677 or early in 1678, and the latter remained his lifelong friend and most assiduous correspondent. An Orléanais and a devout Catholic, Toinard combined an intense interest in the Scriptures with an enthusiasm for experimental science and inventions of every kind; he introduced Locke to all the French official institutions and to a number of private laboratories. Toinard's principal work, *Evangeliorum Harmonia Graeco-Latina*, was greatly appreciated by Locke for its new method. The paper attempts to explore the bulk of this correspondence in detail, giving an account of the wide range of topics dealt with in the two hundred letters; it is divided into four paragraphs referring, respectively, to the years 1678-1679, 1679-1681, 1681-1686, 1686-1704. The perspective is diachronic; on some occasions, the focus is on a particular topic which is the object of prolonged discussion between the two correspondents. In the conclusion, attention is drawn to the relevance of this correspondence in the context of the 17th century and of Locke's philosophical thought.

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## 1. Premise

The philosopher John Locke was a very assiduous epistolarian. Among his favorite correspondents, special mention should be reserved for the barrister and politician Edward Clarke, Locke's main interlocutor on educational matters, and the Irish philosopher William Molyneux, his more trustworthy collaborator in the revision of *An Essay concerning Human Understanding*; other assiduous correspondents were Philipphus van Limborch, the Remonstrant theologian to whom Locke dedicated the first *Epistula de tolerantia*, the merchant Benjamin Furly, whose letters cover a wide range of topics (politics, tolerance, economics, education) and James Tyrrell, the political philosopher with whom Locke discussed issues concerning the law of nature. However, the French intellectual Nicolas Toinard was Locke's most assiduous correspondent, and probably also his closest friend, or at least the one with whom intimate friendship was longest maintained (Bourne, 1876, I, 385).<sup>1</sup> Born at Orléans in 1629, Toinard met Locke during the latter's permanence in France in 1675-79; apart from a short interruption (1682-84), the correspondence went on until the Nine Years' War, when it was

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interrupted for seven years (1690-97; there was a short interchange in 1694); it ended with the outbreak of the War of the Spanish Succession in 1702, apart from a single letter from Toinard that Locke received in 1704. In the time when they met in Paris, Toinard had already modified his previous professional plans (he had trained as a lawyer), and was actively implicated in exegetical and antiquarian research around the Scriptures; his varied intellectual and scholarly interests ranged from new technology, natural philosophy and medicine, through geographical exploration to biblical scholarship (Ollion 1912, 5-11; Woolhouse 2007, 139). One of the most frequent topics of discussion in Locke's correspondence with Toinard is science, in a very broad sense: the letters are crowded with remarks on astronomy, metrology, horology, mechanic inventions, chemistry, physics, magnetism, botany; the common interest in geographical explorations guarantees another frequent topic of conversation. Religion is another fundamental topic: the exegetical talent of Toinard, his competence in matters of biblical chronology and Rabbinic writings are clearly apparent in the correspondence, and Locke benefited much from the stimulant dialogue with Toinard on these matters.<sup>2</sup> In his terms, nothing was "so useful to me in reading and understanding the Gospel" as the reading of Toinard's main work, *Evangeliorum Harmonia Graeco Latina*.<sup>3</sup>

As many epistolary exchanges among intellectuals and scientists in the 17th century, Locke's correspondence with Toinard is evidence of the enormous scientific progress which makes this age one of the most eventful in the history of science; like many other private correspondences, it throws much light on the stages through which men's mind advances in the progress of discovery, recording their occupations, their thoughts and difficulties. However, the correspondence between Locke and Toinard is so crammed with heterogeneous materials that it is difficult to summarize its achievements properly. This paper is an attempt to explore the bulk of this conspicuous correspondence: it aims at reconstructing its development diachronically, and at reporting faithfully on the many topics the letters deal with. The task is quite difficult and the result may not be pleasant reading; nonetheless, the relevance of this correspondence is clearly apparent to those who are engaged in the study of Locke's thought. This is of course only an attempt, supported by the hope that others will continue the study of this lengthy correspondence, with better results.

At the beginning of his correspondence with Toinard, Locke wrote his letters almost entirely in French; later, Latin prevails (especially after prolonged periods of silence), though French reappears when the correspondence intensifies; in his later years, Locke's letters are almost entirely written in French. Although Locke's French is often incorrect, I will report it faithfully. Only when quoting a Latin passage will I report its English translation, following the one given by De Beer in his edition of Locke's correspondence (De Beer 1976-1989).

## 2. The French Period (1678-1679)

Locke met Nicolas Toinard<sup>4</sup> at Henry Justel's house at some date between June 1677 and April 1678,<sup>5</sup> during his stay in Paris; the protestant academic and librarian Justel held meetings of scientists and perhaps of the learned in general, and Toinard was an assiduous participant in these gatherings, where Catholics and Protestants, Frenchmen and foreigners were all welcome alike. Toinard was a devout, learned Catholic<sup>6</sup> with a prolific mind: a well known historian and numismatist, he was also an enthusiastic reader and collector of voyagers and explorers' narratives and maps, not to speak of his interest in new inventions. However, Toinard published only a very few small pieces: he wrote some dissertations on particular coins or medals<sup>7</sup> and some notes on Lactantius' *De mortibus persecutorum*, but failed to concentrate his interest sufficiently to complete

his major work, *Evangeliorum Harmonia Graeco-Latina*, which was printed in 1678 for his own use.<sup>8</sup> Although industrious and conscientious as a scholar, Toinard cultivated too many interests to avoid being superficial; his interest in new inventions led him to improve whatever came his way, though his machines were often devised without any regard for whether they could be realized or useful. It is questionable whether Toinard appreciated the achievements of the scientists of his time properly.

Locke's attitude towards science was quite different. He had many scientific interests in common with Toinard, such as astronomy: thanks to Toinard and Justel, Locke became acquainted with the Danish astronomer Olaus Rømer and the French astronomer Jean Picard, with the first of whom he entertained a short correspondence. Nonetheless, Locke had a more practical vision of scientific enterprise, which, in his opinion, had always to be shown of some utility before being undertaken. "Experiments and Historical Observations—Locke wrote in *An Essay concerning Human Understanding*—we may have, from which we may draw Advantages of Ease and Health, and thereby increase our stock of Conveniences for this life" (Locke 1975, 645, b. IV, xii, 10).<sup>9</sup> The ultimate goal of scientific knowledge, in Locke's view, was the improvement of the human condition on earth, not self-sufficient enhancement. To go beyond matters of practical importance meant wanting something "of no solid advantage to us nor help to make our lives the happier," and to encourage "the useless employments of idle or over curious brains which amuse them selves about things out of which they can by noe means draw any reall benefit" (King, I, 164).

As regards their personalities, Toinard was a very facetious man while Locke inclined less to joke, because of the severity of his moral temper: according to Peter King, this was the most durable legacy of Locke's Calvinistic upbringing (King 1830, I, 330).<sup>10</sup> This severity is apparent in the strong disapproval of French refined manners Locke expressed after his first short stay in Paris in 1672: in that time, he had written to one of his friends, the physician John Mapletoft, that France was a "dancing country, where everyone think that he may skip up and downe as he will".<sup>11</sup> The same opinion was restated in a letter Locke wrote to his friend John Strachey: English people were wrong in admiring French refined customs, which were full of vanity and contempt. The only thing they could learn from French people, "a sort of men that look down on all the world," was to despise their own country.<sup>12</sup>

Three years later, Locke was in France once again in search of health, first in Montpellier and then in Paris; in 1677 he became tutor and medical attendant to Caleb Banks, the 18-year-old son of Sir Caleb Banks, with whom he stayed in Paris for some months and then undertook a tour of France.<sup>13</sup> Surely, the acquaintance with many French intellectuals and scientists (besides Justel, Toinard, Picard and Rømer, the abbé and physician François Gendron, the mathematician and astronomer Adrien Auzout, the philosopher and traveller François Bernier, the inventor René Hubin, the traveler and cartographer Melchisédec Thévenot and many others) contributed to render this stay more interesting and pleasurable than the previous one: since the very beginning, Locke's correspondence with Toinard reveals his previous severity had vanished, giving way to a pleasant humor.

Locke's correspondence with Rømer, though exiguous, provides a worthy example of the stylistic sobriety and clearness which, according to Boyle and the other members of the Royal Society, deserved to be one of the main concerns of all those who were engaged in promoting the advancement and diffusion of scientific knowledge.<sup>14</sup> The register of Locke's correspondence with Toinard is more familiar and immediate; though complimentary expressions are not infrequent, they seem to be rather a sign of a mutual and sincere affection than a tribute paid to literary consuetude.

From the beginning, the letters are crowded with questions and answers, messages and replies concerning mechanical inventions. In his first extant letter to Toinard,<sup>15</sup> Locke spoke enthusiastically of some of Toinard's inventions he had had the opportunity to examine (a sort of firearm, some glass bottles with glass stoppers and a small portable mill),<sup>16</sup> and a few days later Toinard reported to him on a prodigious hygrometer in perpetual motion, whose inventor was a friend of his, Jean de Hautefeuille (July 22, 1678, I, 392).<sup>17</sup> In a subsequent letter (July 24, 1678, I, 393), Toinard praised a "microscope simple et nouveau" which had been brought by Christiaan Huygens to Paris; the microscope was to be tested at the *Académie des sciences*, but Toinard already knew some of its virtues: through that powerful device, it was possible to observe even small life forms in seeds.

This same letter attests Toinard was well informed about English political affairs: he reported on the English diplomatist John Brisbane, being empowered to act as substitute for the ambassador of England Ralph Montagu,<sup>18</sup> and seemed eager to know something more about the latter's new mandate.

In answer to the aforementioned letter from Toinard, Locke spoke of Brisbane as a "common friend" (he was included in Toinard's circle), but denied knowing anything more about his mandate: "I heard some gossip here from time to time about our ambassador; but it was only in passing, as it were, and not on any certain authority" (Locke to Toinard, July 26, 1678, I, 394). Locke also refrained from answering another question posed by Toinard, who in his letter had alluded to the possibility of a pacific settlement between France and England (whose political relations were critical in 1677), and seemed eager to know Locke's opinion on this subject. Actually, Locke appeared reluctant to speak about political matters with his French friend;<sup>19</sup> also in his later years, when he took an active part in the political life of his country, politics is never a topic of conversation in his correspondence with Toinard.

As for the prodigious hygrometer devised by Hautefeuille, on the contrary, Locke had much to say: "if [...] it is powerful enough to move other weights and is not liable to fail at times through irregular working, the originator will be affording a great relief to human labors and making a contribution to mechanics, for nothing greater can be counted among our long felt wants than perpetual motion."<sup>20</sup>

Further on in the letter, Locke appeared to be still more optimistic: "I am sure, indeed, that those who come after us will discover many things that are not only unknown to us but even seem impossible; yet we need not despair even of the present age, in which we see you and those like you." This great optimism in a philosopher so severe with respect to epistemic demarcation (a theme fundamental to the agenda of the *Essay* and its drafts: see Anstey 2011, 19-24) might seem strange; probably, it was due to the assiduous frequentation of the intellectually stimulating environment in which Locke had been introduced by Toinard. Actually, Locke's letter abounded with compliments: he reported on having studied Toinard's small portable mill at length with great pleasure, and on being sure of its working well though he had not tested it ("one is certain of it simply by looking at it; why should one want to make any further trial?"). This is a curious affirmation for an experimental philosopher: Toinard himself implicitly insisted on the necessity of testing new inventions when writing to Locke a few days later ("Le nouveau fusil qui se charge par la relasse est entierement fini, et je l'ai tire douze fois pour l'essayer", Aug. 27, 1678, I, 402).

Actually, Locke admired Toinard's fertile mind and was captivated by all his projects (among which a reform of orthography: in 1678, Locke reported to him on having "amused myself by composing some thoughts" on this subject).<sup>21</sup> Writing to Boyle (Aug. 6, 1678, I, 397), Locke spoke of Toinard as an "ingenious acquaintance" of his and "a very good mechanic, besides an admirable scholar"; in addition, he reported to

Boyle on what Toinard had told him with reference to the “very sensible hygrometer” of Hautefeuille and the powerful microscope of Huygens,<sup>22</sup> though he did not say anything about Toinard’s inventions. Surely, Locke was not so interested in the latter as he was in *Evangeliorum Harmonia Graeco-Latina*, some sheets of which Toinard had shown him on April 21, 1678, before he left Paris.<sup>23</sup> Toinard intended to publish a few copies of the work, which harmonized the various parts of the New Testament, as they were found in early Greek texts, so that a single integrated narrative could be constructed. The four Gospel texts were placed in parallel columns, the various parts of their Greek narratives being aligned and related as appropriate. Each page was headed with the dates and places of the various events, and in a fifth column Toinard constructed a Latin summary. Locke was immediately impressed by the “new method” in which *Harmonia* was printed, which he thought might “be very useful”;<sup>24</sup> in December 1678, he composed a Latin inscription celebrating its author<sup>25</sup> and one year later exhorted Toinard to publish a larger number of copies, insisting on the great praises conferred on the work by many scholars: this was the first of a long and unsuccessful sequence of exhortations, which went on till the end of the correspondence.<sup>26</sup>

### 3. Locke’s Return to England: The Correspondence in the Years 1679-1681

Surely, Locke was indebted to Toinard for the many precious acquaintances he had procured for him during his stay in France,<sup>27</sup> and he would be equally as grateful to him for the acquaintance with the German scholar Johann Graevius during his stay in Holland (1684-1689). One of his new acquaintances, the astronomer Rømer, was with Locke when, in April 1679, he left France to return to England.<sup>28</sup> A letter from Toinard, full of regret for Locke’s departure, is evidence of the great familiarity they had acquired in France,<sup>29</sup> as well as of the desire to prolong their conversation, interrupted by Locke’s departure. In the letter, Toinard asked for Locke’s help in order to find “dans l’art ou dans la nature” a coil spring capable of proportionate vertical vibrations, a device which he thought could be used in order to fix a standard of weight.<sup>30</sup> In that time, many scientists were involved in the research for standards of measurement which could be current everywhere, and Toinard was one of them; as for Locke, his interest in metrology dates back at least to 1670, as is shown by the two *Drafts*.<sup>31</sup>

In answer to Toinard in April 1679, Locke expressed some doubts with reference to the possibility of finding the device his friend was looking for: “je ne crois pas que l’art ou la nature vous fournira d’un ressort en France qui soit égal a un autre [...] trouvé en Perse.”<sup>32</sup> As a member of the Royal Society, Locke had adopted the pendulum of seconds (a supposed natural constant) as a standard of measurement of length; besides, he introduced two sub-units, the “philosophical foot” corresponding to the third part of the pendulum of seconds, and the “gry” (a term he probably borrowed from Erasmus), corresponding to one thousandth of the philosophical foot. Locke employed these sub-units in some medical notes of his own,<sup>33</sup> as well as in some letters to Boyle and Toinard.<sup>34</sup> However, already in 1672 the reliability of the pendulum had been called into question by Jean Richer, who claimed it could not represent a constant, since its frequency varied according to latitude; Rømer agreed with Richer on this point.<sup>35</sup> As many other scientists (*in primis* Picard), Locke remained faithful to the standard represented by the length of the pendulum,<sup>36</sup> though he was conscious that it was an approximation: this seems to be the sense of his answer to Toinard concerning the coil-spring. The lack of reliable measures and standards and their relativity is repeatedly stated in *Essay* (Locke 1975, 187, II, xiv, 18; 191, II, xiv, 23; 206, II, xvi, 4; 327, II, xxvi, 5; 362, II, xxviii, 20).

The correspondence between Locke and Toinard was particularly intense in the year 1679: Toinard kept

Locke informed about new books circulating in France (such as those by Etienne Baluze and Claude Blondel),<sup>37</sup> and Locke did the same for those printed in England, focusing on the Latin translations of Rabbinic writings (one of Toinard's main interests),<sup>38</sup> and commentaries on the Bible.<sup>39</sup> Toinard's letters contained far more requests than Locke's: he asked for maps,<sup>40</sup> ancient manuscripts for his friend Thévenot<sup>41</sup> and various books, such as Edmund Halley's *Catalogus Stellarum Australium* (May 24, 1679, II, 470; Halley 1674), John Malalas' *Chronographia* (May 14, 1679, II, 470)<sup>42</sup> and a catalogue of John Lightfoot's works (July 9, 1679, II, 484). On the other hand, Toinard was an unlimited source of information on various topics, such as botany (a subject related to medical practice, Locke's main pursuit),<sup>43</sup> voyagers' reports (especially those relating to the discovery of new species of plants and animals, or describing the customs of primitive tribes),<sup>44</sup> physics,<sup>45</sup> chemistry and medicine.<sup>46</sup> In addition, Toinard kept Locke informed on Picard and Rømer's activities.<sup>47</sup> For his part, Locke acted as an intermediary between Toinard's acquaintances and Boyle, who guaranteed a feed-back with the Royal Society; besides, he promised to help Toinard in order to find people interested in his inventions (a ship with three keels<sup>48</sup> and some wooden die stamps which would print ligatured Latin letters: Locke to Toinard, May 24, 1679, II, 470; Aug. 30, 1679, II, 495). In May 1679, Locke sent to Toinard two copies of the *Fundamental Constitutions of Carolina*,<sup>49</sup> the fruit of his work as secretary to the Lords Proprietors of Carolina; the copies were one for Toinard and one for Justel.<sup>50</sup> The exchange of presents<sup>51</sup> between Locke and Toinard increased as time went by; it included books, but also curious objects coming from recently discovered countries,<sup>52</sup> as well as more ordinary things (the recipes for making bouillon cubes, baker's yeast and a palliative ointment, all sent to Locke from Toinard;<sup>53</sup> a pack of playing cards depicting the Popish Plot and a fishing rod,<sup>54</sup> both sent from Locke to Toinard).

The intense exchange of erudite information alternated with facetious remarks<sup>55</sup>, and Locke was not inferior to Toinard in either, though sometimes a melancholic mood became visible in his letters: after four years of absence from England, Locke felt like a foreigner in a country troubled by internal conflicts, where the unraveling of the Popish Plot fomented a blind hatred towards the Roman Catholics. Moreover, since his coming back, Locke was troubled by impediments which obliged him to act without any rest: "j'ai un peu trop de la machine-he wrote to Toinard on May 25, 1679 (II, 473) dans la grand agitation dans laquelle je me suis trouvé depuis mon retour mon esprit aussi n'a pas eu la tranquillité nécessaire a une conversation si philosophique que la vostre". Locke playfully proposed to Toinard to flee to Carolina, where they would spend their time studying and relaxing far from the mechanical and ambitious European way of life; however, Toinard seemed worried about the strict rules imposed by the *Constitutions* to dissenters in Carolina: "je chercheray un nombre suffisant de catholiques pur vous y suivre avec moi."<sup>56</sup> Later, Toinard asked Locke to modify some rules<sup>57</sup>: actually, the new version of the *Constitutions* (1682) records some important changes.<sup>58</sup>

Toinard's letters were full of news concerning his friends, those with whom Locke had become acquainted in France; frequent mention was made of the "Triumvirs," the abbé Eugene Formentin (nicknamed "le capitain de marine" because of his enthusiasm for sea travels), the abbé-physician François Gendron and Toinard himself. Another recurrent name was that of Dr. Godefroy, a talented physician with a prolific mind<sup>59</sup> with whom Locke had become acquainted in Orléans in 1678.<sup>60</sup> Perhaps some of Toinard's erudite friends were concerned about his friendship with Locke, an English man: in a letter dated June 21, 1679 (II, 477), Toinard reported to him on a "brusquerie," a wisecrack he had made in the presence of some of his friends (Picard, Thévenot, Auzout, Bernier, and others), relating to Rømer's stay in England ("je craignois, tout Lutherien qui'l est, que votre chambre basse

lui auroit fait a croire qui'l etoit Jesuite, et que lon en auroit fait un pendule"); Toinard added that, in their opinion, he should refrain from reporting the joke to Locke, because English people were not able to understand *raillery*. Of course, this was not true of Locke, who seemed very amused by Toinard's humor.<sup>61</sup>

Other recurrent names in Toinard's correspondence with Locke are those of the critic Gilles Ménage, the theologian Louis Gorin de Saint Amour, and the historian-theologian Pierre-Daniel Huet; besides, writing to Locke on Sept. 9, 1679 (II, 497), Toinard informed him that another friend of his, the famous English printer and publisher Daniel Elzevier, was with him in Paris in that time.<sup>62</sup> The habitual attendance at the gatherings of French intellectuals gave Toinard a lot of material to fill his letters with, not to mention his activities at the French Observatory, side by side with Rømer and Picard: on Aug. 16, 1679 (II, 489), for instance, Toinard reported to Locke that Picard was going to observe Jupiter's satellites on the island of Ouessant, in order to establish the exact longitude of that place. Later, Toinard himself observed the satellites in Paris with Rømer, while Picard was making the same observations in Brest.

In the Summer of 1679, Locke was spending some time at Olantigh, in Kent, in order to recover his health impaired by the polluted air of London and to tend to his pupil Caleb Banks;<sup>63</sup> in answer to two long letters from Toinard, both concerning the recent observation of Jupiter's satellites in France,<sup>64</sup> Locke replied that astronomical investigations were particularly difficult in England in that time because of the cloudy weather (Locke to Toinard, Oct. 13, 1679, II, 508), a phenomenon which he playfully attributed to a divine purpose (to preserve the English Virtuosi from persecutions).<sup>65</sup> Besides, Locke went on with the literary game initiated by his friend: Jupiter was the King of the sky and the satellites his body guards, which disdaining to be observed by English people had hidden themselves inside a thick layer of clouds.

Unfortunately, Locke had not yet any news to report to Toinard on his technological inventions, in particular those wooden die stamps the latter had given him in order to find someone interested in purchasing them in England; Locke intended to show the stamps to the Bishop of Oxford John Fell, but some impediments had prevented him from doing it.<sup>66</sup> In a subsequent letter (Oct. 29, 1679, II, 510), Locke reported to Toinard that he hoped to be able to show the device to Fell in a short time, though he had not yet understood what an "estampoir de matrices" could be used for.

In fact, Locke was expecting some news from his French friend as well: he had not yet received some books Toinard had promised him (the first three volumes of *Essais de morale* by Pierre Nicole and *Le secrets de Madame Fouquet*),<sup>67</sup> besides he was still waiting to know what Toinard intended to do with a small work of his, concerning a new method of cataloguing pieces of information.<sup>68</sup> Toinard had already expressed the desire to see it published (Toinard to Locke, Aug. 30, 1679, II, 495), and probably, Locke hoped to see it printed in *Journal de sçavants*: writing to Toinard on October 29, he gave him the permission to do whatever he wanted with his "modo conficiendi adversaria." However, in answer to Locke in November 1679, Toinard did not mention the work at all; instead, he asked him whether the text of the *Constitutions* had been revised and spoke of a secret cipher Locke had sent him, which in his opinion was not new.<sup>69</sup> Similarly, a subsequent letter from Toinard did not contain any mention of Locke's work: he asked for his opinion on *Harmonia Davidica*, which he had just finished revising, and reported on having been pressed by his editor to publish a larger number of copies of *Evangeliorum Harmonia*. This was exactly what Locke had been recommending to Toinard since 1678; however, the latter had thought he was flattering him (as he admitted in the letter: "Je ne crois pas que vous aiez voulu me flater par votre derniere, ca nous nesommes pas sur ce pié la, a legard de lharmonie Evangelique,"

Toinard to Locke, Dec. 23, 1679, II, 520).

Locke did not answer this letter immediately, as was his custom; in January 1680, Toinard expressed some anxiety about Locke's prolonged silence,<sup>70</sup> but he received an answer only in May. Locke's letter is lost, but we can discern something about its content from Toinard's reply (May 22, 1680, II, 536): he apologized for the great delay of the books Locke was waiting for, arguing it was not his fault, and spoke enthusiastically of his "maniere de faire des receuils." Once more, Toinard recommended Locke should publish his method of common-placing, though he did not say anything about an opportunity of printing it in France: probably, he was very busy at that moment, being engaged in the revision of *Harmonia* as well as in the astronomical observation of sun spots, as some lines added by Picard to the letter confirmed.

Although Toinard's behavior in relation to the publishing of his method was not so cooperative as he had hoped, Locke seemed not resentful about it. Writing to Toinard on May 20, 1680, he apologized both for his long delay in answering, which was due to a serious accident (a horse had kicked him), and the trouble he had caused to him by repeatedly asking for news about the books he had not received. Moreover, Locke was "exceedingly vexed" that Toinard could think he suspected him of being "in any way backward in rendering friendly services,"<sup>71</sup> and spoke enthusiastically of the harmony of the Book of Chronicles, some sheets of which Toinard had promised to send to him ("I am all agog to see and taste the first-fruits of that work, and to conceive from them the hope that I may one day see also the harmony that my soul has so long yearned for, attuned as it is by such a skilled and scholarly hand"). The other harmony Locke referred to, the one his soul had "so long yearned for," was of course *Evangeliorum Harmonia*: in his opinion, this was the work to which Toinard should devote all his efforts.

As regards sun spots being observed in England (a subject about which Toinard had been inquiring in his letter of Sep. 27, 1679), Locke was extremely vague: "I do not know yet whether anything of the sort has been observed by our philosophers here; I have asked one or two people about it, but only casually, as the common herd only look at the sun to mark the time for dinner or play." Probably, Locke's relationships with the scientists gravitating around the French observatory had become more distant, with his great disappointment: actually, in a subsequent letter, he complained about Rømer's prolonged silence (Locke to Toinard, June 6, 1680, II, 541). The mocking humor at the end of the letter of May 20, where Locke criticized Cartesians ("your philosophers"),<sup>72</sup> seems to confirm his disappointment.

Actually, this was a very difficult moment for Locke: Shaftesbury's struggle against the king went on and became every day more fierce.<sup>73</sup> Perhaps this was one of the reasons for the great impatience Locke manifested in June 1680: in a letter of May 27, 1680,<sup>74</sup> Toinard had reported to him that, according to Picard, sun spots would be visible again on June 15, so that it was necessary to inform the members of the Royal Society immediately; unfortunately, the letter arrived only on June 7 (it might have been sent too late), when it was impossible to alert them in time. Locke had no doubt that the delay was deliberate:

I received your letter two days ago; I suspect that the reason it was somewhat slow in reaching me was that the sun spots were, as you tell me, due to appear again (unless they were dissipated in the interim) on the 15th of this month, which day had passed before the arrival of your letter, for I feel sure that you take no account of our obsolete and erroneous calendar. But I can easily forgo that spectacle so long as such a constellation of illustrious men designs to look upon me. I may well say a constellation, since their sublime and brilliant talents and their imperishable glory far surpass anything that we see above us in those heavenly bodies. Please greet them all from me again and again as opportunity offers.<sup>75</sup>

Locke's suspicions were directed against the "constellation of illustrious men" who worked at the French



observatory, not against Toinard: in his opinion, they had deliberately prevented the latter from sending the letter in time, because of scientific rivalry. Apart from this harsh beginning, Locke's letter went on in the usual way, though a note of disappointment was somewhat visible. Speaking of the new book by the Gassendist and traveller François Bernier, a book commended by Toinard for his anti-Cartesianism,<sup>76</sup> Locke seemed not to share his friends' enthusiasm:

Though I find pleasure and profit in hearing him disputing among the philosophers yet I should, if I may say so, prefer him to tell us something about the manners and doings of Eastern peoples and the things he has observed in those parts. We have long been overloaded, it seems to me, with philosophy and disputations, whilst we have little or nothing in the way of trustworthy accounts of happenings amongst foreign nations.<sup>77</sup>

Besides, Locke complained with great emphasis (another sign of his disappointment) about the destiny of a *petit almanach* entitled *La connaissance des Temps*, which Toinard had reported was going to be suppressed: "that is how mankind is usually treated; the more useful anything new is, the more difficult it is to make it available; hence I am inclined to acquiesce in the opinion that of all the spirits that drive us this way and that mix themselves up everywhere in human affairs the bad ones, if not in the majority, nevertheless surpass the good in industry."

Toinard's answer (June 26, 1680, II, 547) did not contain either an attempt to explain the delay of his previous letter or any mention of astronomical observations; instead, he dwelled on many different subjects (French piracy against the Muslims and cases of mutiny, a medical remedy against fistula and voyagers' narratives). Besides, Toinard pointed out an imprecision in Locke's previous letter: speaking of a bed for people suffering from gout (a device which Locke had reported was of common use in England), Toinard hastened to clarify it was a Dutch, not an English invention, and some days later he made a similar claim about a calculating abacus Locke had sent him, which in his opinion was identical to that devised by Pascal some years before.<sup>78</sup> However, Toinard was much less scrupulous in fulfilling Locke's repeated requests for the description of a prodigious spinning machine, which the former had reported on having seen at work in Paris.<sup>79</sup>

After two very short letters written in June, one from Toinard and the other from Locke, the correspondence resumes its usual traits with a long letter written by Locke on July 5, 1680:<sup>80</sup> here he expressed his gratitude for Toinard's concern for his cousin Anne Grigg, who was spending some time in Montpellier, and for the many presents he had sent to him (ten issues of the almanac *La connaissance des Temps*, an issue of the journal of medicine published in Paris and Bernier's book).<sup>81</sup> Moreover, Locke reported to Toinard on having composed a short description of his method of common-placing in order to satisfy his desire; clearly, in a lost letter Toinard had renewed his request to see the work published (as he actually did in a subsequent letter),<sup>82</sup> and Locke still hoped to see it published in France. However, he hastened to clarify that the description was in English (a language unknown to Toinard) and that he found it very difficult to translate.

Since the unfortunate incident of the delayed letter of June 1679, Toinard had abstained from reporting any news on astronomical observation to Locke; it was Locke that, on Aug. 5, 1680 (II, 560), broke this embarrassed silence asking Toinard to inform Picard that the English Virtuosi were interested in knowing when Jupiter's satellites would be visible again. Toinard promised to inform Picard, and in a subsequent letter he asked Locke for the addresses of Robert Hooke and John Flamsteed, in order to communicate the dates for astronomical observation to them.<sup>83</sup>

Toinard's finances suffered a tremendous blow in August-September 1680, as a consequence of a judicial

misadventure; he hoped to gain some comfort from Locke's going back to Paris, which was expected to be in a very short time, but the journey was postponed because of some problems on Locke's side.<sup>84</sup> Looking for distraction,<sup>85</sup> Toinard devoted himself to horology; with regard to this matter, he attributed a great expertise to Locke, whose help he requested in order to find a dividing plate (a device which, according to another acquaintance of Toinard, the French clockmaker Oury, was used by English clockmakers in order to cut clock wheels' teeth accurately). The search for the plate troubled Toinard and Locke for a long time: at the beginning, Locke thought that what his friend was looking for was a dividing engine,<sup>86</sup> then, when he understood exactly what he meant, the problem was the price, which was extremely high.<sup>87</sup>

Locke seemed captivated by horology as well: on December 13, 1680, he reminded Toinard of what he had promised him a year before (the description of a little pendulum capable of great precision, devised by Isac Thuret),<sup>88</sup> and in February 1681, he sent to him the design of a clock devised by himself, whose dial marked six hours and their parts.<sup>89</sup> Sporadic remarks on horology also appear in the correspondence of the following years.<sup>90</sup>

At the beginning of the eighties, Toinard appeared increasingly interested in the English way of approaching scientific innovation: in September 1680, he asked Locke about two new inventions (a German device capable of putting out fire without water<sup>91</sup> and the air guns devised by the French Denys Papin<sup>92</sup>), which were both being demonstrated to the Royal Society. Toinard's letters reveal he was living through a very creative period: remarks on horology, numismatics,<sup>93</sup> astronomy and geography alternate with the description of the new machines he was experimenting on (a device capable of cooking food in a bain marie of sea-water and another capable of creating a void).<sup>94</sup> At the end of 1680, Toinard asked for Locke's help in order to sell two inventions of his in England (a way of rendering ships waterproof<sup>95</sup> and screw-threaded glass stoppers<sup>96</sup>); moreover, he reported on a "petite machine pour faire des injections" as another invention of his, greatly appreciated by Gendron.<sup>97</sup> Surely, some financial difficulty was at the root of Toinard's increased activity: his harmonic writings required considerable expense, as he himself reported to Locke.<sup>98</sup> The latter assured Toinard that he would most probably be able to make a gain in England: "for any invention of public utility one can immediately expect a fair and adequate monetary remuneration and moreover a privilege valid for a number of years."<sup>99</sup> However, Toinard's hopes were dashed: his machines were judged of no utility in England.<sup>100</sup>

At the end of 1680, Toinard's attention was captivated by another subject, the declination of the compass (a phenomenon due to magnetism, which had recently been observed at the southernmost points of Africa and America).<sup>101</sup> In Toinard's opinion, the declination could be properly described by a "proportion improportionele": where the variation was north-eastward it tended to diminish and the magnetic needle went toward north-west, while where the variation was north-westward it tended to increase. Locke agreed with Toinard on one point: the magnetic line in the northern hemisphere always declined towards the west from the meridian, so that the variation went from east to west; nonetheless, in Locke's opinion, it was difficult to reconcile this view with what Toinard himself had reported in a previous letter (a decrease in the variation at Cape Agulhas, a phenomenon which suggested it was going back eastward).<sup>102</sup> Locke was eager to speak more in detail with Toinard on this topic; however, he received only a brief answer in November 1680. Toinard deferred an accurate description of what he called "mon systeme" to a more convenient time, summing it up in a few words: the magnetic needle would turn horizontally on the equinoctial line as the hand of a clock, so that it would mark the pole only accidentally, just as the minute hand of a clock would mark midday.<sup>103</sup> Locke was dissatisfied with this hypothesis: in his opinion, Toinard's system could work only if the variation of the needle always

went towards the west, which was not, given the irregularity of declination in some places on earth.<sup>104</sup>

Locke intended to discuss the variation more at length with Toinard, but his friend's attention never stayed on the same subject for a long time: in a letter of Dec. 22, 1680, Toinard appeared captivated by another phenomenon, the sighting of a comet at the French Observatory.<sup>105</sup> His enthusiastic words, more than a scientific report resembled a literary comment: the comet looked like a bird which was shying away from prying eyes, though being well mannered, it did not disdain from showing itself from time to time.<sup>106</sup> A few days later, the subject of Toinard's letters changes again: a prodigious "machine" coming from India, an elephant the king of France had been presented with by the Queen of Portugal, had died during the winter (in Toinard's words, its "cogs" had been broken by the cold); all the members of the Academy had gone to its funeral in Versailles and were ready to dissect it.<sup>107</sup>

However, Locke was still thinking about the declination of the compass, and on Feb. 9, 1681,<sup>108</sup> he asked Toinard to return to this topic: in Locke's opinion, which was supported by a host of new arguments, Toinard assumed all the magnetic radii to be parallel to each other, so that the angle each formed with intermediate parallels would be always the same; the unequal amount of declination in different places demonstrated instead the radii were not always parallel. Moreover, Toinard supposed that through that variation, all the radii could become parallel to the equator and this, Locke argued, amounted to denying the earth was a magnet.

Locke's attempt to open a dialogue on this subject failed: Toinard repeatedly postponed answering his objections,<sup>109</sup> and when he finally did, he only replied that Locke had not understood his system properly.<sup>110</sup> Nonetheless, Locke expected to see Toinard's system reworked and with a sounder experimental basis,<sup>111</sup> but it began to collapse by itself: on Sept. 24, 1681, Toinard expressed his disappointment because Picard had demonstrated that the variation from east towards west had diminished in Paris, whereas it remained constant in La Fleche. The irregularity of the phenomenon, as Locke had tried to explain to his friend, was capable of destroying any attempt at theorizing (a belief in accordance with the experimental philosopher's aversion to speculations on the inner causes of natural phenomena: see Romanell 1984, 78-91).

In spite of his forays into magnetism and other topics, Locke's main interest was medicine, as many entries in his *Journals* confirm: the correspondence with Toinard offered him a splendid opportunity to learn something new from the abbé Gendron, whose opinion he appreciated greatly.<sup>112</sup> Toinard often acted as an intermediary between Locke and Gendron;<sup>113</sup> sometimes, he also reported on what he had learnt from other sources.<sup>114</sup>

Locke seemed to appreciate less the views of another acquaintance of Toinard, the French physicist and inventor Hautefeuille, whose book on breathing underwater he was reading at the end of 1680.<sup>115</sup> In Locke's view,<sup>116</sup> deeply influenced by Boyle's physiology,<sup>117</sup> the function of respiration was not to cool the vital flame ("biolychium")<sup>118</sup> in the blood, as Hautefeuille affirmed, but to warm and lighten it; for this reason, respiration was "as necessary in Lapland and for people perishing with cold as it is in the torrid zone and for those panting with heat." Though appreciating something in Hautefeuille's book ("il y a bien de chose la de dans fort bien dites et observes"), Locke was convinced that experimentation would destroy his system.

As for the other "machine" Toinard had spoken about (the huge elephant's body), Locke seemed perplexed: he was sure the knives (or rather the "ploughshares", as he wrote) of the French "keen eyed Academicians" would find much to observe, nonetheless, he insisted that "Nature is not less coy of showing herself in that majestic habitation than she is in the body of the smallest animals, and the entrances by which one gains admission to her, the orifices or veins and arteries, the aperture of lacteals or the courses of nerves, are no wider

open than in the dog or the ox; for Nature is at her greatest in the smallest things.”<sup>119</sup>

Locke was a physician, with prolonged experience collaborating with Oxford’s physiologists; in 1664, Robert Hooke had performed his important respiration experiments on dogs, incorporating some of Locke and Richard Lower’s suggestions (Dewhurst 1984, 14). But, Locke was also a man of faith, who believed that Nature has a wise design: the greatest marvels had been hidden by God in the smallest things, in order to teach men to investigate natural phenomena with the utmost humility.<sup>120</sup> For Locke, the great snow bridges suspended between rocks on the Pyrenees and the behavior of white ants living in Ceylon were both evidence of this wise design: the great wisdom of nature was apparent in the biggest and still more in the smallest things, which men inclined to underestimate.<sup>121</sup>

Toinard’s enthusiasm for the dissection of the elephant couples well with the curiosity permeating his reports on medicine, which often focus on something unusual or extraordinary: writing to Locke in August 1679, Toinard reported on the case of a child with two heads and four arms, who was born dead in Orléans,<sup>122</sup> and two years later he dwelled on the case of a dead woman from whose stomach a flame had burst out, while she was being dissected, burning her face.<sup>123</sup>

The exchange of presents between Locke and Toinard continued into the beginning of the eighties: Toinard sent the new issues of the little almanac *La Connaissance des Temps* to Locke, together with some tables of the ephemeris of the planets and some books (Thévenot’s *Recueil de voyage*<sup>124</sup> and Mabillon’s *De re diplomatica*<sup>125</sup>). Besides, he reported on voyagers’ narratives (mostly on a relation concerning a certain “Olenker”)<sup>126</sup> and astronomical observations;<sup>127</sup> in exchange, he asked Locke for the new editions of Joseph Flavius, Cyprian, and the Greek New Testament,<sup>128</sup> as well as for a book by the Scottish George Dalgarno, concerning the scheme of a philosophical or universal language.<sup>129</sup> Locke sent a report written by the traveller Robert Knox to Toinard,<sup>130</sup> but was unable to procure for him the edition of the Greek New Testament, which was still in preparation. As regards the latter, Toinard asked Locke to inform Bishop Fell he desired to contribute with some lectures on the *Codex Vaticanus* he had recently collated; Locke answered that the Bishop was interested in his contribution,<sup>131</sup> but the project failed: three years later, Toinard informed Locke that the Lectures had been refused.<sup>132</sup> Probably, the serious rupture between Fell and Locke was the cause of the Bishop’s refusal.

In 1680, Locke was working on the revision of Toinard’s harmonic writings: he had received some sheets concerning the Books of Kings, Chronicles, and Prophets, which he promised to peruse with the attitude of a severe judge: “you know my ill habit: never do I praise your works without some complaint, either that they are not finished or that they are too short”.<sup>133</sup> However, what Locke was really eager to peruse was the harmony of the Gospels, on which Toinard had worked discontinuously; in a subsequent letter, Locke suggested he should simplify its whole design (in his opinion it was too laborious), giving the comprehensive narrative in Latin in the margin only,<sup>134</sup> and in another letter, he recommended Toinard should specify the date *ab orbe condito* on each sheet, inserting the date *periodi Juliani* only at the beginning of the work.<sup>135</sup> Clearly, Locke was afraid that his friend’s perfectionism could be an obstacle to the publishing of the Gospel harmony; this is why he insisted on the need to devote more time to its revision (“I foresee that harmony of yours will never be perfectly harmonious until you have made your way through the whole of the Scriptures and brought into its due harmony a work that is truly worth of your erudition, insight and pity”).

Toinard seemed to give much credit to Locke’s suggestions;<sup>136</sup> however, his many interests prevented him from concentrating on the revision properly. The correspondence during the first months of the year 1681 says

very little about the Gospel Harmony, at least until July 2,<sup>137</sup> when Toinard reported to Locke on the objections of two friends of his, Nicolas Malebranche and Claude Fleury. In their opinion, Toinard should afford a translation of the Gospel closer to the Latin text of the Vulgata than to the Hebrew of the original, but Toinard did not approve of their suggestion: he intended to keep closer to the Hebraic text, in order to afford a more adequate translation into Latin (a very difficult task, given the many meanings of each single Hebraic word). Locke approved of Toinard's design (faithfulness should be preferred to elegance in translating), and suggested a simple remedy: "although such expressions, being hardly Latin, may possibly offend scholarly and fastidious ears, yet you will have a ready remedy in the margin if you append the passage there in correct Latin".<sup>138</sup>

A few days later, Locke received the harmony of the two Books of Machabeorum, which had gained a privilege for ten years,<sup>139</sup> and six months later Toinard informed him on having been invited to publish his *Harmonia Evangeliorum* in Holland (an invitation on which he asked Locke to express his opinion).<sup>140</sup>

(To be continued, see Vol. 3, No. 8)

## Notes

1. The correspondence between Locke and Toinard amounts to 206 letters, of which 128 from Toinard and 78 from Locke.

2. Discussions of the literary style of biblical writings and of methods of biblical criticism were of special interest to Locke. He studied the works of Richard Simon (1678; 1689), a pioneer of modern biblical criticism, as well as those in these areas by Jean Le Clerc (1685). Locke was well acquainted with the writings on this subject by Robert Boyle (1661) and Baruch Spinoza (1670). In the *Paraphrase* (Locke, 1687), frequent use is made of the writings of John Lightfoot and other theologians who are mentioned in Locke's correspondence with Toinard.

3. See Locke to Toinard, Nov. 5, 1694, in De Beer (1976-89, V, No. 1808). All the references to Locke's correspondence with Toinard are from De Beer's edition.

4. The correct spelling of Toinard's surname was Thoynard, but Nicolas adopted the first form as part of his scheme for simplifying French orthography. The principal materials for Toinard's life are the letters from and to him; the bulk is now in the Bibliothèque Nationale de France, MSS. Nouvelles acquisitions françaises, nos. 560-3. The majority of the letters from Locke was in the collection of J. C. Brunet and was sold at auction by Charavay in 1868; most of the letters in this sale were acquired by the British Museum. Ollion printed thirty two items from the Museum's holding in 1908, then in 1912 he published 59 letters, all except one apparently from originals or copies in the Museum's holding. Letters from other correspondents to Toinard were printed by Jovy in 1888 and 1912, and by Du Boys in 1889. The letters from Toinard to Locke in the Bodleian Library form the most important collection of those that survive; there are about 55 letters from Toinard to J. G. Graevius in the Royal Library in Copenhagen. A few letters to Leibniz have been published; there are single letters or small holdings elsewhere. The best modern account of Toinard is that by Cuissard (1902), in which his will and other documents and a bibliography are printed. Ollion follows this; he makes some additions, largely from Locke's letters.

5. Locke mentions Justel on Oct. 7, 1677 for the first time (their meeting may have taken place slightly earlier); he mentions Toinard for the first time on April 21, 1678. Both the references are in Locke's *Journal* (see Lough 1953, 175, 191).

6. Toinard was well acquainted with Jacques Bossuet, though he appears not to have been a regular member of his *petit concile*, a group for the study of the Bible that met weekly from 1673 to 1681. As for Toinard's relationship with the *petit concile*, see Floquet (1864, 438-39) and Preyat (2007, 27).

7. Toinard's standing as an antiquarian and numismatist is shown in notices in Le Clerc, *Bibliothèque universelle*, XXI (1691):130-32, and in Perez Bayer (1781, 106).

8. Gospel harmonies were attempts to merge canonical Gospels into a single Gospel account; they were constructed by scholars to establish a chronology for the life of Jesus and to better understand how the accounts related to each other. In addition to the complete version printed in 1678, perhaps one, two, or three other versions of *Evangeliorum Harmonia* were written up by Toinard in whole or in part; the work was published posthumously in 1707. Jean Le Clerc, who had himself composed a harmony of the Gospels, published a notice of Toinard's *Harmonia* in *Bibliothèque choisie* (1708); this is probably the most important recognition of Toinard as a scholar.

9. See also Locke, *Essay*, IV, xii, 12 (1975, 647): "he that first invented Printing, discovered the Use of the Compass, or made publick the Virtue and right use of Kin Kina, did more for the propagation of Knowledge, for the supplying and increase of useful commodities, and saved more from the Grave, than those who built colleges, Work-houses, and Hospitals." Locke's attitude towards science was deeply influenced by Bacon, who thought that the enhancement of knowledge should be for the relief of man's estate (see Bacon 1901, 134).

10. See King (1830, I, 330): "by the Independent divines who were his instructors, our philosopher was taught those

principles of religious liberty which they were the first to disclose to the world. When free inquiry led him to milder dogmas, he retained the severe morality which was their honourable singularity."

11. Oct. 19, 1672, I, 265. Mapletoft had suggested Locke should prolong his stay in France because of bad health, but Locke refused: "you know that our journey as well as pilgrimage in this world have their settled bounds, and none of us can go beyond the extent of that tether, which certainly ties us."

12. Mid-Oct. 1672, I, 264. In Locke's words, the pleasures Paris abounded with were suitable only for "clod-pate mortals."

13. Sir Banks, a self-made businessman, had addressed Shaftesbury in order to obtain Locke's tutorship. See Tomas Coxie to Locke (Feb. 22, 1677, I, 321).

14. See Rømer to Locke (July 19, 1679, II, 483): "please pardon this brief truce, which is [...] to leave myself freer and otherwise unimpeded for the philosophic intercourse to which we have together devoted ourselves for the public good."

15. Locke to Toinard, July 14, 1678, I, 390; the letter was written in Orléans, where Locke spent nearly three weeks.

16. Locke described guns and artillery invented or improved by Toinard in some pages of his *Journal* written in 1678 and 1679 (B.L. MS. Locke, f. 3, and Brit. Lib. Add. MS. 15,642, 108-10, 113-15, 165-6, 383). In a *Journal* entry for April 24, 1679 (Lough 1953, 285), Locke described a "Bombarda" mentioning Toinard as his source. As regards the glass bottles and the mill, see *Journal*, July 12, 1678 (Lough 1953, 204), and July 13, 1678 (Lough 1953, 206). In another *Journal* entry for April 19, 1678, Locke reported on an experiment on fermentation which he had witnessed at Toinard's house (Dewhurst 1984, 117). Toinard's name is recurrent in Locke's journals as the source of varied pieces of information: see the entry for July 4, 1679 (Dewhurst 1984, 203), where Locke reported on the best way to rear fat rabbits, and that for February 16, 1679 (Dewhurst 1984, 258), where he described the way of cooking eels in Canada. In another entry for Feb. 18, 1679 (Dewhurst 1984, 258), Locke reported on a case of sodomy punished by burning at the stake in 1664, and his source is Toinard as well, as it is for an entry for March 14, 1679 (Dewhurst 1984, 260), where he reported on how wells were dug in Modena. Another entry for 1679, entitled "Rosicrucians" (a caricature of a particular variant of alchemy popular in Europe in the first half of the seventeenth century), mentions Toinard as its source as well (Romanell 1984, 97-98).

17. The abbé and horologist Jean de Hautefeuille had devised a new form of hygrometer capable of generating perpetual motion: he had attached a clock to a hygrometer in such a way that its movements could wind the clock. See Hautefeuille (1678).

18. Ralph Montagu took an active part in the negotiations in which Louis XIV purchased the neutrality of England in the war between France and the Netherlands; being accused in the House of Commons by the Lord Treasurer Danby of conspiring with the pope, Montagu returned to England in 1678 to defend himself.

19. See, for example, Locke's letter of May 8, 1679 (II, 467), where he gave a very sketchy account of the important events following the fall of Danby, Shaftesbury's main rival in politics: "Le grand Changement qui est arrivé nouvellement en Angleterre vous entendrez avant que cette letre put tomber entre vos mains; c'est pourquoi je vous épargne la paine de le lire en méchant Francois dans ma letre." As for Toinard, his few comments on political events were often facetious: in a letter of Sept. 16, 1679 (II, 501), he mentioned the poor health of Charles II, reporting that some English sympathizers in France thought it was better for English people if the king recovered his health, since his successor (the Duke of York, the future King James II) was expected to be "a kind of martyr". Locke did not answer Toinard on this topic, though in a letter of Oct. 4, 1680 (II, 580), he posed some questions concerning the role played by French bishops in capital trials; the inquiry was clearly related to the dispute between the two Houses in England on the right of the Lords Spiritual to attend to the capital trials of Danby and the Roman Catholic peers involved in the Popish Plot. Toinard asked Locke the reason of his inquiry (Oct. 23, 1680, II, 585), but he did not receive any answer on this topic. Surely, Locke had spoken to Toinard of his patron Shaftesbury and his political misadventures when he was in Paris, as is confirmed by a letter of May 20, 1679 (II, 469): here Toinard rejoiced at the political reinstatement of "le Comte de Chesbury [...] aiant pour lui une veneration toute particuliere après la connoissance don't je vous suis redevable de ses grands qualitez." Moreover, writing to Locke on Sept. 3, 1681 (II, 655), Toinard deplored the "facheuse conjuncture" Locke was living at that moment, probably alluding to Shaftesbury's imprisonment. All this evidence suggests Toinard knew more about his friend's engagement on the side of Lord Shaftesbury than was reported in his letters. As additional proof of this, in a letter of Dec. 28, 1680 (II, 605), Toinard thanked Locke for the present of a portrait of Shaftesbury.

20. Later, Locke cast some doubts on the practicality of Hautefeuille's inventions: see Locke to Toinard, Aug. 15, 1679 (II, 492). Locke's opinion on Hautefeuille is in agreement with that of other sources, according to which his inventions were marked by ignorance and lack of judgment (Huygens 1888-1950, VII, 437, in note). On the contrary, Toinard seemed very interested in Hautefeuille's inventions: see his letter to Locke of Jan. 22, 1681 (II, 611), where he spoke of another invention of the latter, an "Acoustique" (earpiece).

21. See Locke to Toinard, July 26, 1678, I, 394: "Why must the propagation of knowledge which demands easy language and writing, be hindered by such pedantic and useless futilities?" In a letter to Locke of Dec. 5, 1681 (II, 669), Toinard mentioned an unfinished work of his on French orthography; there is no trace of any such publication. Probably, Locke abandoned the project soon after.

22. Surely, Locke was not speaking of this particular microscope when, writing on his *Journal* on Nov. 24, 1678, he affirmed: "The microscopes that so magnifie are nothing but little lens of glasse, made of the smallest threads of glasse melted." Locke mentioned Hautefeuille as the source of this information (Lough 1953, 250).

23. See *Journal*, April 21, 1678, in Lough, 1953, 191: "Mr. Toinard sheud me his Harmony of the Evangelists printed in a new method which I thinke may be very useful"; this is the first mention of Toinard in Locke's *Journal*. The first mention of *Harmonia* in the correspondence is in a letter Locke sent to Toinard on July 21, 1678 (I, 390). Locke received a complete edition of the work at the end of 1678: see Locke to Toinard, Dec. 13, 1678 (I, 428). Locke's interest in harmonic writings is well attested

in the journals by a great mass of notes on the subject of Gospel Concordance; they appear to have been derived from the works of John Lightfoot, as well as from the correspondence with Toinard. Many notes on the Old and New Testaments in the journals report Toinard as their source: see for example the entry for July 3, 1678, where Locke spoke of a Latin translation of the Bible by Sébastien Castalio ("The best edition of Castalio's translation is 1567. Mr. Toynard," in Lough 1953, 203). As we learn from Toinard's letter of May 20, 1679 (II, 469), he procured a book by Lightfoot (1679) for Locke. In the *Paraphrase* (Locke 1987), Locke made frequent use of the writings of Lightfoot, who was a pioneer in the investigation of the relationships between the New Testament and Rabbinic writings.

24. *Journal*, April 21, 1678, in Lough (1953, 191).

25. Locke to Toinard, Dec. 13, 1678, II, 428 ("the best of men, graced with all the virtues [...] deeply versed in Greek and Hebrew scholarship, and in chronology too, as is clear from this Harmony...").

26. Oct. 29, 1679, II, 510. In answer to Locke (Dec. 6, 1679, II, 517), Toinard gave him some hopes of fulfilling his desire, being possessed by a "harmonic spirit." However, he was working on the chronology of some Books of the Old Testament, not on the harmony of the Gospel; for a few years, Toinard was eager to produce harmonies of the Old Testament and of the Apocrypha.

27. One of these was the royal engineer Pierre de Massiac, sieur de Ste-Coulombe; Massiac showed Locke and Caleb the sights of Rochefort on September 8 and 9, 1678, as is reported in the *Journal* (Lough 1953, 232-235). Ste-Coulombe is frequently mentioned in Locke's correspondence with Toinard.

28. Rømer had been permitted to attend the Royal Society's meeting planned for May 15, 1679: his task was to carry out the measurements of the pendulum used by Picard -effectively to show the English how it had to be done- and to verify the exact value of the London foot. Locke and Rømer arrived in London in late April 1679; they spent a few weeks enjoying London together. Rømer seems to have fallen in love with a pretty girl who ran a hardware shop, and so bought rather a lot of pliers, knives and so on (see Locke to Toinard, May 25, 1679, II, 473; July 15, 1679, II, 485).

29. Toinard to Locke, May 5, 1679, II, 466. Toinard playfully reported that, since Locke had gone away, his friends were drinking all together to his health; Locke answered this thought could hardly console him, who "was dying of regret for having left them" (May 8, 1679, II, 467). The melancholic tone of Locke's letter was softened by the telling of an amusing story: Sylvanus Brownower, Locke's fat, Swiss servant, had repeatedly fallen off his horse during the trip to Calais. Toinard could not pass up this opportunity for a joke: the secret of the "Helvetic machine" discovered by Locke (Brownower himself), was of considerable scientific interest and had to be reported to Picard (May 20, 1679, II, 469).

30. In Toinard's terms, when a coil spring was fixed at one of its extremities and a weight fixed at the other, "il se fera un nombre de vibrations verticales [...] plus ou moins selon la grandeur du poids. Cequi estant combine avec une longer donné et avec un tems connu on trouveroit un poids naturel par les vibrations, comme lon a trouvé une longer par un pendule de secondes." Toinard referred to the pendulum clock invented by Christiaan Huygens in 1657, which was driven by weights. In 1661, the Royal Society suggested the length of the pendulum of Huygens' clock (which in their experience swung to and fro in one second), as a standard to apply to the measurement of the earth. This was the standard adopted by Picard in 1670: he used the pendulum of seconds to establish an invariable and universal measure of length, then by astronomical observation he established the difference in longitude between the terminal points. He was thus able to start the reconstruction of the map of France (Delambre, 1821).

31. See Anstey (2011, 114, 116, 146-47). In a letter to Toinard of May 1679 (II, 467), Locke mentioned Rømer and one of his inventions, a telescope whose working is described in a *Journal* entry for March 28, 1679 (Lough, 1953, 282: "I was shewd by Mr. Rømer an instrument to level with which was very simple and of exceeding quick dispatch, it being a telescope of four glasses about a foot long or something more which shewd the level when two threads, one where of was fixed and the other moved by a plummet, came to hide one another").

32. Later, it was Toinard who cast some doubts on this possibility: see his letter to Locke of June 6, 1680, II, 541: "Il est tres a souhaiter que lon convient dune mezure et dun poids, mais il n'y a pas lieu d'esperer cela." On this topic, see the conclusion at the end of this article.

33. See Locke, "An account of one who had horny excrescencies or extraordinary large Nails on his Fingers and Toes," *Philosophical Transactions*, 19 (1695-1697); 594-596 (the account was written in May 1678). See also *Journal*, Jan. 26, 1677 and March 17, 1679 (Lough, 1953, 185, 261), where Locke reported on having shown his "Universal foot" to Picard, who "found it just."

34. Locke described his way of dividing the Philosophical Foot in a letter to Boyle (June 16, 1679, II, 478). As for Toinard, he had some difficulties in understanding what the term "gry" stood for: in reporting to him on "hailstones of enormous size" which fell on London, Locke employed the gry as a unit of measurement (May 20, 1680, II, 538), but Toinard did not understand what he meant (see his letter to Locke of June 6, 1680, II, 541, where he joked on the ambiguity between "gry" and "griphus," enigma). Locke sent the description of the gry to Toinard on June 10, 1680 (II, 546); he employed the gry also when he sent him the measurements of a "pigeon hole" cabinet he had devised for the storage of rolled papers (Dec. 13, 1680, II, 600). According to Toinard, all his friends appreciated "le cabinet de monsieur Locke" (Toinard to Locke, Oct. 25, 1681, II, 666). Locke had also sent a description of the English foot to Toinard (Aug. 15, 1679, II, 492).

35. Already in 1664, Robert Hooke had questioned whether the pendulum, on account of the possible variation of the forces controlling it, could provide the requisite unit, and Huygens had expressed the same doubts in 1666. In a letter to Locke of May 20, 1679 (II, 469), Toinard reported on Richer's objection, though without much conviction; on May 20, 1680 (II, 538), Locke asked Toinard whether he knew something about Rømer's perplexities concerning the seconds pendulum, which were identical to those of Richer. In the *Principia*, Newton explained the variation of the pendulum through the variation in the force of gravity on the earth's surface (Tavernor 2007, 37-61).

36. Locke's correspondence scarcely touches on later developments on this matter; in a letter to Toinard of May 20, 1680 (II, 538), Locke guessed "people might someday agree upon the philosophic foot."

37. On July 2, 1679 (II, 481), Toinard mentioned the second tome of a *Miscellanea* edited by the French historian Etienne Baluze (1678-1715; the second tome was published in 1679), a very rich collection of Patristic and Canonical right documents; on Sept. 9, 1679, II, 497, he reported on some notes to Cardinal Baronius' *Annales*, written by the French Calvinist David Blondel, which had been brought in Paris by his friend Daniel Elzevier. The notes are those Pierre Bayle spoke about in his *Dictionary*, where he belittled Blondel's attack on the *Annales*: "he [...] made no great matter of the refutation of Baronius. They found after his death only some notes that he had written in the margin of his Baronius. His manner of writing is very close and small characters shew these notes might be pretty large, but this is not what we call refuting an author" (Bayle 1741, III, 383).

38. See Locke to Toinard, June 6, 1679 (II, 475), where he mentioned a Latin translation of the *Talmud* by I. Abendana (1671; never published), and another of the *Zohar* by C. von Rosenroth (1677); Locke was given a copy of the latter by Boyle for Toinard (see Toinard to Locke, July 12, 1679, II, 481). Locke also sent to Toinard a book by Maimonide translated by Humphrey Prideaux (1679, Aug. 15, 1679, II, 492). Many years later, Toinard asked Locke for a translation of the *Rosh-Hashana* (Houting, 1695; Toinard to Locke, Jan. 19, 1698, VI, 2375), adding that he himself had done a translation of it, of the *Pesach* and some fragments of the *Mishnah* and *Gemara*.

39. See Locke to Toinard, May 25, 1679, II, 473, where he spoke of a commentary on some books of the Old Testament by Edward Pococke (1677). Pococke had been Locke's teacher at Oxford.

40. On May 24, 1679, II, 470, Toinard asked Locke for marine maps of the English coasts and on Dec. 23, 1679, II, 520, he asked for a map of London. Probably, the maps had been requested by Thévenot, with whom Locke had become acquainted in Paris.

41. On June 6, 1680, Thévenot added a personal request to a letter addressed from Toinard to Locke (June 6, 1680, II, 541): he was searching for a *Turquestanae regni descriptio* (a work by Thomas Erpenius, to whom G. Vossius attributed an "Historia Regni Turquestani"), which he had been told was in Cambridge. At the beginning Locke was unable to find it either in Cambridge or in Oxford (Locke to Toinard, July 5, 1680, II, 552); later he found only some sheets (Oct. 14, 1681, II, 665). Another similar request by Thévenot, concerning the manuscripts collected by the voyager Richard Hakluyt and Samuel Flower's drawings of the ruins of Persepolis, received a similar answer from Locke: see Toinard to Locke, Aug. 24, 1680, II, 562, and Locke's answer of Aug. 30, 1680, II, 565. Thévenot was already a reasonably well known collector, who had published a four-volume travel compilation (1663-1672). Locke made notes on Thévenot's collection and cited it, along with other travel accounts, in his *Essay*: see Locke, 1975, 71 (I, iii, 9), and 87 (I, iv, 8). Toinard sent Thévenot's *Recueil de voyage* to Locke (1681; see Toinard to Locke, July 29, 1682, II, 721).

42. Toinard to Locke, May 14, 1679, II, 470. Locke was unable to find the book by Malalas (the surname of John of Antioch), which was not printed in England (Locke to Toinard, July 15, 1679, II, 485). On Jan. 27, 1680 (II, 525), Toinard asked Locke to speak of Malalas' book to the Oxford Bishop John Fell, who was in charge of a university press, hoping he was interested in printing it; Locke reported that the Bishop agreed on printing it, but only if Toinard could buy 400 copies (Nov. 29, 1680, II, 596). Malalas' work was never printed till 1691, though in 1689 the ecclesiastical historian Antoine Pagi published the first volume (Toinard to Locke, Sep. 1689, III, 1180); according to Pagi (1705, I, 108), Fell was not interested in Malalas' book, finding it full of silly stories. Regarding Malalas' work, see Smith and Wace, 2004, 789. Toinard received a copy of Malalas from Locke in 1694 (Toinard to Locke, Dec. 3, 1694, V, 1818).

43. See Locke, *Journal* 1679, March 8 (Dewhurst 1984, 150), where Toinard is cited as the source of a piece of information concerning the narcotic effects of Stramonium; Apr. 23 (Dewhurst 1984, 151), where Locke reports on Toinard's recipe for "an admirable sneezing powder" prepared with hellebores; Sep. 9 (Dewhurst 1984, 177), where Toinard is the source of another piece of information concerning the beneficial effects of Tanacetum. As regards the correspondence, see Toinard to Locke, May 31, 1681, II, 637, where he reported on a plant called "Agnus Tartaricum" (a sort of fern mentioned by the voyager Jean Struys, 1676); July 25, 1687 (III, 945), where Toinard spoke of "cynoglossum" or "Chanquerole," a medicinal plant (a sort of geranium) about which Locke had been inquiring in a previous letter. On Oct. 4, 1680 (II, 580), Locke asked Toinard to procure for him some specimens of fruit trees which he had brought back from Portugal; they are also mentioned in *Journal*, Feb. 2, 1679 (Lough 1953, 256), where Locke speaks of some great orange trees which Toinard had showed him in Paris. Oranges were recommended by the physicist François Gendron as a remedy against scurvy (see Dewhurst 1984, 216, in note). See also Toinard to Locke, July 16, 1688 (III, 1062), where the former reported on some "Trochisques Thanatoticque" he was sending to Locke. Occasionally, Toinard benefited from Locke's competence as a botanist: see Toinard to Locke, Aug. 28, 1680 (II, 563), where he asked for some seeds of cochlearia and some potatoes cultivated in London. Locke sent some seeds also to the Montpellier botanists when he returned to England (Locke to Toinard, Feb. 20, 1681, II, 626).

44. On June 21, 1679 (II, 477), Toinard promised Locke a copy of a *Relation des Amazones* (a dissertation written by Esprit de Cabart, preceding the French translation of the report by C. de Acuña, 1682); a few months later (Sept. 9, 1679, II, 497), he reported to Locke on the discovery of two new species of animals (the "Quirquinchos" of Chile described by the Jesuit Alonso de Ovalle, 1646, and the "Biscachas" of Tucuman). Later, Toinard reported on the "Zambuigi", the Cape hunting dog living in Angola (Oct. 4, 1681, II, 659). Toinard's curiosity was also aroused by reports concerning the customs of primitive tribes, such as the "Jagas", a black tribe of cannibals living in Angola (Toinard to Locke, Sep. 9, 1679, II, 479). Writing to Toinard on Oct. 13, 1679 (II, 508), Locke reported that an English voyager had written much on the "Giagas"; the voyager was Andrew Battel (an account of his travels in Angola had been published by Samuel Purchas in his *Pilgrimes*, 1626, pt. ii, b. VII, ch. iii). Toinard already knew Battel's account: in one of his first letters to Locke (Aug. 27, 1678, I, 402), he had spoken of "de Empacaces", a



kind of buffalo found in Angola described by Battel.

45. See Toinard's letter of July 12, 1679 (II, 481), where he spoke of a "petit traité de Physique de mr Mariote, dans l'un desquels il parle de l'observation de la pesanteur de l'air." Locke had been working on pressure-readings since 1666, as shown by his *Weather Diary* and the correspondence with Boyle (see Locke to Boyle, May 1666, I, 197). Toinard was engaged in barometric experiments as well, as he reported to Locke in his letter of July 2, 1679: "Mr [René] Hubin et moy avons trouvé de la indifférence entre l'air de Paris et celui d'Orlean."

46. See Toinard to Locke, Sep. 9, 1679, II, 497, where he spoke of water made with calcined vitriol, the narcotic effects of Stramonium and a journal of medicine printed in Paris every month. Writing to Toinard on May 20, 1680 (II, 538), Locke asked him for other issues of the journal (see Blegny, 1679-81). Toinard sent to him many issues (see his letter of July 3, 1680, II, 549). On May 22, 1680 (II, 536), Toinard also sent to Locke the *Essays de physique* by Claude Perrault (1680), which aimed at a radical methodological renewal of physiology and comparative anatomy.

47. On July 12, 1679 (II, 481), Toinard sent the design of a clock capable of five strokes a second devised by Rømer to Locke; Rømer himself sent a more detailed description of the clock to Locke on July 19, 1679 (II, 483). A few months later (Sept. 9, 1679, II, 497), Toinard reported to Locke on a water pump devised by Rømer for the fountains of Versailles; later, he described an invention by the French André Dalesme (Sep. 27, 1679, II, 504; Jan. 27, 1680, II, 525), consisting of "des plumes d'acier" which were expected to last for two years, and on June 6, 1680 he sent to him an (incorrect) account of Rømer's planisphere, a device by which it was possible to observe the daily movement of the planets (II, 541; see also Toinard to Locke, Aug. 7, 1680, II, 557; Oct. 12, 1680, II, 579). On Sep. 18, 1680 (II, 569), Toinard sent to Locke Picard's *Voyage d'Uranibourg* (1680), and in a subsequent letter he commended Picard's use of new telescopes, fitted with micrometers in order to determine the difference in longitude between Paris and Uraniborg accurately (July 2, 1681, II, 642).

48. On May 24, 1679 (II, 470), Toinard asked Locke to contact Sir William Petty, who had devised some experimental ships; Toinard's ship was an improvement on one devised by Pitt. See also *Journal*, July 4, 1678 (Lough 1953, 198-99), where Locke reported on what Toinard had told him about a book by a "Mr. Gravier", concerning the building and equipping of ships.

49. For the first and second version of the *Constitutions* (1669; 1670), see Locke (1997, 161-181). Shaftesbury was one of the eight Lords Proprietors and this is why Locke was involved in the writing of the constitutions in 1668. There is some evidence to suggest that Locke did play an important part in formulating the sections on religion—though it is possible this may have been at the bidding of Lord Ashley. Armitage (2004, 602-27) has shown that Locke was involved over the years in amending the *Constitutions* right up to the time at which he was writing the *Two Treatises of Government*. The second drafting of the document (1670) shows less liberal views on religion, attributing some privileges to the Anglican church (art. 96). It is highly probable Locke was not the author of this provision.

50. See Locke to Toinard (May 25, 1679, II, 473). Locke had already given a copy of the *Constitutions* to Toinard in 1678, as is shown by Toinard's letter of July 22, 1678 (I, 392): "J'ay bien songé des fois aux Loix de la Carolina au sujet des persecutions quell lon nous fait parceque la chicane est ici un metier." Toinard alluded to art. 64 of the *Constitutions* ("No Cause shall be twice Tried in any one Court, upon any reason or pretence whatsoever"): in that time, he was involved in a judiciary trial which was to last for over eight years.

51. Locke asked Toinard to pay for some books he was procuring for him (see Locke to Toinard, July 15, 1679, II, 485: "permettez moi sil vous plaist sans offencer notre amitié de vous en demander la prix puisque je souhait fort un commerce de la sorte fort libre de bons livres qui s'impriment chez vous (et sour tout des bonnes relations de voiajes)", but Toinard refused to be paid (see Toinard to Locke, Sept. 16, 1679, II, 501). Later, it was Toinard who complained about Locke's refusal, as was reported to the latter by his cousin Anne Grigg, who was spending some time at Montpellier (see her letter to Locke of Jun. 5, 1680, II, 539). Many years later, Toinard still complained about Locke's refusal, but Locke replied the complaint was reciprocal: see Locke to Toinard, June 11, 1700, VII, 2732 ("quand vous m'avez mandè ce qu'ont coutès les livres que vous m'avez envoiès il sera temps d'en demander la prix").

52. Toinard procured for Locke "a great peice of Angola wood with the poudre where of the grandees of that country make a paste with which they cover them selves" (*Journal*, April 14, 1679; see Lough, 1953, 269); for his part, Locke sent to Toinard "tortis shell knives and forks" (Lough, 1953, 177, note 1; see also Locke to Toinard, May 25, 1679, II, 473).

53. As for the bouillon cubes, see Toinard to Locke, Sep. 9, 1679, II, 497; the recipe for making yeast was sent by Toinard on May 22, 1680 (II, 536). As for the palliative ointment, see note 113.

54. See Locke to Toinard, Sep. 3, 1680, II, 566. As for the Popish Plot (a supposed Catholic conspiracy to assassinate the King and put his brother on the throne, revealed by Titus Oates in 1678), see Kenyon, 1972. Locke's correspondence is silent on this matter; the only interesting mention of the Plot is in a letter from Denis Grenville (a Doctor in Divinity Locke met in Montpellier in 1677), dating back to Oct. 14, 1678 (I, 411): "This post hath astonished us with a dismall relation of another Jesuitical plot to kill our King, newly discovered [...] Foure or five Priests, and others are secured and sent to New-gate: They are English Jesuites that are accused." As regards the fishing rod, Toinard's interest in fishing is well attested by the frequent mention, in his correspondence with Locke, of a *Historia piscatura balenarum* written by himself (see for example Toinard to Locke, July 12, 1679, II, 481).

55. Some of these remarks are strongly misogynous: see Locke's letter to Toinard of June 6, 1679 (II, 475), where he reported on having found a beautiful woman for him in England, whom he could sell by weight just like pigs were sold at the market of Montpellier, if he was not happy with her. Toinard replied amused that many mutual friends in France believed Locke had secretly married (June 21, 1679, II, 477); as for the beautiful woman, Toinard answered that if she were fat it would be a good bargain to sell her, but he did not like fat women, while if she were thin he would gain too little in selling her (July 19, 1679, II,

484).

56. July 12, 1679, II, 481. Toinard referred to art. 97 of the 1670 version of the *Constitutions*: “any seven or more persons agreeing in any religion shall constitute a church.” Those who were not members of a church were excluded from the protection of laws (art. 101).

57. See Toinard to Locke, Oct. 4, 1681 (II, 659): “nous [Toinard and Justel] avons trouvé bien des choses embarrassantes, et tres contraires à la tranquillité que des subalternes cherchent dans ces sortes de païs”; see also Toinard to Locke, Oct. 4, 1681 (II, 660): “Songez serieusement à la reformation des loix de la K.”

58. See Armitage (2004, 613 ff.), on the important role Locke played in the revision of the *Constitutions* in 1682.

59. In a letter of Aug. 16, 1679 (II, 489), Toinard reported that Godefroy was convinced the earth was an oval (an idea he derived from the precession of equinoxes).

60. Locke gleaned much medical information from Godefroy, as his *Journals* 1678-1679 reveal: see Dewhurst (1984, 131-34, 137, 138, 147, 173).

61. Locke seemed more reluctant to speak of his friends in his letters, also when the name was that of Boyle. Writing to Toinard about an ancient archive on the island of St. Thomas, Locke reported on having been informed of its existence (he did not specify by whom: see Locke to Toinard, July 15, 1679, II, 485); in a subsequent letter, Locke attributed this information to Boyle (Aug. 15, 1679, II, 492). A few months later, Locke did not mention Boyle as his source when reporting to Toinard on the “Geelofs,” an African tribe living on the river Gambia (Locke to Toinard, Oct. 13, 1679, II, 508; see *Journal*, Oct. 11, 1679, in Dewhurst, 1984, 176).

62. Toinard had corresponded with Elsevier since 1669; the letters are evidence of Toinard’s interest in printing and of his attempts at reforming and improving printing methods. However, Elsevier’s comment on a typographical invention by Toinard (a device which allowed two letters to be printed at a time), suggests he doubted his competence: “pour imprimer deux formes à la fois, c’est une folie impossible de practiquer, au moins inutile” (in Pieters, 1851, 179).

63. Sir John Banks, Caleb’s father, was at Olantigh in the summer of 1679. Locke remained at Olantigh until October 1679.

64. Sep. 20, 1679, II, 502 and Sep. 27, 1679, II, 505.

65. “Il faut donc prendre bien garde que la cause de cet obscurite, de ces nuages et grouillards qui nous ostent le vieu du ciel n’eclat pas de peur qu’on ne persecutass les Vertuosi comme de gens mal accomodes aux affaires du monde. Vous croirez que j’ay raison quand vous vous souveniez qu’atre fois a Oxford meme on troitoit de Heretique tout ceux qui entendoient la Greque et Bacon en estoit banni parcequ’il scavoit un peu les Mathematiques.”

66. In October 1679, Locke was in London, where his patron was playing a crucial role as the chief proponent of the Exclusion bill. At the fall of Lord Danby, Shaftesbury had been named Lord Chancellor of the new Privy Council (April 1679); when Charles II agreed to allow his catholic brother James, the Duke of York, to move from Flanders to Scotland (Oct. 1679), Shaftesbury summoned an extraordinary meeting of the Privy Council to discuss the Duke’s move. Angered by this insubordination, Charles removed him from office on Oct. 14, 1679. Locke’s letters to Toinard are silent on this matter.

67. See Locke to Toinard, Aug. 15, 1679, II, 492. Locke translated three of Nicole’s *Essais* during his stay in France, probably sometime between late 1676 and April 1679; he copied the text into a small volume dedicated to “the Right Hon.ble Margaret Contesse of Shaftesbury” (see Yolton, 2000). Some years later, on Feb. 20, 1687 (III, 910), Toinard asked Locke about “certain traitéz de morale dont vous m’ecrivites une fois”, in order to know whether they had been printed: probably, he was referring to Locke’s translation of Nicole’s essays, though it had not been printed. As for Mme Fouquet’s book, published for the first time in 1676, it was a collection of remedies which the charitable lady, the mother of the unfortunate French minister of Finances Nicolas Fouquet, had prepared and distributed to poor people. Locke intended to give the book to Damaris Cudworth, the future Lady Masham.

68. *A New Method of a Common-Place-Book, translated out of the French*, in Locke, 1824, II, 441-459; see also Meynell (1993, 256-263). Locke began keeping common-place books during his first year at Oxford in 1652; later, he developed a method for common-placing, which he reworked for some years. Probably, Locke had shown a small Latin essay of his method in Paris to Toinard; the work was published in French in 1685 by Le Clerc and, separately, in 1706. On pp. vi and 1 of the 1706 edition, a chart printed in red and black shows how Locke was able to create an expandable index of topics on two pages in each commonplace book; the index contains a line for every letter of the alphabet and for each letter there are sub-divisions based on the vowels.

69. Toinard to Locke, Dec. 6, 1679, II, 517. Toinard had asked Locke for the cipher on August 20, 1679, II, 495; see Locke’s reply of Oct. 29, 1679, II, 510. The cipher Locke spoke about is probably that devised in the British Library, Add., MS. 28, 728, ff. 65-6. Locke was familiar with the use of ciphers: see his letter to Clarke of Dec. 1, 1683 (II, 773). See also Locke (1954, 15). Toinard was also interested in tachygraphy; Locke sent to him some books on this subject on Aug. 15, 1679, II, 492.

70. Jan. 27, 1680, II, 525. In the letter, Toinard asked Locke once again to show his “machine a faire des ligatures c’est a dire a Etamper ou fraper des matrices” to Bishop Fell.

71. May 20, 1680, II, 538. The letter is in Latin.

72. Locke reported to Toinard that hailstones of enormous size had fallen on London a few days before, and that he would like to know from the French philosophers up to what weight solid bodies of such bulk could be suspended in the air. The question was ironically addressed to the Cartesians, who, following the doctrine exposed by Decartes in his *Dioptrica*, assumed that the space between the sun and the earth was full of fluid corps made of very subtle matter, moving in a vortex around a centre. The vortex theory was widely adopted in Britain and on the continent, in order to explain the motion of the celestial bodies mechanically; it was a common place for natural philosophers casually to describe or refer to the solar system as “our vortex.”

Locke himself uses the term even as late as July 2, 1695, in a letter to William Molineux (V, 1921); see also *Journal*, Feb. 1, 1679, British Library Add. MS. 15, 642, 8-9: "Mr Toinard shewd me a new systeme of our Tourbillon." Locke's letter to Toinard of May 20, 1680 shows he was sceptical of the vortex theory; Newton's attack on it convinced him conclusively that it had to be rejected (see Locke, "Elements of Natural Philosophy", 1697, 309).

73. On 26 June 1681, Shaftesbury led a group of fifteen peers and commoners who presented an indictment to the Middlesex grand jury, charging the Duke of York with being a popish recusant in violation of the penal laws. Before the grand jury could act, they were dismissed for interfering in matters of state. Probably Toinard knew the situation in England was critical: see his letter to Locke of Jan. 15, 1681 (II, 609), where he hinted at the "etat de choses du lieu ou vous etes" as an eventual impediment to their dealings.

74. June 6, 1680, II, 541.

75. June 10, 1680, II, 546. Locke's letter was in Latin, as the previous one (May 20, 1680, II, 538); in subsequent letters, he returned to alternate French with Latin. Locke's shift to Latin was perhaps another way to express his disappointment.

76. See Toinard to Locke, June 6, 1680, II, 541. Toinard characterized Bernier's book as a reply to a book by Monsieur Louis de la Ville (the pseudonym of the Jesuit Le Valois) concerning the Eucharistic Species, and also as a defence of the Gassendists at the Cartesians' expense. A few copies of Bernier's book were published in 1680 and listed as *Éclaircissement sur le livre de M. de la Ville* among the new books in *Journal de Sçavants*, Aug. 19, 1680; a version was published by Pierre Bayle in 1684. The crux of Bernier's response to De la Ville was that, since Eucharist is a mystery and God's action is miraculous, one can allow philosophers to philosophize in their own way, as long as they propose probable, non-dogmatic solutions within the sphere of the possible, limiting themselves to the natural -not supernatural- course of things. Regarding Bernier's book, see Ariew (1999, 183).

77. Locke restated this opinion in a subsequent letter to Toinard (July 5, 1680, II, 552): "if I were given the choice, prefer him as historian; for nowhere, it seems to me, is he less a stranger than when in strange lands." Actually, Locke's journals 1677-79 show that his relations to Bernier were with the oriental traveller rather than with the disciple of Gassendi.

78. On May 20, 1680 (II, 538), Locke had sent a calculating abacus invented by George Sinclair to Toinard (II, 538); Toinard's reply is of June 19, 1680, II, 545. Later (July 3, 1680, II, 549), Toinard sent to Locke an arithmetic machine devised by the French mechanic and clockmaker René Grillet, which represented an improvement of the *pascaline*, and a book written by Grillet himself, *Curiositez mathématiques* (1673).

79. On July 19, 1679 (II, 484), Toinard had reported to Locke on a spinning machine capable of giving work simultaneously to more than forty spinners; Locke asked for its description on Aug. 15, 1679 (II, 492). Some months later, Toinard promised to send the description to him (May 20, 1680, II, 538), but he probably forgot and when Locke asked for it once again, he misunderstood his request. Writing to Toinard on June 10, 1680 (II, 546), Locke seemed annoyed: "I am sorry that these words were so badly written that you could not read them. In your letter of July 19, 79 I see that you said *Je vis avant hier une machine pour fair travailler 20, 30 ou 40 des fileuses a la fois, etc*; that is the machine I meant in that passage." Locke withdrew his request: "the description of machines is not only very laborious but also difficult to understand; so I think that this request of mine can be dispensed with." In answer to this letter on June 19, 1680 (II, 484), Toinard gave a very sketchy description of the spinning machine, lingering over the fact that he had been asked by the inventor to improve it.

80. II, 552. The letter is written partly in French, partly in Latin.

81. See also Locke's letter to Toinard of July 14, 1680, II, 556: "Je vien de recevoir de Mr Budgen tous ces beaux presents que vous aviez mis entre ses mains pour moi dont je suis plus qu'accablé." On Sep. 6, 1680 (II, 566), Locke asked Toinard for P. Richelet's *Dictionnaire* (1680; see also Locke to Toinard, Dec. 13, 1680, II, 600). In exchange, on Nov. 29, 1680 (II, 596), he sent to Toinard a book by the mathematician Jonas Moore (1674), concerning a way of reforming the English calendar. For his part, Toinard procured Hautefeuille's book on breathing under water for Locke (Dec. 1, 1680, II, 597; see note 115).

82. Toinard asked Locke once again whether he had printed his method on Dec. 11, 1680 (II, 597); Locke sent him a short description of it two days later (Dec. 13, 1680, II, 600).

83. Flamsteed was the first Astronomer Royal and the founder of the Greenwich Observatory; in that time Hooke was curator of experiments of the Royal Society. Thanks also to Locke's intermediation, the exchange of information between Toinard's friends and the Royal Society became more frequent: Rømer asked Locke to report to the members of the Royal Society on his recent astronomical observations (see Toinard to Locke, Sep. 18, 1680, II, 569), while Hooke sent to Toinard a report on the observation of Jupiter's satellites (Locke to Toinard, Dec. 13, 1680, II, 600), and informed him about a new book by the mathematician Robert Wood concerning the reform of the English calendar (1680; see also Toinard to Locke, Jan. 1, 1681, II, 605). Locke spoke to Toinard of two tracts by Hooke (1674a; 1676), where he denied the reliability of the astronomical observational procedures of Hevelius (impaired by the variability of measurements due to the alteration of instruments), and advocated the development of a second generation of astronomical instruments that combined lenses and measuring devices. In another letter to Toinard (Dec. 13, 1680, II, 600), Locke mentioned another book by Hooke (1674b), whose main argument went against Picard: in his *Voyage d'Uranibourg*, the latter had made an attempt to measure the annual parallax of the stars, but Hooke demonstrated that his observations were inaccurate through the results of some observations he had made in 1669 and claimed to have detected the annual parallax, which proved the earth orbited the sun. Toinard read the book and reported to Picard on it (see Toinard to Locke, Jan. 1, 1680, II, 605).

84. See Toinard to Locke, Sep. 18, 1680, II, 569: "le plaisir que je me faisois en me representant que je vous embrasserois bientost, dissipoit tous mes chagrins, et veritablement javois besoin de pouvoir ouvrir mon coeur a une personne come vous." In September 1680, Locke was at Aylesford in Kent, the home of Sir John Banks, probably to spend some time with his pupil John.

85. Writing to Locke on Nov. 24, 1680 (II, 594), Toinard reported on a maxim by Bernier, who recommended that his friends,

at least sometimes, should behave like oxes (“faire le Beuf”), spending their time eating, drinking, and sleeping. Locke playfully replied that Bernier could not behave like an ox because, hating marriage, he refused to “have horns” (be cuckolded: Dec. 13, 1680, II, 600).

86. See Locke to Toinard, Sept. 16, 1680 (II, 571).

87. Locke had spoken of seven sterling, adding that Hooke had seen and approved the device (Nov. 29, 1680, II, 596); however, Toinard thought the price was too high and suggested Locke should send a merchant in his place to ask for it (Oct. 23, 1680, II, 585). The price did not decrease, so that Toinard had to renounce the device. Probably, the “Oury” mentioned by Toinard was Louis Oury, who became a master watchmaker in Paris in 1684 and was one of the first to introduce a balance spring into the watch. A few months before (Aug. 28, 1680, II, 563), Toinard had already asked Locke for a small watch made by a London clockmaker: he recognized great expertise to English watchmakers.

88. II, 600. Locke received the description a few months later: see his letter to Toinard of Feb. 9, 1681 (II, 623). The Thuret family of clockmakers was one of the outstanding craftsman-dynasties in 17th and 18th-century in Paris. Probably, Locke was speaking of Thuret’s pendulum when, on Oct. 14, 1681 (II, 665), he wrote to Toinard: “Vostre ami s’est servi d’un tres belle invention pur prandre la hauteur.”

89. Feb. 9, 1681, II, 623.

90. See for instance Toinard to Locke (Dec. 6, 1697, VI, 2355), where the former reported on a man named Watson, who was said to have made “des horloges avec de petites boules de verre”; Locke replied that the English watchmaker Thomas Tompion had showed glass (“verre”) was useless in clock-making (March 25, 1698, VI, 2412).

91. See Toinard’s letter of September 18, 1680, II, 569. The device at that moment was in the hands of the members of the Royal Society (see Birch, 1756–57, IV, 40–41), but Locke was not aware of this: he answered there was no such machine in England (Oct. 4, 1680, II, 580). Toinard was also interested in knowing something about a “machine remolquante” capable of towing boats on rivers; on Dec. 4, 1680 (II, 594), he asked Locke whether something of that sort was in use on the Thames, but seven years later he was still waiting for a description of the machine (see note 209).

92. The French mathematician and physician Papin had worked as an assistant to Huygens, but after the revocation of the edict of Nantes he left France and took up residence in England, where he made the acquaintance of Boyle and the other members of the Royal Society; it was while working with Boyle that Papin invented the air gun. Toinard asked Locke for a specimen of Papin’s guns for Rømer: see Toinard to Locke, Nov. 13, 1680, II, 589. Later, he enquired about another invention by Papin, a way of softening bones (Papin 1681; Toinard to Locke, May 31, 1681, II, 637). Locke was convinced that Boyle was the inventor of the chemical recipe for softening bones: he sent to Toinard Boyle’s book *Experimentorum Novorum* (1680), a second sequel of Boyle’s original treatise on the *Spring of the Air* (1660) and the result of his strict collaboration with Papin. Locke sent the book to Toinard on Sep. 1680 (II, 567).

93. Toinard’s interest in numismatics is recorded in his correspondence with Locke at least as far back as 1680: see Toinard to Locke, (Sept. 18, 1680, II, 569), where he mentioned a book written by the numismatist Jean Foy Vaillant (1681). Numismatics is the subjects of other letters written by Toinard to Locke in 1698.

94. See Toinard to Locke (Oct. 4, 1680, II, 573). On Oct. 12, 1680 (II, 579). Toinard furnished Locke with a design of the first machine, inviting him and Boyle to test whether salted food lost its taste in a void. Locke seemed interested in both the machines (Oct. 4, 1680, II, 580), on whose utility Toinard insisted also in a very long letter of Dec. 4, 1680 (II, 594): cooking food in sea-water could free the crew of a ship from having to use “d’eau douce qui souvent etant corompüe communique sa mauvaize qualité aux aliments.” Moreover, Toinard thought it was worth enquiring whether early training could accustom men to drinking sea-water, but Locke was doubtful about this possibility: “though I readily admit the great power of habituation in all departments of life, I doubt whether a beverage so out of accord with our nature would conduce to perfect health and long life; what is better, too, than drinking sea-water is to go entirely without any sort of drink” (Nov. 29, 1680, II, 596). The problem of ensuring an adequate supply of good drinking water during lengthy voyages at sea received much attention in the 17th century; in 1673 Boyle published his *Observations about the Saltness of the Sea*, where he gave his own view on the subject and dealt with the preparation of fresh water from sea water by distillation. Finally, Boyle reported the results of his own hydrostatical and chemical examination of sea-water. In a *Journal* entry for Dec. 5, 1678, Locke reported that, according to Toinard, “the secret to sweeten salt water” had been discovered; Locke added the name of Dr. John Wilkins followed by a question-mark (Dewhurst 1984, 148). On Nov. 4, 1688 (III, 1087), Toinard reported to Locke on a book which revealed the secret way to make salt-water drinkable (identifiable as Fitzgerald, 1683), but he was convinced that it was Boyle the author of the discovery. In 1683, Boyle had addressed a letter on this subject to the Royal Society, as faithfully reported by Fitzgerald in his book; see Maddison (1952, 196–216).

95. See Toinard to Locke, Nov. 13, 1680, II, 589.

96. See Toinard to Locke, Dec. 4, 1680 (II, 594). See also Locke’s *Journal*, Jul. 12, 1678 (Lough, 1953, 191: “we see [*sic.*] the glasshouse where they made glasse bottles with glasse stoppers that scrued in, the invention of Mr. Toynard”). Toinard’s interest in glassworks is also attested by a present he sent to Locke on Jan. 25, 1682 (II, 679), consisting of some pieces of crystal; he furnished Locke with the description of the process through which they had been worked, asking him to report to Boyle on it in order to have an explanation of the reason why white crystal became red, when put near a flame. The correspondence does not record any answer from Boyle.

97. See Toinard to Locke, Oct. 4, 1681 (II, 659), and Oct. 25, 1681 (II, 666). Locke was very interested in this invention (see his letter to Toinard of Oct. 14, 1681, II, 665), which allowed liquids to be injected into deep wounds or fistulas. There is no record of this invention in Locke’s journals.

98. See Toinard to Locke, Dec. 4, 1680 (II, 594), where he spoke of himself as an inventor who needed to earn money in order to put his expensive “harmonic machines” to work.

99. See Locke to Toinard, Nov. 23, 1680, II, 593.

100. Locke spoke of Toinard’s way of rendering ships waterproof to Brisbane, who doubted its efficacy: in his opinion, the kind of soldering devised by Toinard was unable to prevent ships from splitting in adverse conditions (see Locke to Toinard, Nov. 23, 1680, II, 593). In October 1680, Toinard had asked Locke once again to show his wooden die stamps to Bishop Fell (Oct. 23, 1680, II, 585); this time Locke answered immediately (Oct. 24, 1680, II, 587), regretting the Bishop’s refusal and complaining about his incompetence: “je suis bien confirmè et par la, et d’ailures que le choses le plus utiles si elle sont nouvelles entrent seulement dans l’esprit de ceux qui y apportent une application exacte et particuliere.”

101. See Toinard to Locke, Sep. 18, 1680, II, 569. The English William Gilbert was the first to write something about the declination of the compass in his *De Magnete* (1600); see also Toinard’s letters of Dec. 4, 1680, II, 594 and Aug. 29, 1701, VII, 2983.

102. See Locke’s letter of Oct. 24, 1680, II, 587. Toinard had received this information from a friend of his, a certain “capitaine de marine tres habile” (probably the abbé Formentin, one of the Triumvirs).

103. Dec. 5, 1680, II, 595.

104. Dec. 13, 1680, II, 600. Locke and Toinard continued their discussion on magnetism in 1701.

105. Jan. 1, 1681, II, 605. The comet was the first to be discovered by telescope; the author of the discovery was the German astronomer Gottfried Kirch (Nov. 4, 1680; Kirch 1681).

106. In a subsequent letter from Toinard (Jan. 11, 1681, II, 608), the comets became two, moving in opposite directions: actually, this was the prevailing view in that time, because comets were thought to travel only in a straight line; when one was observed passing near the earth towards the sun, and observed again some months later passing near the earth but far from the sun, they were thought to be two different comets moving along nearly parallel lines but in opposite directions. See Newton, *Correspondence*, II, 315, in note. In a letter of Jan. 15, 1681 (II, 609), Toinard reported to Locke on Picard’s observations on the second comet, as he did in a subsequent letter (Jan. 25, 1681, II, 611).

107. Jan. 22, 1681, II, 610. In a letter to Toinard of Feb. 9, 1681 (II, 623), Locke regretted the death of the elephant and playfully guessed it could enjoy an eternal life in heaven, adding some verses of *Hudibras* which celebrated animals as the wisest creatures in the world.

108. II, 623.

109. See for example Toinard to Locke, Mar. 5, 1681: “Je reserve a une autrefois la non-direction magnetique, parcequ’il est tard” (II, 629).

110. May 31, 1681, II, 637. In the letter, Toinard reasserted his hypothesis (the magnetic needle marked the North only momentarily, always moving towards the west), though he admitted that if the needle were found somewhere to go back towards the east, his system would be reversed.

111. May 31, 1681, II, 638.

112. See Locke to Toinard, Dec. 13, 1680 (II, 600): “Seeing, however, that you are on such good terms and have so much influence with Mr. L. G [Gendron] I will tell you that I set the highest value on anything coming from that source.” Locke had met the famous priest—physician François Gendron at Orleans in 1678; Gendron had treated Anne of Austria for cancer, and gained an abbey for his services. Gendron’s name is recurrent in Locke’s journals 1678–1683 (see Dewhurst, 1984, 120, 156, 157, 163, 199, 216).

113. See *Journal* 1678, May 14 (Dewhurst 1984, 120), where Locke reports on Gendrons’ opinions on purging, mentioning Toinard as his source. As for the correspondence, in 1679 Locke asked Toinard to procure for him Gendron’s recipe for making ointments to treat corns; in exchange, he sent him his method of healing wounds (Oct. 13, 1679, II, 508). A long recipe of Gendron’s palliative ointment was sent by Toinard to Locke on Dec. 6, 1679 (II, 517). A year later, Locke asked for some explanation (Dec. 13, 1680, II, 600: “As for the ointment that you sent me a formula for, I am quite clear about it, except perhaps that it needs a certain amount of explanation”); however, Toinard thought it inappropriate to question Gendron on this matter again (Jan. 1, 1681, II, 605). The recipe of the ointment is still mentioned in *Journal* 1681, Feb. 10, together with a remedy against chilblains (Feb. 15, 1681; see Dewhurst, 1984, 199; Toinard is mentioned as the source of both entries). On May 20, 1680 (II, 538), Locke asked Toinard to contact Gendron also for a remedy for fistula; Toinard’s answer (Aug. 24, 1680, II, 562) contained a note on this topic written by Gendron himself. One year later, on June 13, 1681, Locke asked Toinard for the name of a root which was hung around childrens’ neck by peasants in Orléans for curing mouth ulcers (II, 640); Locke asked for it once again on Nov. 23, 1684 (II, 790), but on Dec. 22, 1686 (III, 884). Toinard was still unable to give him any answer. Thanks to Gendron, the plant was identified as “cynoglossum” or “Chanquerole” in Toinard’s letter of July 25, 1687 (III, 945). On Nov. 13, 1684 (II, 789), Toinard sent Locke a remedy for sore eyes; another remedy for aching muscles was sent to Locke on Mar. 8, 1685 (II, 812), together with a short notice on the beneficial effects of the coconut oil coming from Maldives. All the remedies were Gendron’s, whom Locke thanked in a letter to Toinard of Apr. 9, 1685 (II, 818): he had personally experimented the beneficial effects of the first, a kind of poultice (“L’emplatre fait de miracles”).

114. In a letter of Oct. 9, 1680 (II, 577), Toinard reported to Locke on a remedy against biliousness, which he had learned from Thévenot: it was necessary to swallow three or four small live fish, whose movements could help the body to expel bile. Toinard had learned from Thévenot also a remedy against migraine (a steel ring to wear on the little finger of the right hand); Locke asked to know more about the latter (Nov. 29, 1680, II, 596; see also Locke’s *Journal*, Oct. 9, 1680, in Dewhurst 1984, 195). Beside, Locke and Toinard spoke of remedies against fever: Locke recommended the use of “Kinkina” (or “quinquina,” the

cortex: Oct. 4, 1680, II, 580), whereas Toinard reported on a salt which had been able to cure him, and on a book by Robert Talbor (1672; see Toinard to Locke, Dec. 4, 1680, II, 594). Locke did not think highly of Talbor's book ("il n'y a rien de son secret qui ne vaut pas trois sols"), and suggested Toinard should read something else on the argument, adding he knew a useful remedy for treating every kind of fever (Dec. 13, 1680, II, 600); on his request, Locke sent Toinard the recipe, based on the use of quinine (Feb. 9, 1681, II, 623), and a written memoir on the cortex, on whose reliability he asked his friend to enquire (Aug. 30, 1681, II, 656). On Oct. 8, 1681 (II, 661), Toinard reported to Locke on the Count of Chinchóy (the viceroy of Peru, whose wife had been saved by the use of quinine), and on a book printed in Lyon (identifiable as R. Restaurand, 1681). Finally, on Oct. 25, 1681 (II, 666), Toinard was able to guarantee the reliability of the memoir: he sent Locke an account on this topic, probably written by Don Diego de Peñalosa (governor of New Mexico from 1661 to 1664; the account is lost). Toinard's name is also mentioned in Locke's *Journal*, Oct. 22, 1682, in relation to the way of curing jaundice in Ethiopia (Dewhurst 1984, 208).

115. On Aug. 30, 1679 (II, 495), Toinard had reported to Locke on a new machine invented by Hautefeuille, which made breathing underwater possible; he had expressed some doubts on this invention: "je lui ay fait lobjection du defect de parties alimentaires de lair, parceque l'air frais est un equivoque de frigidus au lieu de recens". On Dec. 1, 1680 (II, 597) Toinard sent to Locke Hautefeuille's book, *L'art de respirer sous le eau*.

116. Locke to Toinard, Feb. 20, 1681, II, 626.

117. In 1666, Locke had written a small Latin essay on respiration ("Respirationis usus," National Archives, London, PRO 30/24/47/2, fols. 71-74; see Dewhurst (1960). The essay shows Locke was deeply engaged in Boyle's investigations: see Dewhurst (1962), and *Idem* (1984, 12-17). Dewhurst characterizes "Respirationis usus" as follows: "It is not a good essay as [Locke] neglected to support his theories with experimental evidence, and included many out-dated ideas of the classical physicians, together with Swammerdam's notion of respiration serving to cool the blood" (1984, 15). Locke's letter to Toinard is evidence that he could not think that Swammerdam's concept of respiration could be right, at least in 1680.

118. "A *biolychium*, or vital flame continually burning in the heart, and fed by the spirituous parts of the circulating blood": see Boyle (1666, in Birch 1744, II, 535).

119. Speaking about the elephant, Locke could not pass up the opportunity for a witty remark against the Cartesians: if the elephant's pineal gland were found to be in proportion to its huge body, they would be obliged to admit it had a soul bigger than men.

120. This seems to be the ultimate sense of Locke's insistence in *Essay* on human ignorance even about the smallest things; see for example *Essay*, III, vi, 9 (Locke 1975, 444): "There is not so contemptible a Plant or Animal, that does not confound the most enlarged Understanding. [...] The Workmanship of the All-wise and Powerful God, in the great Fabrick of the Universe, and every part thereof, farther exceeds the Capacity and Comprehension of the most inquisitive and intelligent Man, than the best contrivance of the most ingenious man, doth the Conceptions of the most ignorant of rational Creatures."

121. See Locke to Toinard, Oct. 14, 1681 (II, 665), where he attempted to explain a curious phenomenon reported by the latter (Sept. 3, 1681, II, 655), that of snow bridges suspended between rocks on the Pyrenees: Locke attributed to Nature the wise design to cover the course of the rivers flowing under these bridges, in order to prevent them from frosting. In a similar way, Locke added in the letter, white ants living in Ceylon were reported in explorers' narratives to cover themselves with leaves, when moving from one place to another (a piece of information Locke took from Robert Knox, 1681).

122. Toinard to Locke, 16 Aug. 1679 (II, 489). Some years later, on Feb. 20, 1687 (III, 910), Toinard sent to Locke the recipe for a prodigious remedy capable of curing every kind of sickness, which he recommended should be kept secret. There is no further mention of this extraordinary remedy in the correspondence; Toinard had voluntarily abstained from revealing the name of its author, "un homme du grand nom."

123. Oct. 4, 1681, II, 661.

124. Jan. 16, 1682, II, 679. Toinard mistakenly reported that the book contained a survey relating to the Canadian coast; actually, what the book contained was a map, not a survey.

125. Dec. 5, 1681, II, 669. The book was hot off the press; Mabillon was Toinard's correspondent (Jovy 1912).

126. See Toinard to Locke, March 5, 1681 (II, 629); Toinard spoke of a "Relation en Espagnol d'un nommé Olenker, Aleman catholique d'Alsace, que le Roy d'Angleterre envoya en 1669 passer le Detroit de Magellan pour aler par la mer du Sud et de Californie reconoitre du coté de l'Ouëst le passage que l'on pretend y avoir au nord de l'Amerique pour tomber dans ces mers." The voyage was that of the Admiral Sir John Narbrough (1669-71; Narbrough 1670-75) and "Olenker" was Don Carlos Enriques Clerk, a participant in the expedition. In a letter of July 16, 1681 (II, 648), Toinard reported on the translation into French of Jean Struys' book on Siam (1676).

127. In a letter of May 31, 1681 (II, 637), Toinard reported to Locke on Cassini having published a book on the comet (probably the *Abregé*, 1681). Toinard disapproved of the great privileges accorded to Cassini, who had been appointed Director of the Observatoire: his pension was enormous compared to that of Picard, who had obtained only a modest lodging in the building. Both Huygens and Cassini enjoyed higher social and economic status than all their noble colleagues in the Academy of Sciences (Stroup 1990, 32).

128. Toinard to Locke, March 5, 1681, II, 629. The New Testament's edition was that by John Mill (see James Tyrrell to Locke, Oct. 26, 1693, IV, 1665), which was not published until 1707.

129. Toinard to Locke, July 16, 1681 (II, 648). George Dalgarno was a Scottish intellectual interested in linguistic problems (Dalgarno 1661). The idea of a universal language was pursued in Britain foremostly as an empirical and practical undertaking rather than as a speculative one; some ideas about a universal language had been in the air at Oxford already before the 1650s, and the name more frequently evoked was that of Bacon, though Descartes and Mersenne's ideas on this subject were also as well

known as those of the educational reformer Comenius. The experiment failed: in the early 1680s, Dalgarno offered to hand on his work to any worthy undertaker willing to continue it (Birch 1756, I, 387), but his offer found no takers.

130. Locke to Toinard, Aug. 30, 1681, II, 656; see Knox (1681).

131. Locke to Toinard, June 13, 1681, II, 640.

132. Toinard to Locke, May 24, 1684, II, 778.

133. July 5, 1680, II, 552. In the letter, Locke suggested Toinard should expand on the chronology of the three harmonies he had received. On Aug. 24, 1680, II, 562, Toinard asked Locke for a “Concordantia particularum in bibliis contentarum” (the right title is *Concordantiae Particularum Ebraeo-Chaldaicum*), written by Christian Nold and printed in Copenhagen: probably, he needed the book in order to go on with his harmonic writings. Locke was not able to find it until the beginning of 1681 (see Locke to Toinard, March 5, 1681, II, 629). The work by Nold, Professor of Theology at Copenhagen, was particularly important in the history of Hebrew concordances: it contained the particles, or indeclinable words, omitted in previous concordances.

134. Locke to Toinard, July 20, 1680, II, 556.

135. Locke to Toinard, Dec. 13, 1680 (II, 600). Toinard followed Locke’s suggestions: in the version of *Harmonia* published in 1707, the texts of the four Gospels are placed in four parallel columns, while an additional column provides a Latin summary narrative. At the head of each page, the place and the date are set out, the latter according to the various epochs (the consular and the regnal years, the years of the life and ministry of Jesus).

136. See Toinard to Locke, Aug. 7, 1680, II, 557, and Aug. 24, 1680, II, 562.

137. July 2, 1681, II, 642.

138. Sept. 8, 1681, II, 656.

139. See Toinard to Locke, Oct. 4, 1681, II, 659. In a subsequent letter (Oct. 8, 1681, II, 661), Toinard spoke of a harmony of Pentateuch, but this is the only mention of this venture.

140. Feb. 28, 1681, II, 686.

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