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### **A Model Scientist: Lichtenberg's Views on Franklin**

In Germany, as elsewhere in Europe, Benjamin Franklin was admired as the foremost representative of the New World, as a man of learning and harbinger of new attitudes and aspirations. Georg Forster, in his *Erinnerungen aus dem Jahr 1790*, declared passionately:

Es ist nicht denkbar, daß ein Europäer, der sich nur einigermaßen um die Schicksale seiner Gattung bekümmert, diesen Namen und den davon unzertrennlichen Ruhm nicht kennen sollte. Der Stifter des Nordamerikanischen Freistaats, der Erfinder des Blitzableiters, der Wohltäter seines Vaterlandes, der Freund und Bruder des Wilden und des Weisen, der humanste Mensch und der glücklichste von allen, die im achtzehnten Jahrhundert zu Mitarbeitern am großen Vollendungswerke menschlicher Glückseligkeit auserkoren waren, hieß Benjamin Franklin!<sup>1</sup>

To promote his humanitarian ideals, Forster selected and described in his *Erinnerungen* twelve portraits and twelve prints of exemplary contemporary personalities and events. Only Benjamin Franklin is represented in both series. As birth had provided him with no special advantage and he, above all others in the public eye, had earned his many distinctions through intrinsic merit, Forster found in him his universal model and predicted confidently, that "so lange das Menschengeschlecht der Macht des Beispiels bedarf, wird dieser Name leben und wirken."<sup>2</sup>

A naturalist who with his father had accompanied Captain Cook on his second voyage of discovery, Forster was, like Cook and Franklin, a Fellow of the Royal Society of London, and well able to appreciate Franklin's scientific achievements. More than anything, however, he valued his contributions to the concept of human dignity and individual freedom. Depressed by the narrow restrictions which the small and fragmented German principalities imposed on their subjects, Forster shared the aspirations of the American and French revolutions, and

Franklin, the man of peace and good sense, who gained his goals through reason and with peaceful dignity, was to him living proof that enlightenment can lead to liberty and progress:

Vernunft—und nur durch Vernunft mögliche Tugend, also wieder nur Vernunft und nichts als Vernunft—ist der Zauber, womit Benjamin Franklin den Himmel und die Erde bezwang; Vernunft ist die Tyrannenbändigerin, der einst die runde Erde das ewige Triumphlied zujauchzen wird. Vernunft ist das Element, worin das Menschengeschlecht allein seine Bestimmung erreichen kann.<sup>3</sup>

If Forster mainly celebrated the historical and heroic aspects of the self-made commoner who had "torn lightning from heaven and the scepter from tyrants,"<sup>4</sup> his friend and colleague, Georg Christoph Lichtenberg, emphasized Franklin's scientific achievements and his general human and humanitarian traits, and wisely refrained from entering political controversy. While Lichtenberg's attitude towards the emerging American republic changed from contempt in the seventies, and the "hope in the early eighties that the British might still be victorious" to benign equanimity, his view of Franklin as a scientific paragon underwent no transformation. To him Franklin was the "exemplary man of learning,"<sup>5</sup> whose methods and aims merit as much attention as, if not more than, his results.

Lichtenberg saw Franklin not as a unique heroic figure, but as "one who had a great deal of common and uncommon nature in him,"<sup>6</sup> and as a prominent member of the select group of individuals to whom humanity owes instruction and progress. The methods and procedures of such people, Lichtenberg was fervently convinced, must be studied, copied, perfected, and perpetuated for the continuing good of mankind. In his view, his own astronomy professor, Tobias Mayer (1723–62), belonged to this category, as did Captain James Cook, men whose personal and scientific integrity and versatility he held in particularly high regard, and whom he judged as never motivated by the hope of personal gain and aggrandizement, but by an unquenchable thirst for knowledge which led their interests into many different directions and drove them to continuous thought and study.<sup>7</sup>

Whatever attracted his attention, Lichtenberg considered within a complex context. Consequently he judged the first scientist of international renown to emerge from the New World against the background of his particular conditions, about which he was exceptionally well informed. As Harold von Hofe points out, "the American themes in the works of Lichtenberg are unusually diversified and copious for his era, . . . American subjects are explored in large numbers in a variety of essays and letters," and Lichtenberg displayed "vast knowledge of New World history from the fifteenth to the eighteenth century."<sup>8</sup>

As "Professor of Natural Philosophy in the University of Göttingen"<sup>9</sup> and the leading German authority on electricity, Lichtenberg obviously took a keen professional interest in Franklin's scientific work, especially in his experiments concerning the nature of electricity and



lightning, which are often quoted in his notes and letters. Unfortunately no communications to English correspondents have come to light, and there is no record of any actual meeting between Franklin and Lichtenberg, who, during his second stay in England (1774-75), moved in the same scientific circles as Franklin. They shared not only their interests, but also friends and acquaintances, such as the Forsters<sup>10</sup> and Joseph Priestley, who at the time lived at Lord Shelburne's London residence, which both Franklin and Lichtenberg frequented.

Notes and letters, especially those to Johann Albert Heinrich Reimarus, professor of natural history in Hamburg, and Franz Ferdinand Wolff, author of a *Compendium zum Vortrage in der Experimentalnaturlehre*, discuss only Franklin's stature and work, primarily that on electricity. Reimarus erected the first lightning rod in Germany and published the standard works in this field. As Lichtenberg regarded them highly, he refrained from scientific writing on the subject himself.<sup>11</sup> To the *Göttinger Taschen Calender*, which he edited and mainly wrote from 1777-99, he contributed, however, an article "Über Gewitterfurcht und Blitzableitung" in 1794. Educating and involving the public by making science accessible to everybody was to Lichtenberg, as to Franklin, of prime importance, and his amusing and partly playful explanations of electricity in the almanac did, indeed, much to defuse the widespread terror of thunderstorms.<sup>12</sup>

In his own lifetime Lichtenberg was famed for his electrical experiments, and a significant proportion of his professional work was carried out in fields which Franklin had opened, especially research with lightning rods,<sup>13</sup> and kites. The latter technique had been pioneered by Franklin, whose initial attempts to duplicate the European procedure of "drawing the electric fire from clouds by means of pointed rods of iron erected on high buildings" had been frustrated by Philadelphia's lack of a prominent steeple.<sup>14</sup> Such practical resourcefulness characterized all his projects, and Lichtenberg greatly admired it. He himself gained much local fame, not to say notoriety, by applying and developing Franklin's weather kites. A description in a letter of 1778 to Johann Andreas Schernhagen, a high official in Hannover, who was himself keenly interested in physics, recounts with wit and humor some of the risks and adventures inherent in these innovative experiments.<sup>15</sup>

Lichtenberg observed Franklin's progress astutely and with the intention: "Franklins Erfahrungen zu erklären. Andere ähnliche Versuche zu machen" (C 331). Careful investigation, which proceeds step by step, takes related problems into consideration, and builds only on carefully accumulated facts, was Lichtenberg's own ideal, and he honored in Franklin a scientist who practiced and promoted these principles. Thus, when he formulated the aphorism: "In der Gabe alle Vorfälle des Lebens zu seinem und seiner Wissenschaft Vorteil zu nützen darin besteht ein großer Teil des Genies," he had Franklin in mind for he added: "Franklin mit den Fliegen in Madeira" (J 1547). During this famed incident, Franklin revived seemingly expired flies in the sun after their long journey from London to Virginia in a Madeira bottle, not by mere chance, but because he had already scrupulously



observed and investigated related phenomena, because the connection and transition between life and death was for him, as for Lichtenberg, a subject of particular fascination.<sup>16</sup> Lichtenberg admired here what he so often recommended himself: observation of facts to which normally no attention is paid, and their integration into the macrocosm.

Closely after the remarks on Franklin and genius follows a definition of a truly great man:

Den Mann nenne ich groß, der viel gedacht und gelesen und erfahren hat, und der alles, was er gedacht gelesen und erfahren hat, bei jeder Sache die er unternimmt also auch bei jedem Buch das er schreibt vereint zum besten Zweck anzuwenden weiß, alles so anschaulich darzustellen, daß jeder sehen muß was er selbst gesehen hat. (J 1559)

While the description fits Franklin, it also demonstrates that Lichtenberg was not motivated by personality cult, but tried to define valid standards. These he found personified in Franklin's universality, application, concern for progress and improvement, persistent fact finding, as well as in his sober modesty. If he therefore accepted his opinions and conclusions, it was not from mere bias, as is sometimes implied,<sup>17</sup> but because he could respect Franklin as a scientist, and as a man of good will, good sense and moderation. This evaluation shows in the motto he took from Franklin's letters:

Opinions are continually varying, where we cannot have mathematical evidence of the nature of things; and they must vary. Nor is that variation without its use, since it occasions a more thorough discussion, whereby error is often dissipated, true knowledge is increased and its principles become better understood and more firmly established. (J 431)

The same letter yielded the reminder

that men are in general such careless observers, that . . . [one] should never build an hypothesis on any thing but clear facts and experiments, or it will be in danger of soon falling . . . like a house of cards. (J 433)

Phrases which struck him as particularly well turned and memorable, Lichtenberg copied in full and in their original language. These English quotations are therefore further indication of his esteem, not only for Franklin's thoughts, but also for the manner in which they were delivered.

Lichtenberg was not alone in noting the merits of Franklin's style, for the American's popularity, even as a scientist, owed much to his exceptional command of the language. As Richard E. Amacher records: "Numerous writers have commented on Franklin's excellence as a stylist in writing scientific exposition," and he quotes Sir Humphry Davy's opinion: "The style and manner of the publication on electricity are almost as worthy of admiration as the doctrine it contains."<sup>18</sup> Lichtenberg himself worked all his life to acquire and perfect his literary expertise, aiming to combine, like Franklin, sagacity and perception with clarity and a simplicity which could open the world of science even



to the untutored. It is for his success in expressing complicated thoughts in accessible and memorable language, often in witty aphorisms, that he is now mainly remembered.

Though Franklin was his model in so many ways, Lichtenberg practiced also in regard to him what he preached continuously as a general rule in his lectures and recommended to friends: utmost caution in accepting anything that cannot be tested experimentally and goes beyond "das Zeugnis der Sinne." Errors even by Aristotle, Descartes, Boerhaave and the "fast übermenschliche Newton" convinced him of this necessity, and therefore he recommended testing also in Franklin's case.<sup>19</sup> Nor did he accept without challenge all the praise heaped on the celebrated American, for he recorded and documented that Franklin had by no means been first to notice the effect of oil on troubled waters (F 594). Franklin himself, incidentally, never laid claim to this priority, but emphasized that his close observation had initially been inspired by "Pliny's Account of a Practice among the Seamen of his Time." It was the attention given by him, however, which sparked scientific interest in the phenomenon—eventually leading to the understanding of surface tension—for it was hoped the procedure might assist ships in distress.<sup>20</sup>

When Lichtenberg formed different opinions, he usually emphasized that in arriving at his conclusions, Franklin had lacked facts or methods which had since become available. Such tolerance was, however, nothing more than the application of rules which Franklin himself adopted and frequently voiced, as in his *Experiments and Observations of Electricity* ([4th ed., London, 1768] 469): "If we propose our objections modestly, we shall tho' mistaken deserve a censure less severe, than when we are both mistaken and insolent." Lichtenberg excerpted the adage (KA 295), and the attitude was so congenial to him, that he is specially noted for his cautious statements in the subjunctive.<sup>21</sup> He presented his own work in the same spirit, explaining facts: "wenigstens nach unseren JETZIGEN Kenntnissen, die Franklin damals noch nicht hatte." As Lichtenberg kept always in mind that scientific results will inevitably be improved and superseded, mere facts or details would never satisfy him, and he demanded: "nicht bloß fragen wie hängt alles in *dieser* Wissenschaft zusammen, sondern wie verträgt es sich mit dem Ganzen?"<sup>22</sup>

Himself a thinker who delighted in distilling ideas and observations into quotable aphorisms, Lichtenberg appreciated Franklin's flair for expressing himself succinctly and to the point. To gain this skill, Franklin had worked persistently and systematically, as he describes in his *Autobiography*. Impressed by the fluent and persuasive diction of *The Spectator* of which the third volume had fallen into his hands, he schooled himself on Addison's eloquent prose. Wide and thorough reading followed, including Xenophon's *Memorable Things of Socrates*, and besides Bunyan, authors like Locke, Shaftesbury, Collins, Pope, Defoe, Richardson and Young.<sup>23</sup> Franklin's own satiric inclinations were particularly stimulated by Swift. His almanac, first published in 1732 under the name of Richard Saunders and hence commonly known as *Poor Richard's Almanack*, was introduced to the public with a prank



modeled on Swift's satiric attack on almanacs in the *Bickerstaff Papers*, where a "Prediction for the Year 1708" forecasts the death of John Partridge, "the Almanack-maker" who had aroused Swift's particular ire. "I have consulted the star of his nativity by my own rules," Swift solemnly announced, "and find he will infallibly die upon the 29th of March next, about eleven at night, of a raging fever." When poor Partridge indignantly protested that no such event had taken place, Swift based his defense on the premise that "no man alive ever writ such damned stuff," and declared: "without entering into criticisms of chronology about the hour of his death, I shall only prove that Mr. Partridge is not alive."<sup>24</sup>

Similarly, Franklin announced in his first "Preface," that he was emboldened to publish his own almanac only because his chief competitor, a Mr. Titan Leeds, was due to die by his forecast, made at Mr. Leeds's request, "Oct. 17, 1733, 3 ho., 29 m., P.M.," while "by his own calculation he will survive till the 26th of the same month."<sup>25</sup> By introducing this slight uncertainty, Franklin added not only special interest, but gave himself ample opportunity for later elaboration.

At the same time he also followed the example of Addison, who had begun his immensely successful *Spectator* by introducing to his readers the various fictitious correspondents, whose diverging viewpoints and social positions enabled him to offer contrasting critical opinions. The very first sentence in the *Spectator* combines this effective strategy with the mild and pleasant satire with which Addison engaged attention:

I have observed, that a Reader seldom peruses a Book with Pleasure, 'till he knows whether the Writer of it be a black or a fair Man, of a mild or cholerick Disposition, Married or a Batchelor, with other Particulars of the like nature, that conduce very much to the right understanding of an Author.<sup>26</sup>

By choosing as his mouthpiece the "excessive poor" Richard Saunders, and providing him with an "excessive proud" wife, meddlesome enough to interfere in the writing, Franklin followed Addison's effective prescription, and created a character that fascinated his own intended public not less than the elderly Sir Roger de Coverley with his assorted acquaintances that of Addison. Both characters in their completely different ways are close enough to their imagined audience to elicit recognition and sympathy, yet they also induce feelings of amused superiority, and thus captivate the reader all the more. The impoverished Richard at once introduces an element of satire, for who, if not he and his spouse, should benefit from his plentiful maxims commending an industrious, pious and profitable life. Parallels to Socrates and Xanthippe manifest that Franklin's fictive characters, though simple, are far from simplistic. The odd couple also allows Franklin to indulge in the occasional provocatively masculine statement, because he has Mistress Saunders to denounce it and provide forceful counterarguments.



Franklin addressed his almanac mainly to the unlearned and practically illiterate. Following the advice of Horace to be both *dulce and utile*, he

endeavoured to make it both entertaining and useful. . . . And observing that it was generally read, scarce any neighbourhood in the province being without it, . . . [he] considered it as proper vehicle for conveying instruction among the common people, who bought scarcely any other books.<sup>27</sup>

He spiced his wisdom, however, in various ways with fun and irony, so when he explains the Latin: "Bis dat qui cito dat: He gives twice that gives soon; i.e. he will soon be called upon to give again" (1752).

Such humor, and the submerged levels of satire and literary insinuation, insured that his publication became also popular among the learned and sophisticated, not least in Europe. Among these were Lichtenberg and his distinguished correspondent, the anatomist Samuel Thomas Sömmering. Lichtenberg concludes some for him uncharacteristically disparaging remarks with the English comment: "As soon as You have read this Letter, to the Devil with it, as poor Richard says."<sup>28</sup> For full appreciation of the appropriate use of an American quotation, it has to be recalled that he spoke of Christian Friedrich Michaelis, son of the famous orientalist, and the designated successor of Sömmering in Cassel. Michaelis had been a medical officer with the Hessians, and had just returned from North America, from where he had sent a communication to Georg Forster about American fossils, a subject in which Lichtenberg himself was greatly interested, and to which Franklin had significantly contributed. The report contains nothing new, apart from the gratuitous information that Michaelis had inspected specimens which were unobtainable to Buffon and the London anatomist Dr. Hunter, and that he was given intelligence which Hunter and Lord Shelburne, with whom Franklin had cordial personal relations, had been unable to obtain. He neglected, however, to communicate their nature.<sup>29</sup>

Lichtenberg's allusion seems to refer to Franklin's "Preface" for his twenty-fifth and last almanac of 1758. This contains the famous diatribe "Father Abraham's Speech," also known as "The Way to Wealth," a breathless accumulation of worthy adages, which Father Abraham quotes "as Poor Richard says," to arouse in his compatriots dedication to thrift, work and self-sacrifice, and render them eager to pay heavier taxes. Negative comments on Franklin's almanac are usually based on this passage only, which was often independently reprinted. Bruce Ingham Granger, on the other hand, comments: "The skill with which Franklin shaped his proverbial borrowings suggests that by the time he launched the *Almanack*, in his twenty-seventh year, he was on his way to becoming one of the great makers of the English sentence."<sup>30</sup> Taken in full context, Franklin was neither narrow-minded, one-dimensional nor humorless. Father Abraham's passionate testimony to the Protestant work ethic is offset by the delightful conclusion:



The People heard it, and approved the Doctrine, and immediately practised the contrary, just as if it had been a common Sermon; for the Vendue opened, and they began to buy extravagantly, notwithstanding all his Cautions, and their own fear of Taxes.

To which Poor Richard resignedly adds:

However, I resolved to be the better for the Echo of it; and though I had at first determined to buy Stuff for a new Coat, I went away resolved to wear my old One a little longer. *Reader*, if thou wilt do the same, thy Profit will be as great as mine.<sup>31</sup>

One of Lichtenberg's own aphorisms, written in 1775 towards the end of his second stay in England, contains a cautionary response to such thrift: "Wenn die Menschen plötzlich tugendhaft würden, so müßten viele tausende verhungern" (E 213). Whether he wrote this, and other statements which relate to adages in Franklin's almanac, in response to *Poor Richard* must remain speculative, for Franklin had gathered his sayings from many sources, as Poor Richard revealed at the end of Father Abraham's harangue in his unpretentious way: "not a tenth Part of this Wisdom was my own which he ascribed to me, but rather the *Gleanings* I had made of the Sense of all Ages and Nations."

Before overhearing Father Abraham's abundant quotations, Poor Richard complains that: "no other Author has taken the least Notice of me, so that did not my Writings produce me some solid *Pudding*, the great Deficiency of *Praise* would have quite discouraged me," but Lichtenberg's familiarity with the American almanac is not only demonstrated by the single reference to "poor Richard" in his letter to Sömmering of 12 July 1784. He used several of Franklin's almanac techniques and adapted them for his *Göttinger Taschen Calender*, particularly a policy which Franklin had adopted in 1748, when, "to endeavour some Improvement," he began to extract information from the accounts of the *Royal Society* to familiarize his readers with the problems and achievements of contemporary science. In England, Edward Cave had also introduced such information into his *Gentleman's Magazine*, "accounts of new discoveries, mathematical and astronomical problems, methods for curing worms or the bites of mad dogs."<sup>32</sup> Like Lichtenberg after him, Franklin seized on anecdotal incidents to capture attention for his own more sober and serious observations. Thus he stimulated awareness of health care (1752, 1756) by reporting cases of longevity. Lichtenberg wrote an article on this theme for the *Göttinger Taschen Calender* for 1793, "Hupazoli und Cornaro," but his interest in the possibility of improving life expectation had started much earlier.<sup>33</sup>

Using the same methods and themes would prove nothing beyond common interests and sources. However, the influence on Lichtenberg's *Taschen Calender* is evidenced by specific use of Franklin's work. For instance, to a narration concerning "Lieutenant Riou," who refused to abandon ship when struck by an iceberg off the Cape of Good Hope, Lichtenberg attached the maritime precautions and suggestions for enhanced safety on board ship which Franklin had worked out on his



several sea voyages.<sup>34</sup> Both scientists wrote on comets and other celestial bodies as part of their calendar trade. These and other observations they presented in ways designed to stimulate readers to take action themselves, and to enlarge their public's perspectives and understanding, they offered comparisons with the thought and usage of other times and places. Franklin's description of the Chinese method for manufacturing paper belongs in this category. This information was also passed on to Lichtenberg's readers with due acknowledgements.<sup>35</sup>

Franklin, mindful of his largely uneducated audience, confined himself mainly to simple hints on health and personal hygiene: a cure for fevers (1749), methods to prevent heartburn (1756) and to secure houses from lightning (1753). Lichtenberg's *Taschen Calender* operated on a much more sophisticated level. Assorted items from *Poor Richard* were used, but the topics were extended and elaborated. Lichtenberg's amusing, but nevertheless serious inquiry: "Warum hat Deutschland noch kein großes öffentliches Seebad?" was one of various articles devoted to orientate the public towards health-related issues, and it started the fashion of seaside resorts in Germany. Wolfgang Promies calls Lichtenberg therefore the "erste deutsche Schriftsteller, der die räumliche und geistige Distanz der deutschen Zeitgenossen zum Meer und Seebad mit ein paar Federstrichen überwand."<sup>36</sup> Lichtenberg only recommends immersion, which had become fashionable in England, while Franklin had already "from a child been ever delighted with" swimming, "had studied and practised all Thevenot's motions and positions," and, characteristically, added some of his "own, aiming at the graceful and easy as well as the useful." While in London in 1724-26 he practiced this healthful exercise to the astonishment of bystanders, and a nobleman even tried to engage him to instruct his sons.<sup>37</sup>

A later proposal in the *Göttinger Taschen Calender*, "Das Luftbad" (1795), deals more directly with Franklin's own habits. Here Lichtenberg recommends exposing the naked body regularly to fresh air, and to soften the shock of such a startling and eccentric suggestion, he discloses: "daß Franklin, dessen flüchtigste Äußerungen immer mit Respekt gehört zu werden verdienen, ein großer Freund von dem Luftbad gewesen ist."<sup>38</sup>

The practice had already been commended by Addison, who declared on Wednesday, 8 July 1713, in *The Guardian* (no. 102): "I am always beating about in my thoughts for something that may turn to the benefit of my dear countrymen." He then suggested: "A man should take care that his body be not too soft for his climate; but rather, if possible, harden and season himself beyond the degree of cold wherein he lives." As an example of such stoicism he quotes the inhabitants of Nova Zembla, who "go naked, without complaining of the bleakness of the air in which they are born." Rather than encouraging his readers to follow this example, Addison advises them to try cold baths. Franklin adapted both techniques to his personal use, though not without submitting them to rigorous tests.<sup>39</sup> His belief in the benefit of fresh air led to his much noted investigations into causes and possible cures for smoke-filled rooms, which he summarized in a letter to Dr. Ingenhousz,



published in 1785 and known as "Letter concerning Chimneys." To deal with the problem thoroughly, he searched for examples from many countries, among them China, and while he lectured on the proper methods to construct chimneys, he took the opportunity to call those misguided who "are as much afraid of fresh air as persons in the hydrophobia are of fresh water. I myself," he confesses, "had formerly this prejudice, this *areophobia*, as I now account it, and dreading the supposed dangerous effects of cool air, I considered it as an enemy, and closed with extreme care every crevice in the rooms I inhabited."<sup>40</sup>

The pleasure with which Lichtenberg read this account is described in a letter to Reimarus, where he particularly praises the spirit

ohne den alles Wissen . . . Flickwerk ist . . . und den man sich leider nicht geben kann, ich meine den alles durchaus mit wohltätiger Kraft belebenden bon sens, der mir z.B. Franklins Schriften zur unterhaltendsten Lektüre macht, sie mögen nun die Einrichtung eines neuen Freistaats oder die Kur von rauchenden Kaminen betreffen.<sup>41</sup>

When Lichtenberg read in August 1793 in the *European Magazine* the letter in which Franklin had summarized his geophysical theories to the Abbé Soulavie in 1782, he deplored that this ingenious hypothesis of the formation and nature of the earth had not been published with Franklin's other papers.<sup>42</sup> He therefore summarized, explained and expanded Franklin's ideas for the *Taschen Calender* of 1795 in an essay entitled "Geologische Phantasien," and acknowledged his source in the subtitle: "Franklins Geogenie." The letter, now known as "Conjectures concerning the Formation of the Earth," though read to the American Philosophical Society on 21 November 1788, was not printed until 1793, when the third volume of the *American Transactions* appeared after long delay. From then on its merits began to be widely recognized.

In the "Conjectures" Franklin aspires to merge the results of his own scientific experiments with the discoveries of astronomy and the newly emerging geophysic sciences into a unified theory of the universe. He surmised that "changes in the superficial parts of the globe seemed . . . unlikely to happen if the earth were solid to the centre," and "therefore imagined that the internal parts might be a fluid more dense, and of greater specific gravity than any of the solids we are acquainted with." As he assumed "all the elements in separate particles being originally mixed in confusion and occupying a great space," before the formation of the earth, he called this dense fluid compressed air. He also argued that a shift of "the permanent Magnetism of this globe . . . occasioned the rupture of its shell, the submersions and emersions of its lands and the confusion of its seasons," and that the rule applying to the earth might also be valid throughout the universe. Lacking opportunity and techniques to test this vision, he called it modestly "my fancies concerning the manner of forming the rest of our system." The Abbé Soulavie was himself an acknowledged geologist, and after apologizing to him for having "given a loose to imagination," Franklin commends the Abbé's own "method of philosophizing, which proceeds upon



actual observation, makes a collection of facts, and concludes no farther than those facts will warrant."<sup>43</sup> Franklin, whose "fancies" take careful account of all the facts available at his time, usually followed this method himself, but like Lichtenberg, he was also farsighted enough to look beyond the fragmentary and limited scientific discoveries of his time.

In his essay, Lichtenberg understands "Phantasien" in Franklin's sense, and Promies underlines how the expression corresponds to Lichtenberg's own "spezifische heuristische Methode, alles allem anzuprobieren, um dadurch womöglich auf neue Entdeckungen zu geraten."<sup>44</sup> To start with, Lichtenberg rejects mere phantasies, unfounded assumptions which contribute nothing "für die Geschichte der Erde, doch für die Geschichte des menschlichen Geistes." He elaborates his subtle, but biting criticism of mere wishful thinking with various examples, notably that the fossils from the Ohio, the same which young Michaelis had seen and described, had been regarded as the molars of fallen angels by a Frenchman.

Useful phantasies are to him the visions of people with well-stocked and penetrating minds; of Milton, for instance, and of Bacon besides Franklin, "Menschen, in deren Kopf sich alles sucht und findet und paart, und läge es auch anfangs eine ganze Kopfsbreite auseinander."<sup>45</sup> Such imagination alone can achieve the creative combination of facts, which seem to others unrelated and even irrelevant, until a genius recognizes their significance.

To Lichtenberg the conjectures of Dr. Franklin, "eines Mannes von Keplerischem Adel," were such a vision. He had recognized Franklin's capacity for unifying diverse subjects already in 1782, when he commended to Rambert "die edle Einfalt der Franklinschen Theorie."<sup>46</sup> Nor were Franklin's speculations entirely a surprise to him. In the "Geologische Phantasien" he points to similar trends in the thoughts of other persistent thinkers, such as Milton, or Bacon, and in a notebook compiled between 1765 and 1771, he had excerpted from Flögel's *Geschichte des menschlichen Verstandes* (p. 33) an idea of Newton, which supports Franklin's conjecture: "Alle Materie der Weltkörper ließe sich vielleicht in einen Kubik-Zoll zusammen bringen" (KA 266).

In an age where hopeful and youthful enthusiasts everywhere regarded inspiration as an innate gift of every "Originalgenie," Lichtenberg agreed so emphatically with an English writer's austere definition of a genius that he copied his statement and underlined a sentence:

I cannot find . . . in my own notion of the term (Genius) above two or three names with which it can agree; and when I have named Aristotle, Bacon and Newton, I am nearly at the end of my catalogue. *An all comprehending mind, that sees every object on every side, sees the different relations* (and to an ordinary observer, contradictory) that it bears to other things, we contemplate, seems to me alone worthy of the name. (J 478)

Lichtenberg himself added sparingly to this list, but that in his view Franklin measured up to these exacting standards is shown by several of



his pronouncements on the American scientist, thus when he states in the "Geologische Phantasien": "Den Anfang unserer geologischen Phantasien wollen wir mit der eines Mannes von Keplerischem Adel machen, mit Doktor Franklins."<sup>47</sup> He found his favorable opinion reinforced and confirmed in the *Autobiography*.

The German translator, Gottfried August Bürger, was a friend of Lichtenberg, and they both lived in the house belonging to the printer when Lichtenberg received a copy of the *Autobiography*. He felt so buoyed up and spiritually refreshed by the "Lektüre eines wahrhaft großen Mannes," that he recorded the exact date of the event (12 January 1793).<sup>48</sup> Franklin's wish to share his thoughts and experience coincided with his own ideals of public duty, and "the humorous self-criticism" to which David Levin called attention,<sup>49</sup> was a form of self-discipline he practiced himself. That Franklin had "learned to modulate his own voice so as to instruct his readers without seeming to do so," and that the didactic intention of his narration was not to amass wealth or fame, but to place "the story of his success into a context of failure"<sup>50</sup> were features which Lichtenberg particularly appreciated, as he showed in his commentaries on Hogarth's prints, many of which appeared in the *Taschen Calendar*. Respect for such traits moved Lichtenberg to suggest as a profitable topic for an essay: "zu bitten, daß doch große Männer ihre Art zu studieren bekannt machten; eigentlich die Art wie sie ihre Meisterwerke verfertigt haben" (L 186). "Groß" to him was only he who worked not for selfish ends, but, like Franklin, with the common good in mind.

True to his usual approach, Lichtenberg did not rely on Franklin's testimony alone. Soon afterwards he also immersed himself in Milon's account of Franklin, noting that Franklin owed much to Kinnersley, regarding his electrical discoveries, and that it was Silas Deane, who arranged "den glücklichen coup," the treaty between France and the United States (J 1178).<sup>51</sup>

In the epitaph he composed for himself, though it was not used on his grave, Franklin combined two more of Lichtenberg's special interests: printing—of which as friend and tenant of the publisher Johann Christian Dieterich he, too, was an expert—and the concern about existence after death, "Ewigkeit." Lichtenberg therefore duly recorded the verses late in 1777:

The body of/ Benjamin Franklin, Printer/ (like a cover of an old book/ its contents worn out/ and stript of its lettering and gilding)/ Lies here, food for the worms;/ yet the work shall not be lost/ For it shall (as he believed) appear once more,/ in a new/ and most beautiful Edition,/ corrected and revised/ by the author. (F 738)

Lichtenberg took a comprehensive view of Franklin and lauded him, like many of his contemporaries, as an example to scientists as well as to mankind. This public image has not remained unchallenged, and Franklin's *Autobiography* has since been interpreted as successful manipulation, presenting a constructed personality that was not quite real. As



"David Levin keenly observes . . . Franklin's autobiographic pose of homely simplicity . . . tends to disarm the reader, to put him too much at ease."<sup>52</sup>

Lichtenberg was not easily disarmed. His judgments were the result of tenacious study and balanced assessment of information from quite diverse sources. The range of his interests, if not the scope of his activities, was as wide and varied as Franklin's, and like him he was dedicated to science, and concerned with mankind. He, too, had pondered the motives and needs of the poor, and had "stood before kings."<sup>53</sup> His professional reputation among contemporaries rested primarily on expertise in fields which Franklin had opened to science, and he was, like him, a fellow of the Royal Society. His posthumous fame was achieved by mastery of language, acquired by a resolution and persistency matching that of Franklin, and he had studied the same authors to whom Franklin attributed his literary fluency. Lichtenberg was thus ideally placed to take into account all aspects of a man, who left his mark on such different areas of endeavor, and to recognize, as much as is humanly possible, the real person behind the masks. His views of Franklin should therefore be appraised with care and due consideration.

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### Notes

<sup>1</sup> Georg Forsters Werke, vol. 8, *Kleine Schriften zu Philosophie und Zeitgeschichte*, ed. Siegfried Scheibe (Berlin: Akademie Verlag, 1974), 274-75.

<sup>2</sup> *Ibid.*, 8:310.

<sup>3</sup> *Ibid.*, 8:312. The Latin epigram, re coined for Franklin: "Eripuit coelo fulmen, mox sceptrum tyrannis."

<sup>4</sup> *Ibid.*, 8:309.

<sup>5</sup> Harold von Hofe, "Lichtenberg and America," in *Vistas and Vectors: Essays Honoring the Memory of Helmut Rehder*, ed. Lee B. Jennings and George Schulz-Behrend (Austin: University of Texas Press, 1979), 118.

<sup>6</sup> Nathaniel Hawthorne's description, quoted from James A. Sappenfield, "Benjamin Franklin," in *A Sweet Instruction: Franklin's Journalism as a Literary Apprenticeship* (Carbondale: Southern Illinois University Press, 1973), 7.

<sup>7</sup> Georg Christoph Lichtenberg, *Schriften und Briefe*, ed. Wolfgang Promies (München: Carl Hanser, 1967ff.), 1:J 247. The number of Lichtenberg's notes follows this edition. For Lichtenberg's method of assessment compare his character study "Einige Lebensumstände von Capt. James Cook größtenteils aus schrift. Nachrichten einiger seiner Bekannten gezogen" (1780), in *Schriften und Briefe*, vol. 3 (1972), 35-62.

<sup>8</sup> Harold von Hofe, 114, 119.

<sup>9</sup> He is thus described on the proposal for his election to the Royal Society of London, 15 November 1792.

<sup>10</sup> Georg Forsters Werke, vol. 12, *Tagebücher*, ed. Brigitte Leuscher (1973), 19. Forster knew Franklin already when invited to dine on 9 Oct. 1777 with M. le Roy, host to Franklin at Passey, near Paris.

<sup>11</sup> *Schriften und Briefe*, 4:831. Johann Albert Heinrich Reimarus (1729-1814) published *Vorschritten zur Anlegung von Blitzableitern* (1778) and *Neuere Bemerkungen vom Blitz* (1794).

<sup>12</sup> *Ibid.*, 3:130-37.

<sup>13</sup> Wolfgang Promies, *Lichtenberg in Selbstzeugnissen und Bilddokumenten* (Reinbeck bei Hamburg: Rowohlt, 1964), 88-93.



<sup>14</sup> Letter to Peter Collinson, 19 October 1752, read at the Royal Society, 21 December 1752, in *The Works of Benjamin Franklin*, ed. Jared Sparks (Chicago: Townsend MacCoun, 1882) 5:295.

<sup>15</sup> *Schriften und Briefe*, 4:342–43.

<sup>16</sup> *The Papers of Benjamin Franklin*, 20 vols., ed. William B. Willcox (New Haven: Yale University Press, 1976). Franklin reported the incident in April 1773 to Jaques Barbeu-Dubourg, starting with the comment: "Vos observations sur les causes de la mort, et les expériences que vous proposez pour rappeler à la vie ceux qui parioissent tués par le tonnerre, montrent également votre sagacité et votre humanité. Il paroît que la doctrine de la vie et de la mort en général est encore peu connue" (189–90).

<sup>17</sup> E.g., Franz Mautner, *Lichtenberg: Geschichte seines Geistes* (Berlin: Walter de Gruyter, 1968), 25: "Doch verfährt Lichtenberg hier höchst parteiisch; Forschern, die er persönlich schätzt, wie Franklin oder Deluc, billigt er das Recht zur Hypothese zu, den ihm unsympathischen wirft er vor, unbeweisbare Hirngespinnste als Wissenschaft auszugeben."

<sup>18</sup> Richard E. Amacher, *Benjamin Franklin* (New York: Twayne Publishers, 1962), 144.

<sup>19</sup> *Schriften und Briefe*, 4:598–99 (to Franz Ferdinand Wolff, 30 December 1784).

<sup>20</sup> *The Papers of Benjamin Franklin*, 20:464–74; cf., e.g., R. Patterson, "Explanation of a singular phenomenon, first observed by Dr. Franklin, and not hitherto satisfactorily accounted for," in *Transactions of the American Philosophical Society*, vol. 3 (Philadelphia, 1793; reprint, New York: Kraus Reprints, 1966), 13.

<sup>21</sup> Cf. Albrecht Schöne, *Aufklärung aus dem Geist der Experimentalphysik: Lichtenbergsche Konjunktive* (München: Beck, 1982).

<sup>22</sup> *Schriften und Briefe*, 4:603.

<sup>23</sup> *The Autobiography of Benjamin Franklin*, ed. Albert Henry Smyth (New York: American Book Company, 1907), 60–63, 65, 71, 101.

<sup>24</sup> Jonathan Swift, "The Bickerstaff Papers," in *Gulliver's Travels and Other Writings*, ed. Miriam Kosh Starkman (New York: Bantam Books, 1981), 454, 459, 469; Benjamin Franklin, *Poor Richard's Almanack*, Foreword by Phillips Russell (New York: Doubleday, Doran and Co., 1928), xi–xii; Marion Barber Stowell, *Early American Almanacs: The Colonial Weekday Bible* (New York: B. Franklin, 1977), 158–60. The correlation to Swift was established by John F. Ross ("The Character of Poor Richard: Its Source and Alteration," *PMLA* [1940]: 785–94).

<sup>25</sup> *Poor Richard: The Almanacks for the Years 1733–1758*, by Richard Saunders, *Philom.*, intr. Van Wyck Brooks (New York: Paddington Press, 1976), 3–4.

<sup>26</sup> Addison, Steele and others, *The Spectator in Four Volumes*, ed. Gregory Smith (London: Dent [1907], 1979) 1:3 (Thursday, 1 March 1710/11).

<sup>27</sup> *Autobiography*, 169.

<sup>28</sup> *Schriften und Briefe*, 4:565 (letter to Samuel Thomas Sömmering, 12 July 1784).

<sup>29</sup> Christian Friedrich Michaelis, "Herr Stabsmedicus Michaelis an Herrn Prof. Forster, über das große unbekannte Thier in Nordamerika," *Göttingisches Magazin der Wissenschaften und Litteratur*, ed. Georg Christoph Lichtenberg and Georg Forster, 3, no. 4 (1783): 871–74. Cf. *The Papers of Benjamin Franklin*, ed. L. W. Labaree, 14:25–29: "List of Fossils Sent by George Croghan to the Earl of Shelburne and Benjamin Franklin" (Printed in *The Royal Society, Philosophical Transactions* 57, pt. 1. For the Year 1767 (London, 1768), 467.

<sup>30</sup> Cf., e.g., Sappenfield, 5, 122, 124, 170; Bruce Ingham Granger, *Benjamin Franklin: An American Man of Letters* (Ithaca, NY: Cornell University Press, 1964), 71.

<sup>31</sup> *Poor Richard: The Almanacks*, 277–85.

<sup>32</sup> *Ibid.*, 143–46; on p. 147 he also introduced "the famous Astronomer Copernicus" to his readers, about whom Lichtenberg wrote a treatise, posthumously published in 1800 (*Schriften und Briefe*, 3:138–88). Copernicus had also figured in other almanacs, and a diagram in John Foster's Cambridge almanac for 1675 "called 'A figure of the Visible World according to the Opinions of Copernicus' may have been the first woodcut in American almanacs" (Stowell, p. 47); James L. Clifford, *Young Sam Johnson* (New York: McGraw-Hill Book Company, 1955), 186–87.

<sup>33</sup> *Schriften und Briefe*, 3:467–87; "Kommentar zu Band III," 225.

<sup>34</sup> *Göttinger Taschen Calender* (1791), 167–71; "A Letter from Dr. Benjamin Franklin to Mr. Alphonsus le Roy, Member of several Academies at Paris, containing sundry Maritime



Observations," *Transactions of the American Philosophical Society* (Trans. Am.), vol. 2, no. 38, (1785), 294-329.

<sup>35</sup> "Description of the process to be observed in making large sheets of paper in the Chinese manner, with one smooth surface. Communicated by Dr. B. Franklin," *Trans. Am.*, 3:8-10; "Wie die Schinesen ihr großes Papier verfertigen," *Göttinger Taschen Calendar* (1796), 169-71.

<sup>36</sup> *Schriften und Briefe*, 3:95-102 (1793); Wolfgang Promies, "Der Deutschen Bade-Meister: Georg Christoph Lichtenberg und die Wirkungen aufgeklärten Schreibens," *Photorin: Mitteilungen der Lichtenberg-Gesellschaft*, 4 (1981): 3.

<sup>37</sup> *Autobiography*, 106-9.

<sup>38</sup> *Schriften und Briefe*, 3:126.

<sup>39</sup> One of them was "to try the different Quantities of Perspiration for an Hour sitting naked and another Hour warmly cloathed." Franklin prevailed upon a young physician to pursue "the experiment for eight successive days at all Hours, and [he] constantly found the Perspiration near double in the Hours he was naked" (*The Papers of Benjamin Franklin*, 20:103).

<sup>40</sup> "A Letter from Dr. B. Franklin to Dr. Ingenhousz, Physician to the Emperor, at Vienna," *Trans. Am.*, vol. 2, no. 1 (1785), 20-21.

<sup>41</sup> *Schriften und Briefe*, 4:831 (1792); cf. Promies, *Lichtenberg*, 111: "Eigentlich vervollkommnete Lichtenberg bei sich selbst jene Tugend, die er am Typ des schreibenden Gelehrten wie Franklin bewundert hat: in allem, was er schrieb, bei allem was er vor Augen hatte, den bon sens mit schöner Lesbarkeit zu vereinen."

<sup>42</sup> *Trans. Am.*, 3:1-5; *Schriften und Briefe*, 3:115.

<sup>43</sup> *Trans. Am.*, 3:4-5.

<sup>44</sup> *Schriften und Briefe*, "Kommentar zu Band III," 50.

<sup>45</sup> *Schriften und Briefe*, 3:112 (quoted in *Recherches Philosophiques sur les Américaines ou Mémoires intéressants pour servir à l'Histoire de l'Espece Humaine*. Par Mr. de P\*\*\*\* [Cornelius de Pauw, 1739-99], London, 1771, 2 vols. I, 400, from *Essai sur l'origine de la population de l'Amérique* par E. T. II p. 2, Amsterdam 1767), 113-14.

<sup>46</sup> *Schriften und Briefe* 3:115; 4:429.

<sup>47</sup> *Ibid.*, 3:115.

<sup>48</sup> *Ibid.*, 1:814-15, J 1150.

<sup>49</sup> Sappenfield, 188.

<sup>50</sup> *Ibid.*, 204, 213.

<sup>51</sup> Milon, "Denkwürdigkeiten zur Geschichte Benjamin Franklins," (St. Petersburg, 1793), quoted in *Georg Christoph Lichtenbergs Aphorismen*, ed. Albert Leitzmann, Viertes Heft: 1789-93, Deutsche Literaturdenkmale des 18. und 19. Jahrhunderts (1908), Lichtenstein: Kraus Reprints, 1968, Anmerkungen, 320, n. 1153.

<sup>52</sup> Sappenfield, e.g., 33, 47, 122, 132, 182, 194, 214.

<sup>53</sup> *Autobiography*, 148. Franklin's father "frequently repeated a proverb of Solomon, 'Seest thou a man diligent in his calling, he shall stand before kings'." Lichtenberg had been the personal guest of George III in his palace at Kew on his second journey to England (1774-75).



