

Critiquing Einstein and Darwin

The Humanism of Louis Trenchard More

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Though the University of Cincinnati has never had a formal department devoted exclusively to either the history or the philosophy of science, it has nevertheless maintained a tradition of scholarly activity in both fields. In the 1920s a survey course in the history of chemistry was taught within the Chemistry Department by Harry Shipley Fry (1) and yet a second faculty member in chemistry – Ralph Oesper – published extensively on chemical history throughout the period 1925-1965 (2). Upon his death in 1977 Oesper also endowed a faculty position within the Chemistry Department devoted to history of chemistry, as well as both a museum of historical chemical apparatus and an internationally significant collection of rare books, journals, prints and photographs related to history of chemistry (3).

Likewise, the current faculty in the Department of Philosophy includes John McEvoy, who has written on the history of 18th-century chemistry (4, 5), as well as several specialists in the history and philosophy of biology. However, if one discounts the famous 1882 analysis of the conceptual and theoretical foundations of classical physics by the Cincinnati attorney and judge, Johann Bernhard Stallo (6), who had no official connection with the University, then there is little doubt that the honor of pioneering such activities at UC should almost certainly be awarded to Louis Trenchard More (figure 1).

More was born on 09 April 1870 in St. Louis, MO, the last of eight children of Enoch Anson More and Katherine Hay Elmer (7, 8). He was descended, on both sides of the family, from a long line of New Jersey Presbyterian ministers, soldiers, and state legislators dating back to the American War of Independence. Though More's father had served as a Brigadier General in the Commissary Department of the Missouri State Militia during the Civil War, he proved to be an indifferent businessman in private life and, as a consequence, during More's formative years the family oscillated between "moderate success" and "impoverishment."

As the youngest by some six years of three brothers and three sisters (the first of the eight

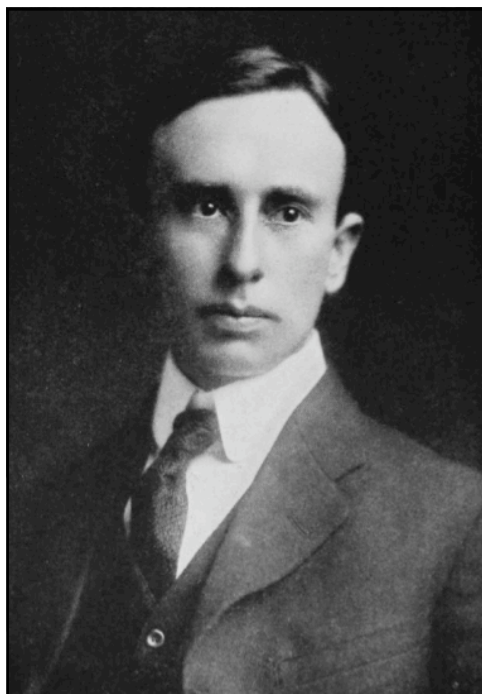


Figure 1. Louis Trenchard More (1870-1944).

children – a son – had died in childhood many years before Louis' birth), Louis was subject to the usual pranks and teasing on the part of his older brothers and especially by his brother Paul, who was closest to him in age (8):

In the second-story back room where they slept, Paul insisted that, as the elder, he had the right, despite objections, to warm his cold feet on Louis' back. Ainsie, Jim, and Paul, stripping and painting their bodies with phosphorus matches, would steal around Louis' bed like ghosts, which so terrified the child that he used to flee for safety to the bathroom near his mother's door. These diversions, however, did not discourage Louis from singing when he woke. Paul, too, would sing now and then mockingly a different tune until Louis, losing his own, bawled with frustration. On investigating one of these outbreaks,

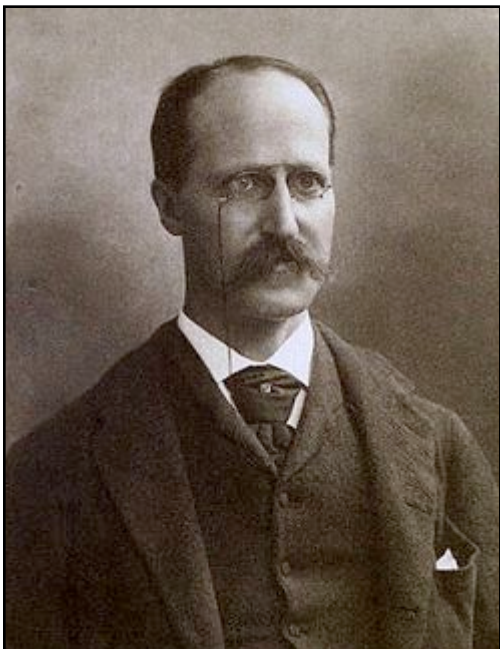


Figure 2. Henry Augustus Rowland (1848-1901).

his sister Alice found Louis lying on the floor roaring in his characteristic way and Paul sitting in a corner with his face to the wall alleging that he was thinking. One of the strongest remembrances of his boyhood, Louis confessed, was of being so coolly tormented by Paul that only inability to devise a sufficiently torturous way of doing so prevented him from killing his tormentor.

Later Paul acquired a small boxed shrine to the Indian Goddess Kali and convinced the impressionable Louis of the necessity of praying to it each evening and morning, while he, dressed in his nightshirt and brandishing a stick with one red tip and one blue tip, acted as high priest and conveyed her pleasure or displeasure with Louis' conduct by touching one end or the other to the floor.

Nevertheless the four brothers would remain close their entire lives and would eventually come, as we will see, to mutually support one another in their future literary endeavors. Indeed, near the end of his own life, Paul would express remorse for his earlier treatment of Louis, lamenting that as children "we were like a couple of chickens tied together and strung over the same wire – we couldn't help fighting" (8).

Due to a small legacy from their maternal grandfather, the More brothers were able to attend Washington University in St. Louis, from which Louis obtained a B.S. degree in 1892, followed by a Ph.D. in physics from Johns Hopkins in 1895 for a thesis

dealing with the phenomenon of magnetostriction done under the supervision of the well-known American physicist, Henry Rowland (figure 2) (9). After a year as an Instructor at Worcester Polytechnic, and four years teaching at the University of Nebraska, More joined the faculty of the University of Cincinnati in 1900 as a full Professor and Department Head, and as one of President Ayers' legendary "band of eight."

For most of the previous two decades the University had been without a proper President, the leadership rotating instead among the various departments and faculty. By 1899 the resulting abuses and "lack of cohesion and discipline" had become so great that the Board of Trustees felt compelled to appoint a President based on an external search in the person of Howard P. Ayers (figure 3) of the University of Missouri. In 1900, after first determining that it was impossible to get many of the faculty to even talk with one another, let alone function as a single organization, Ayers sought the dismissal of nine of the twelve faculty in the University's so-called Academic Department either through forced resignations or through out and out abolishment of their positions (10). Among those forced into retirement was Thomas French, who had been Professor of Physics at UC since 1883, when the original combined Professorship in Chemistry and Natural Philosophy, held by Frank Wigglesworth Clarke, was divided into separate professorships in physics and chemistry, and the latter assumed by Thomas H. Norton (11).



Figure 3. Howard P. Ayers (1869-1933).

THE HUMANISM OF LOUIS TRENCHARD MORE

More, who had just turned 30, was among the eight young and ambitious faculty that Ayers had hired as replacements for those just fired, with the obvious expectation that they would revitalize the University. Many years later More would recall that (12):

When this group of new men met together for the first time in September 1900, they were for the most part complete strangers to President Ayers and to each other. I remember vividly that meeting. We sat around a table on a scorching day. Before each man was a neat pile of his published researches, the height of which was felt by each of us to be a visible justification for his presence at that council table. I blush to recall the fact that my own pile rose scarcely above the level of the table, while my next neighbor's scholastic bricks seemed to reach the ceiling.

This justification by works rather than by faith was typical of Dr. Ayers' attitude. His emphatic statement to me, when first examining my "points," was that he was seeking young and ambitious scholars. In his opinion, there were already too many poor, struggling colleges

in Ohio and he intended to create a school of higher learning – practically a graduate school – in which staff and students would be judged solely on their scholarly attainments.

Unfortunately, the ruthless methods used by Ayers to affect his academic reforms quickly won him more enemies than allies, and in 1904 he was, like the previous faculty he had so blithely jettisoned, also shown the proverbial door. His replacement faculty, however, was luckier and all eight would remain at Cincinnati for the duration of their careers, having by 1937 become, in the words of More, "The Old Guard – a name now, alas, all too significant of the passage of time" (12).

The Limitations of Science

For his first decade at the University More tried to live up to Ayers' expectations and dutifully cranked out a series of respectable – albeit hardly groundbreaking – research publications in experimental physics, the majority of which were published in the British journal, *The Philosophical Magazine* (13). Most of these dealt with the physics of electricity and magnetism, with an occasional sojourn into optics and acoustics. However, by 1909 More was becoming increasingly disturbed by theoretical trends within his research speciality and especially by what he viewed as the excessive theoretical speculations of such prominent physicists as J. J. Thomson, H. A. Lorentz, and Joseph Larmor concerning the existence of both the electron and the so-called luminiferous ether.

This led, in turn, to the publication of a series of articles critically analyzing the metaphysical assumptions underlying these speculations and to a critique of science as a whole. Though a few of these articles appeared in *The Philosophical Magazine* (14-16), the vast majority were published in nontechnical journals devoted primarily to philosophy, religion, and literature, such as *The Hibbert Journal*, *The Monist*, and *Unpopular Reviews* (17-24). Eventually More collected and revised seven of them to create his first book, *The Limitations of Science* (figure 4), which was published by Henry Holt in late 1915 (25).

This book quickly reveals that More was an advocate of a strictly positivist interpretation of the nature and function of science, though he evidenced no apparent explicit knowledge of either Comte or of his philosophy, despite the recent publication of an English translation of a popular exposition of the views of the French philosopher by Lévy-Bruhl (26). However, More did acknowledge similar views on the part of such fellow scientists as Ernst Mach (27), Wilhelm

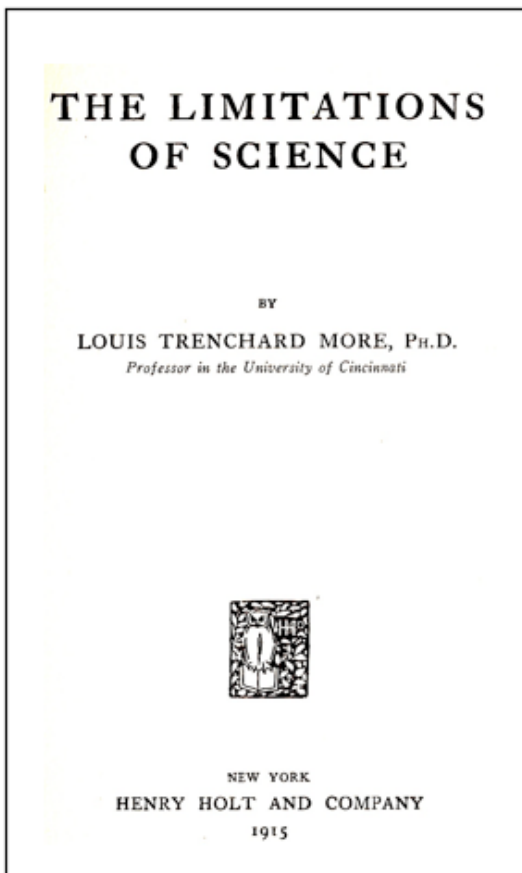


Figure 4. Title page of More's first book on the philosophy of science.

Ostwald (28), and Pierre Duhem (29), though he mentioned them only in passing and did not directly quote from or elaborate upon their writings.

True science, in More's opinion, consisted of the generation of reliable positive knowledge from observation and experiment via an "abstractive" process leading to the establishment of generalized phenomenological laws, expressed, whenever possible, in the form of abstract mathematical equations. It was only when attempts were made to discover the supposed mechanisms underlying these laws, that science became contaminated with speculative hypotheses and metaphysics. In short, it was the function of science to classify and correlate phenomena, but not to construct speculative world systems based on unverifiable theories.

More was perfectly aware that many theoretical speculations in science were driven by a deep-seated psychological need on the part of humans to have a physically understandable "mechanical picture" of what was happening in both the laboratory and in nature, and he was also aware of the claims that such hypotheses served a creative function in science by suggesting and even predicting new experimental results. Both of these claims he rejected. Instead, he argued that the history of theoretical speculation in physics showed a very limited periodic oscillation between a discontinuous or atomistic model of matter, on the one hand, and that of a continuous or plenum model, on the other. The first of these could ultimately be traced back to Lucretius in the first century BC and the second back to Descartes in the 17th century. But no matter how often revived, relabelled, or elaborated, both approaches contained unresolvable paradoxes which ultimately made them physically unintelligible, thus undercutting the argument that they satisfied a deep-seated psychological necessity.

In the case of a purely kinematic approach to atomism, these paradoxes centered on the necessity of postulating perfectly elastic collisions, whereas in the case of a dynamic approach, they centered on the mystery of action at a distance. In the case of the plenum or ether, the paradoxes were legion, the most conspicuous being the necessity of postulating the mutually exclusive properties of infinite mechanical rigidity and a negligible frictional coefficient. Likewise, history showed that, far from being predictive, most theoretical speculations were in reality after-the-fact rationales of already established experimental results. Indeed, with each revival, these two competing models became ever more elaborate, until in some cases they were actually more complex than the macro phenomena they were intended to mechanically rationalize, thus undercutting any argument based on the supposed benefits of reductive simplification.

But what bothered More the most was the fact that – as with the case of the particle versus the wave theories of light – actual experiment was often unable to definitively decide in favor of one theory versus another, in part because so many of the parameters in the theories were inaccessible to either direct observation or experiment. As long as science indulged in this sort of metaphysical speculation, how was it possible to defend the claim that it was a more reliable path to knowledge than the traditional fields of philosophy and religion? How were arguments among theoretical physicists about hypothetical subatomic particles or imaginary vortexes in a hypothetical ether any different from arguments among theologians over the imagined attributes of God or how many angels could dance on the head of a pin?

Relativity Theory

To the slight extent that More's book has attracted the attention of current historians and philosophers of physics (31), it is because of its fifth essay, "The Classical and New Mechanics," which was presumably based on the article, "Units of Measure and the Principle of Relativity," published in *The Monist* in 1914, and which was one of three articles eventually published by More critiquing Einstein's recently published theory of special relativity (16, 20, 22).

Indeed, it was this essay which led to my discovery of More in the first place. In 1987 the first volume of Einstein's *Collected Papers* was published by Princeton University Press and the Einstein expert, John Stachel of Boston University, was invited to UC to give a seminar on its contents. The seminar was jointly sponsored by both the history and physics departments and, as a freshly arrived Assistant Professor, I was assigned the task of escorting the speaker between the History Department in McMicken Hall and the Physics Department in Braunstein. As we approached the physics building, which dates from 1932, Stachel looked up at the names of the famous physicists carved in the medallions along its cornice and observed:

I see that Einstein is missing. That oversight must be due to the influence of Louis Trenchard More.

Asking who More was, I was informed that he had the dubious distinction of being one of the first American physicists to comment on and to criticize Einstein's theory of relativity. This was a carrot too tantalizing to resist and I soon acquired personal copies of all of More's books and photocopies of everything available on him in Archives and Rare Books – materials which

form the basis of this biographical sketch, though it has taken me nearly 25 years to finally write it.

Limitations of space preclude a detailed analysis of More's objections to special relativity theory. Suffice it to say that, like many critics of Einstein, he focused on Einstein's postulate that the velocity of light in a vacuum was a constant, irrespective of the velocities of the emitter and receiver, and argued that this arbitrary assumption was the source of the various violations of common sense and experience which the theory seemed to entail – a situation further aggravated by a tendency on the part of the theory's advocates to naively attribute physical significance to what were in fact merely abstract mathematical conventions (25):

It is a far cry from the inductive method of science, which attempts to build generalizations on experience, thus to make the whole concrete world conform to so abstract an idea as the constancy of the velocity of light in space. Nor does [Einstein] hesitate to found physical science on the paradox that motion cannot be absolute but the motion of light is absolute. Then Professor Minkowski goes a step further. He accepts all of these ideas and treats them symbolically. To deduce conclusions from these postulates, he uses mathematical equations as if there were four dimensions to space. The mathematician can employ equations which contain four or any number of variables, but the physicist who desires to deal with an objectively real universe and also to be intelligible is forced to limit himself to the three dimensions which correspond to his powers of measurement of length, breadth, and depth.

Lastly, Professor Lewis confuses scientific method utterly by arbitrarily assuming which quantities in an equation shall be treated as variable and which as constant. Thus he says, if the momentum of a body changes, let us suppose it happens not because its motion changes but because we shall consider its mass variable. Of course anyone can say, let us consider the universe to act as he wishes. But, after all, what is the use when no one believes it does? Is it any wonder that a gulf is growing not only between men of science and the rest of the world, but also between theorists and those who are still willing to submit their imagination to experience? Such a gulf is certain to continue so long as theorists are willing, and even anxious, to ignore common sense and the facts gained by patient and exact experimentation.

Certainly More's contention that relativity theory appeared to violate common sense is supported by the literally dozens upon dozens of books that have been written since by both physicists and philosophers attempting to



Figure 5. Paul Elmer More (1864-1937).

disentangle its true meaning and implications, and one can only imagine what More's reaction would be to the current state of theoretical physics and the speculative excesses of modern string theory (30)!

The Influence of Paul Elmer More

More was not the only member of his family to write books. His oldest surviving brother, Enoch Anson Jr. or Ainsie, would author several rather forgettable novels, such as *Let It Burn* (1892), *Out of the Past* (1895), *A Captain of Men* (1905), and *A Vision of Empire* (1915), whereas his second oldest brother, James Brooke, was a published poet (32). But it was Louis' childhood tormentor, Paul Elmer (figure 5), who would outshine all of his siblings and who would eventually publish dozens of books dealing with everything from literary criticism to classical literature and philosophy to religion (8).

After graduation from Washington University in St. Louis with a M.A. degree in 1891, Paul went on to study oriental and classical languages at Harvard and to teach Sanskrit at Bryn Mawr, before dropping out of academia to pursue a career as a critic and to serve as an editor for several magazines and newspapers, including the *Independent*, the *Nation*, the *Evening Post*, and the

Unpartizan Review. His essays from this period were periodically collected and published in book form in a series known as *The Shelburne Essays*, which would eventually number more than eleven volumes. Beginning around 1914 he began an informal teaching arrangement with several eastern universities, including Princeton, Harvard, and Radcliffe, which would eventually lead to the publication of yet another dozen or so volumes dealing with Greek literature, philosophy and religion.

Around 1900 Paul became associated with Irving Babbitt of Harvard in a movement known as the “New Humanism.” This movement should not be confused with secular humanism. Rather its use of the term humanism was intended to imply a revival of classical Renaissance humanism as personified in the study of Western literature and art, and referred to a conservative theory of criticism which was opposed to modernism of all types, and especially to any literary or artistic movement which advocated nihilism with respect to either traditional moral or aesthetic values.

Since these traditional Western values found many of their roots not only in classical Greece but in early Christianity, the movement also had an implicit conservative religious element as well – albeit not the Presbyterianism of Paul’s upbringing or the Bible-thumping literalism of fundamentalism, but rather a sort of highly attenuated form of Episcopalian aestheticism. This latter component became increasingly overt as Paul aged and several of his later books dealt with what can only be described as Christian apologetics. Like Paul, Louis also abandoned the Presbyterianism of his childhood and lapsed into Episcopalianism, though after the death of his wife he complained to Paul that he derived little or no comfort from either the teachings or rituals of the church. Unlike, Paul, however, there are no flagrantly overt appeals to religion in any of Louis’ published books.

The relevance of all of this to Louis More is the pervasive influence which Paul exerted throughout his life, not only on his younger brother, but on both of his older brothers as well. Paul’s surviving correspondence indicates that he read, edited and constructively criticized the writings of all three of his brothers and, in the case of Louis, also played a key role in providing him with publication opportunities. Thus, with the obvious exception of the *Philosophical Magazine*, most of the magazines and journals in which Louis published his critiques of physics and science were either publications in which Paul also published or which he edited. In any case, they were hardly the kinds of publications that would be known to or read by a typical physicist. This had important consequences for the impact or nonimpact of Louis’ work.

Thus while the positivistic critiques of such writers as Mach, Ostwald and Duhem were directed at their fellow physicists and chemists, and were further reinforced by the scientific textbooks and monographs which these authors wrote in order to illustrate their views on the proper nature and function of science (33-35), More himself wrote no such illustrative textbooks. His critiques were largely read by the same audience of nonscience-based intellectuals as were attracted to the New Humanism of his older brother and Babbitt. As such, his criticisms played to their incipient resentment of the increasing prestige and power of science and technology and served to reassure them that the emperor, though perhaps not naked, was at least not omnipotent. A very similar vein of antiscience sentiment existed among Catholic intellectuals, who coined the term “scientism” to describe what the Catholic writer G. K. Chesterton once referred to as that “intellectual imperialism which makes ever greater demands in the name of science” on the traditional domains of philosophy and religion (36).

The Dogma of Evolution

The extent to which Louis More came to embrace the “New Humanism” of his brother and Irving Babbitt is made apparent in an essay entitled “The Pretensions of Science,” which Louis later wrote for the 1930 anthology, *Humanism and America*. This opens with a succinct summary of the kinds of “scientism” which More opposed (67):

Science has its legitimate pretensions to power; but false claims are now being advanced on all sides under the shelter of its name, and it is these false claims which the humanist is concerned to expose ... they fall into two classes. The first includes those men of science who are not content to work in their limited field, but are really metaphysicians who have created a fictitious world of the imagination made out of aethers, electrons, and mathematical symbols and have confused it in their own and other’s minds with the sensible world of brute fact. This class does comparatively little direct harm, as it merely creates some confusion in the orderly domain of science, but indirectly, it has given a stimulus and specious authority to the pseudo-scientists.

The second class comprises those who are claiming that the phenomena of the subjective world also lie in the field of science and have imposed on the age the pseudo-sciences of psychology and sociology. They would have us believe that all truth is scientific and that the conclusions of self-examination are but guess-



Figure 6. Title page of More’s second book on the theory of evolution.

work. By mere verbal analogies they have linked the study of man’s intellectual and spiritual nature to the physical world of mechanical matter and motion. It is the false claims of these pseudo-sciences which must be exposed and renounced in order that humanism may come again into its own as the arbiter of character.

The first six essays in *The Limitations of Science* had dealt with More’s first class of “scientific pretenders” and only in the seventh and last essay did he touch on the second class. Entitled “Science as the Arbiter of Ethics,” it was presumably based on an article published earlier that year in the *Hibbert Journal* under the title “The Scientific Claims of Eugenics” (23). Here was a theme of far greater interest to the advocates of the New Humanism than either the metaphysical foibles of atomism and the luminiferous ether or the transcendental idealism of relativity theory, for here was nothing less than an overt attempt on the part of science to encroach upon the traditional prerogatives of religion and philosophy.

Applying his earlier critique of science in general

to the theory of evolution, More concluded that it left much to be desired. Though it obviously had merit as a working hypothesis for the classification of plants and animals, both living and extinct, it was totally lacking the power of prediction. Instead it seemed to consist largely of after-the-fact rationales or “the telling of likely stories” – to use Stephen Jay Gould’s more recent metaphor. Given this limitation, More argued, consider how dangerous it was to premise our ethics, social policies and religious values on such a flimsy foundation. Moreover, examination of the beliefs of those advocating such a course, whether they be capitalists rationalizing the abuses of industrialization, socialists promising some future utopia, or eugenicists arguing for the biological perfection of the human race, quickly revealed that their views on evolution were premised on highly distorted popularizations of the underlying biological theory and were intermixed with additional premises of their own that were often in direct contradiction to those of the biological theory itself (37). In short, such advocates were simply appealing to the authority of science in order to justify their own personal biases and speculations.

In 1922 More decided to expand these essays into a full-length book to be titled *The Dogma of Evolution* (figure 6) and, as usual, Paul was quick to record his impressions of the proposed project in a letter written that August (8):

If Lou really gets himself together, he may make a great hit. The time is in every way ripe for just such an attack on biological and evolutionary superstition as he is planning. It is curious that, despite his scientific training, he is clearest and most original when he deals with the motives and human traits of Darwin, Huxley, et al. His criticism of the fanaticism and bad faith of these men is subtle and, I think, sound. It will make something of a sensation, since they have been canonized in the popular faith, and a good deal of reverence for evolution grows out of a quite erroneous reverence for the evolutionists ...

By 1923 Paul’s correspondence indicates that he was busy reading and editing a draft of his brother’s book manuscript, and in the fall of 1924 Louis informed Paul that he intended to use the manuscript as the basis of his Vanuxum Lectures, which he was scheduled to give at Princeton University that coming January, and thus have them published, as a matter of course, by Princeton University Press, since he had so far been unsuccessful in finding a commercial publisher.

Paul had moved to Princeton in 1914, where he eventually became associated with both the philosophy and classics departments. Over the years he also

established a working relationship with Princeton University Press, which would publish many of his books, including his five-volume epic, *Greek Tradition*, considered by many to be his finest work. The Vanuxum lectures had been established by Princeton alumnus Louis Clark Vanuxum in 1912, and over the years would sponsor many famous speakers, including Edwin Hubble, Thomas Mann, James B. Conant, Ralph Ellison, Carl Sagan, and E. O. Wilson, to name but a few. Paul himself had given the Vanuxum lectures in 1917 on the subject of *Platonism* (published later that year under the same title by Princeton University Press), and there can be little doubt that he was instrumental in arranging the invitation for Louis to give a set of lectures as well.

The lectures were duly delivered and published (38) and, from Paul's point of view at least, were a great hit, as indicated by his remarks to Irving Babbitt in a letter written that March (8):

Lou's lectures on "The Dogma of Evolution" were a howling success, and drove the biologists to a frenzy of rage.

But in fact the timing of the book could not have been worse. That April the famous Scopes Monkey Trial began in Dayton, Tennessee, and the entire topic of evolution once more became highly polarized (39). Though More had explicitly stated in his introduction that the purpose of his book was "not to discuss the validity of evolution as a scientific biological theory but rather to trace its application to the broader fields of social life and religion," William Jennings Bryan – no doubt attracted by the book's title – actually approached More in hopes that he would testify as a sympathetic witness on behalf of the prosecution. More, however, turned him down, once again reiterating that, though he objected to attempts to extend evolution to the fields of philosophy and sociology, he accepted it as a working hypothesis in biology. However, the "either you are for us or against us" attitude quickly prevailed, and a rash of popular books vigorously defending evolution soon descended upon the public in which compromise played no part. In the end, as the science journalist, Edwin Slossen, observed, there was no room for the critical caution espoused by More and he quickly became "persona non grata" to the fundamentalists and evolutionists alike (40).

More, of course, would have interpreted this stance as yet further evidence that both sides of the debate were defending dogma rather than true science or true religion. Though a tradition of secular criticism of attempts to extend the premises of evolution beyond

the boundaries of traditional biology continues to this day – in which the central concern is now sociobiology and evolutionary psychology rather than eugenics – More's book rapidly sunk into obscurity (41). The only modern mention I could find occurs in Martin Gardner's classic 1952 study of pseudoscience, *In the Name of Science*, in the chapter on "Geology versus Genesis," in which it is described as an "infuriating book," since "More attacks evolution (using all of the old and outworn arguments)," but "nowhere lets the reader know what his own explanation is of the fossil record" (42).

Setting aside the irony that Gardner's definition of pseudoscience was very different than More's definition, this criticism was rather beside the point, given the stated intention of More's book. Indeed, its central point would be succinctly summarized many years later by More in an essay entitled "Three Realms of Knowledge" (68). In ascending order these three realms corresponded to knowledge of the physical world, knowledge of the living or biological world, and knowledge of the mental or spiritual world. The first was the domain of physics and chemistry, the second the domain of biology, and the third the domain of humanism and its historical antecedents in both philosophy and religion. Though each succeeding stage was dependent upon the existence of its predecessor, it was More's firm belief that it could never be completely reduced or understood in terms of those predecessors and that claims to have made such a reduction were equivalent to a form of pseudoscience.

Newton and Boyle

In his introduction to *The Dogma of Evolution* More indicated that his first book, *The Limitations of Science*, had been intended to serve as "the introductory volume of a critical history of science." In that earlier book More had also outlined his concept of what such a history of science would look like, given his personal views on the nature and proper function of science itself (25):

One would naturally turn to the histories of science, not only for the data of scientific experience, but also for that larger aspect of the question, the discussion of the relations between scientific thought and other forms of human activity. But almost without exception our histories of science are mere chronicles of scientific experiments and hypotheses. The work of each man of science is outlined in as great detail as the scope of the history permits, as if everything done in the name of science is of equal importance ... The most striking evidence of the ineffectiveness of scientific histories,

however, is their attitude toward hypothesis. Such hypotheses are clearly subjective in character and are to be criticized in accordance with the same standards as a philosophical system of Plato or Kant. Instead of this they are invariably treated as if they dealt with phenomena verifiable by experiment.

And just as Mach, Ostwald, and Duhem had attempted to implement their philosophies of science via the writing of actual example textbooks and monographs in physics and chemistry that were in keeping with their positivistic principles, so Louis apparently felt that his next logical step was to do the same with respect to his projected history of science (43).

However, before he could put this plan into effect, external events intervened in the form of the 1927 bicentennial celebration of Sir Isaac Newton's death and the resulting flurry of scholarly activity which it occasioned. It was after reading a review of some of this activity, that Paul wrote to Louis in early April with an interesting suggestion (8):

I have just been reading a review of Newton's life and work in the London Literary Times Supplement for March 17, and it has given me an idea. The writer of the article remarks that we have no satisfactory book on Newton. Now it occurs to me that here is your chance. The subject is just suited to you – much better in my opinion than a general history of science or of physics. It is interesting from many points of view. His scientific achievement can be expounded as a consummation of much previous work; it can be made the text for a critical discussion of present-day theories. Personally Newton seems to offer a very pretty psychological and religious problem. It seems to me that here you have the chance of your life.

Louis took Paul's advice and over the next seven years labored on his projected biography of the great British physicist. This work involved numerous trips to England, often made in the company of Paul and his family, to consult pertinent archives and collections and to purchase period editions of many of Newton's works, which, after More's death, eventually made their way into the Archives and Rare Book Collections at Cincinnati (44). One such trip was recounted in Paul's correspondence in April of 1931 in which he and Louis travelled to England together aboard the *HMS Britannic*, where they were later joined by their families. After arrival, Paul departed for Cambridge to visit his daughter Alice, who was about to give birth to a baby boy, whilst "Lou went to London, where he worked in the Museum on his life of Newton" (8).

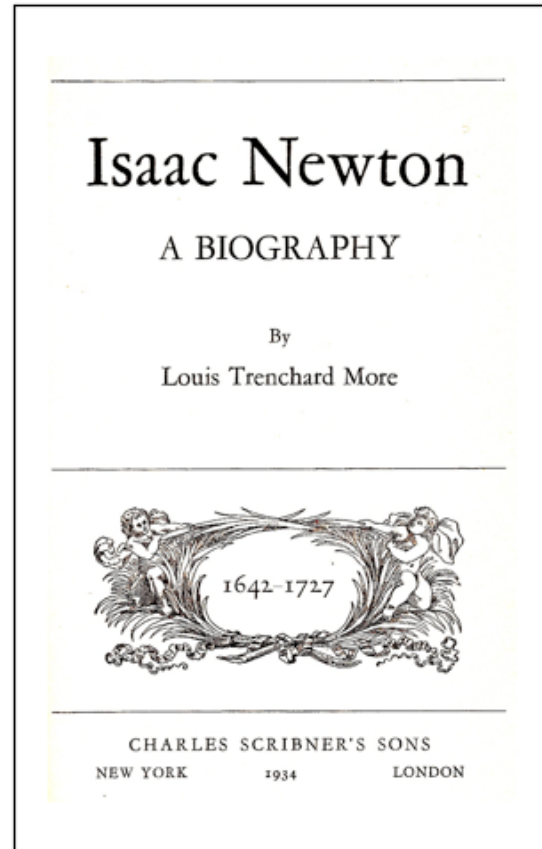


Figure 7. Title page of More's biography of Sir Isaac Newton.

The 673-page biography (figure 7) was finally published in early 1934 by Scribners of New York (45) and that July Paul provided his usual critique of the result (8):

The book has many good qualities, but there is unquestionably an excess of unnecessary repetitions. I hope, and rather believe, it will have good "press." The chapter on the Principia is masterly in its way ...

And indeed the book did receive the "good press" that Paul had hoped for. Typical was the review written by W. F. Magie for the November 1934 issue of *Science Magazine*, which concluded with the accolade (46):

[More] has accomplished a great work, and it may well be that he has written the definitive biography of Isaac Newton.

This proved to be the case, and the biography would retain its definitive status for the next 50 years, as well as being reprinted in the 1960s as a quality paperback by Dover Books (47). Not until the 1980s was it finally

displaced by the equally massive tomes written by Richard Westfall (48) and Gale Christianson (49).

Unlike the much earlier two-volume biography by the Scottish physicist, Sir David Brewster (50), Louis was willing to take Paul's advice and confront not only Newton's religious preoccupations, but his apparent obsession with alchemy as well, though his discussion of both topics pales in comparison with the overhyping of their supposed importance by later Newtonian scholars (51-53). As for the confrontation of Newton as a "pretty psychological problem," that would have to await the appearance in 1968 of Frank Manual's controversial psychoanalytical study (54).

In working on the Newton biography, More could not but notice the overriding importance and influence of Newton's older contemporary, Robert Boyle, on 17th- and early 18th-century science. Not only was Boyle important to the history of physics and chemistry, he also exhibited much the same obsessions with religion and alchemy as Newton had, and, if anything, had written on an even broader range of subjects. In short, he was the precise combination of scientist, philosopher, and humanist that appealed to More, and in 1936 he began work on a biography. Once again this

involved travel to England to consult archives and to acquire period editions which eventually enriched the library collections at Cincinnati (55). In November of 1943 the manuscript was finally finished and the book (figure 8) – More's fourth and last – was published in early 1944 by Oxford University Press under the title, *The Life and Works of the Honorable Robert Boyle* (56). As a tribute to his dead brother, More also included one of Paul's essays on "The Spirit of Anglicanism" as supplementary appendix to his own discussion of Boyle's religious views.

As with his earlier life of Newton, the reviews of the Boyle biography were generally quite favorable (57), and to this day More's book is still applauded by historians for its pioneering effort to confront Boyle's apparent preoccupation with alchemy (58-59). Though many biographies of Boyle have appeared since, they have tended to be highly specialized and to often over-emphasize one or more aspects of Boyle's multifaceted interests (60-63). As a consequence, it is not unfair to claim that More's biography still remains one of the most accessible and most balanced accounts for the general reader.

Administrator and Teacher

When More began his critique of modern physics in 1909, he entered upon that fateful journey which so often leads to a progressive disillusionment with a life devoted to the petty minutiae of experimental laboratory work, however much one might continue to respect the fruits of such labors. Instead of actively and enthusiastically participating in the great intellectual revolutions that were reshaping the science of physics during the early years of his career, More – in his assumed role as a critic – instead found himself opposing many of them. This progressive disillusionment was described by More in his first book in what can only be construed as a semi-autobiographical confession (25):

The prospective man of science is taught laboratory methods and becomes, thanks to it, a rather skillful manipulator of apparatus, but he is rarely required to trace back the gradual development of the subject on which he is working. It remains in his mind a more or less isolated fragment, since he is quite ignorant of the work of the master minds of science of the past. When he leaves school, he is impressed by the head of his department with the opinion that he must continue his research work; left to his own devices he casts about for new problems, and, in despair of ideas, continues some of the minor points left unsolved in his thesis. A second article appears, and then the curtain drops.

In addition to his laboratory work, the student

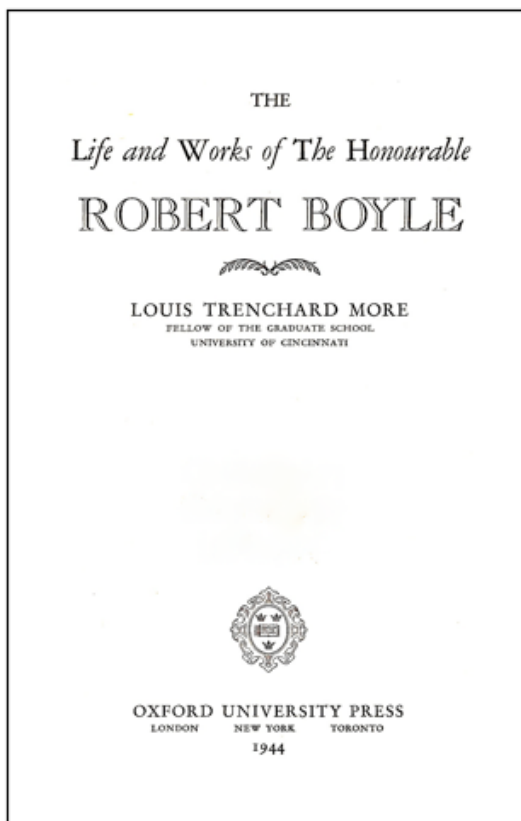


Figure 8. Title page of More's posthumously published biography of Robert Boyle.

attends lectures in theoretical science and passes rigid examinations which are for the most part exercises in mathematical and logical exposition of the most modern and abstruse parts of the science. The lectures treat the science as a modern and fully developed theory devoid of continuity of background. Hypothesis is mixed with fact, and fugitive speculations with permanent laws; his texts are largely confined to purely speculative philosophy and fail to contrast the limitations and the permanent achievements of science; no connection with past thought is drawn and the probable aspects of future thought are not shown. Indeed, no mention is made of the prime fact that human thought has been concerned with these fundamental problems for centuries, and methods of scientific attack are so limited in number, that no new theory or hypothesis can be developed ... At most, what we call modern thought is but a recrudescence of past thought dressed in new clothing. The see-saw of time-worn antinomies constantly recurs.

As More (figure 9) found himself increasingly alienated from the day to day concerns of his chosen profession and entering more and more into the ill-defined borderline between science, history and philosophy in which he was not fully accepted by any one of these established academic disciplines, he took the route so often followed by academics who have hit a brick wall with respect to either research or teaching and chose to become an administrator. In addition to serving as Head of Physics for many years, he served from 1910-1913 as Dean of the College of Arts and Sciences and for 28 years – from 1912 until his retirement in 1940 – as Dean of the Graduate School. In these roles he apparently crossed swords with many of the faculty, as may be inferred from the surprisingly candid faculty resolution read upon his death in 1944 (64):

There is no reason for glossing over the fact that some who encountered More disliked him. Complaints used to be heard that he was opinionated and stubborn; also that he was arrogant in speech and manner. And there were other complaints: he was not practical; he was a dreamer; he was wrapped up in his own designs; it was impossible to reason with him – impossible to deal with him; he was always wrong. In other words, speaking generally, he had a hard shell and he brought some men close to apoplexy.

However, as the account was quick to point out, this superficial impression was based on a fundamental misunderstanding of More's underlying personality (64):



Figure 9. Portrait of More in later life.

Those who knew him best and longest would not deny that More gave ground for such impressions and reactions. Nevertheless, it is a fact that beneath the surface was a very different man who carried on a troubled life. More was in fact unusually sensitive and diffident, and painfully over-modest in self-valuation. His inward life was thus a seeming contradiction of the outward man; yet in this there is nothing that savors of paradox. More knew that the world inclines to take men and women ... at their own valuation of themselves [and] that if he was ever to accomplish anything useful, he must win the opportunity by keeping a determined face turned towards the world.

This determination to present a tough exterior also had roots in More's personal value system (64):

He had, further, two qualities more characteristic of the century of his birth than of our time. He had a strong sense of privacy and a strong sense of decorum. He felt his inward struggles, doubts, and failings were nobody's business but his own. In his youth, too, professors were men of marked dignity and importance, and deans were objects of awe. We have changed all that by a simple rule of multiplication and by other measures. But More found himself, to his bewilderment, a professor at thirty ... and he was a dean at

forty. He tried to act the parts in which he was cast, His understanding of those parts was sound enough, but he was not always fortunate in the portrayal ... He was singularly devoid of personal pride, though always concerned for the dignity of the positions he held. He was also unregardful of his virtues; he thought they should be taken for granted in a gentleman, and laughed away any notice taken of them.

In keeping with his apparent preoccupation with the dignity of his various academic positions, More was granted, upon his retirement in 1940, not only the title of Professor Emeritus but also that of Dean Emeritus.

As for More's perceived stubbornness and supposed lack of compromise, they stemmed from his firm convictions regarding the nature and proper function of a university – views which he held with no less conviction than his beliefs concerning the nature and proper function of science (64):

He was fearless and independent, and we should remember what he stood for. He was never on the side of what was easy, cheap or popular. He stood for general education, for liberal and humane education, as against narrow or premature technical or vocational training; he stood for scholarship as a way of life, as against continuous insignificant productiveness; he stood for concentration upon fundamental ends, as against thin expansion; he stood for courageous and positive leadership, as against timid subservience to popular demand; and he stood for distinction, for quality, as against the constant drive for big numbers, for mere quantitative accomplishment.

In short, More stood for everything that would have made him unspeakably unhappy in today's publish or perish academic environment with its computerized statistical evaluations designed to conveniently reduce a man's academic career to a single numerical rating, like that of a television show or an election poll, and ultimately based on its perceived short-term ability to generate either overhead money or publicity.

Despite his administrative commitments, More continued to teach within the Physics Department, though he increasingly restricted himself to the introductory course for freshman "so as to ensure that their young minds would be adequately introduced to the truths of the subject directly by the Head of the Department" (65) – where one assumes that the operative word "truths" implied the careful distinction between experiment and speculative hypothesis so often insisted upon by More in his various writings. As his skills as a critic developed, More also became something of a problem when it came to departmental

seminars and graduate student oral examinations, as the keenness of his criticisms often led to "chagrin, consternation, and even terror" on the part of the guest speakers and graduate students (65).

In 1931 More lost his wife of 28 years (66) and in 1937 his beloved brother Paul – that other chicken tied to him and hung over the common wire of life. In 1944 he himself finally passed away on 16 January at age 73, several months before the final release of his Boyle biography. Though his fellow faculty would remember him as "a 'character' surviving in an age not remarkable for anxious searching of hearts, earnest convictions, or strongly marked personalities," he is today totally unknown and unremembered by the university that he served for almost a half century.

Reference and Notes

1. I. W. Grote, *Notes for a History of Chemistry Course Given by H. S. Fry at the University of Cincinnati in 1925*, Oesper Collections.
2. J. Palchak, *Dr. Ralph Oesper: A Bio-Bibliography*, University of Cincinnati: Cincinnati, OH, 1972.
3. <http://digitalprojects.libraries.uc.edu/oesper/>
4. J. G. McEvoy, *Joseph Priestley: Philosopher, Scientist, and Divine*, Ph. D. Thesis, University of Pittsburgh, 1975.
5. J. G. McEvoy, *The Historiography of the Chemical Revolution: Patterns of Interpretation in the History of Science*, Pickering & Cato: London, 2010.
6. J. B. Stallo, *The Concepts and Theories of Modern Physics*, Appleton: New York, NY, 1882. Reissued by Harvard University Press in 1960 with a commentary by Nobel Prize winner P. W. Bridgman.
7. Biographical data on More are based on the following documents on file in the University of Cincinnati Archives and Rare Books:
 - a. "Biographical Statement," prepared on 01 May 1941.
 - b. "Resolution on the Death of Louis Trenchard More by the Faculty of the College of Liberal Arts," 06 April 1944.
 - c. Newspaper clipping of obituary dated 17 January 1944, source unknown.
 - d. Newspaper clipping of obituary dated 19 January 1944, source unknown.
 - e. C. H. Dwight, *The First Seventy-Five Years of the Physics Department (1883-1958)*, University of Cincinnati: Cincinnati, OH, 1969, pp. 4-5.
8. A. H. Dakin, *Paul Elmer More*, Princeton University Press: Princeton, NJ, 1960.
9. L. T. More, *On Changes in Length Produced in Iron Wire by Magnetization*, Ph. D. Thesis, Johns Hopkins University: Baltimore, MD, 1895. Also published in *Phys.*

THE HUMANISM OF LOUIS TRENCHARD MORE

Rev., **1895**, 3, 210-225.

10. R. C. McGrane, *The University of Cincinnati: A Success Story in Urban Higher Education*, Harper & Row: New York, NY, 1963, Chapter 11.

11. W. B. Jensen, "Thomas Herbert Norton (1851-1941)," in *Cincinnati Chemists: Assorted Papers on the History of the Cincinnati Chemical Community*, Oesper Collections: University of Cincinnati, 2012, pp. 30-40.

12. L. T. More, "Our Graduate School," Transcript of a talk given on 06 May 1937, UC Archives and Rare Books.

13. See W. B. Jensen, "Bibliography of Louis Trenchard More," Oesper Collections.

14. L. T. More, "On Theories of Matter and Mass," *Phil. Mag.*, **1909**, 18, 17-26.

15. L. T. More, "Recent Theories of Electricity," *Phil. Mag.*, **1911**, 21, 196-218.

16. L. T. More, "On the Postulates and Conclusions of the Theory of Relativity," *Phil. Mag.*, **1921**, 42, 841-852.

17. L. T. More, "Atomic Theories and Modern Physics," *Hibbert J.*, **1909**, 7, 864-881.

18. L. T. More, "Metaphysical Tendencies of Modern Physics," *Hibbert J.*, **1910**, 8, 800-817.

19. L. T. More, "Occult Obsessions of Science," *Hibbert J.*, **1912**, 10, 626-641.

20. L. T. More, "The Theory of Relativity: Poincare and the Philosophy of Science," *Nation*, **1912**, 94, 370-371.

21. L. T. More, "An Essay on Scientific Method," *Univ. Cinc. Stud.*, **1913**, 8(*ser. 2*), 5-27.

22. L. T. More, "Units of Measure and the Principle of Relativity," *The Monist*, **1914**, 24, 225-258.

23. L. T. More, "The Scientific Claims of Eugentics," *Hibbert J.*, **1915**, 13, 355-366.

24. L. T. More, "Skepticism and Idolatry in Science," *Unpopular Rev.*, **1915**, 3, 393-409.

25. L. T. More, *The Limitations of Science*, Holt: New York, NY, 1915.

26. L. Lévy-Bruhl, *La philosophie d'Auguste Comte*, Alcan: Paris, 1900. Translated as L. Lévy-Bruhl, *The Philosophy of August Comte*, Putnam: New York, NY, 1903.

27. E. Mach, "On the Economical Nature of Physical Inquiry," in E. Mach, *Popular Scientific Lectures*, Open Court: Chicago, IL, 1895, pp. 186-213.

28. W. Ostwald, "The Failure of Scientific Materialism," *Pop. Sci. Mon.*, **1896**, 48, 589-601; W. Ostwald, "Elements and Compounds," *J. Chem. Soc.*, **1904**, 85, 506-522.

29. P. Duhem, *La théorie physique: son objet et sa structure*, Chevalier & Rivière: Paris, 1906. Translated as P. Duhem, *The Aim and Structure of Physical Theory*, Princeton University Press: Princeton, 1954.

30. L. Smolin, *The Trouble with Physics: The Rise of String Theory, The Fall of a Science, and What Comes Next*, Houghton Mifflin: Boston, MA, 2006.

31. S. Goldberg, *Understanding Relativity; Origin and Impact of a Scientific Revolution*, Birkhäuser: Boston, MA,

1984, pp. 258-259.

32. W. Brewer, *Life and Poems of Brooke More*, Marshall Jones: Boston, MA, 1940.

33. See, for example, E. Mach, *The Science of Mechanics: A Critical and Historical Exposition of Its Principles*, Open Court: Chicago, 1893; E. Mach, *Contributions to the Analysis of Sensations*, Open Court: Chicago, 1897; E. Mach, *The Principles of Physical Optics: An Historical and Philosophical Treatment*, Methuen: London, 1926; E. Mach, *Principles of the Theory of Heat Historically and Critically Elucidated*, Kluwer: Dordrecht, 1986.

34. See, for example, W. Ostwald, *Prinzipien der Chemie: Eine Einleitung in alle chemische Lehrbücher*, Akademische Verlagsgesellschaft: Leipzig, 1907; W. Ostwald, *L'énergie*, Alcan: Paris, 1910.

35. See, for example, P. Duhem, *Thermodynamique et chimie: leçons élémentaire*, Hermann: Paris, 1902; P. Duhem, *Traité d'énergétique ou de thermodynamique générale*, 2 Vols., Gauthier-Villar: Paris, 1911.

36. In the case of Catholicism, see the curious book S. L. Jaki, *Chesterton: A Seer of Science*, University of Illinois: Urbana, IL, 1986.

37. For an example of these contradictions in the case of socialism, see A. Kelly, *The Descent of Darwin: The Popularization of Darwinism in Germany, 1860-1947*, University of North Carolina: Chapel Hill, 1981.

38. L. T. More, *The Dogma of Evolution*, Princeton University Press: Princeton, NJ, 1925.

39. The best treatment of the Scopes trial and the attendant issues is E. J. Larson, *Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion*, Basic Books: New York, NY, 1997.

40. Quoted in R. L. Numbers, *The Creationists: The Evolution of Scientific Creationism*, Knopf: New York, NY, 1992, pp. 72, 370.

41. See, for example, P. L. Faber, *The Temptations of Evolutionary Ethics*, University of California: Berkeley, CA, 1994; and D. Stove, *Darwinian Fairytales*, Aldershot: Brookfield, VT, 1995.

42. M. Gardner, *In the Name of Science*, Putnam: New York, NY, 1952. p. 127.

43. Something along the lines of what More apparently had in mind was published about this time by the American philosopher Edwin Burtt. See E. A. Burtt, *The Metaphysical Foundations of Modern Physical Science*, Harcourt, Brace & Co: London, 1927.

44. UC Archives and Rare Books owns 20 books by Newton, virtually all of them 18th-century editions.

45. L. T. More, *Isaac Newton: A Biography*, Scribner: New York, NY, 1934.

46. W. F. Magie, "Review of Isaac Newton: A Biography by Louis Trenchard More," *Science*, **1934**, 80, 405-406.

47. L. T. More, *Isaac Newton: A Biography*, Dover

Books: New York, NY, 1962.

48. R. S. Westfall, *Never at Rest: A Biography of Isaac Newton*, Cambridge University Press: Cambridge, 1980.

49. G. E. Christianson, *In the Presence of the Creator: Isaac Newton and His Times*, Free Press: New York, NY, 1984.

50. D. Brewster, *Memoirs, Life, Writings, and Discoveries of Sir Isaac Newton*, 2 Vols., Constable: Edinburgh, 1855.

51. B. J. Teeter Dobbs, *The Foundations of Newton's Alchemy*, Cambridge University Press: Cambridge, 1975.

52. B. J. Teeter Dobbs, *The Janus Faces of Genius: The Role of Alchemy in Newton's Thought*, Cambridge University Press: Cambridge, 1991.

53. For a critique of some of these excesses, see W. B. Jensen, "Newton and Lucretius: Some Overlooked Parallels," in T. J. Madigan, D. B. Suits, Eds., *Lucretius and his Continuing Influence and Contemporary Relevance*, RIT Press: Rochester, NY, 2011, pp. 13-27.

54. F. E. Manuel, *A Portrait of Isaac Newton*, Harvard University Press: Cambridge, MA., 1968.

55. Several period editions of Boyle are in the Geology-Physics-Math Library, as well as period etchings of Descartes and Newton. However, More's most important acquisition was the six-volume set of Thomas Birch's *The Works of the Honorable Robert Boyle*, 2nd ed., Rivington: London, 1772, which currently resides in the Oesper Collections.

56. L. T. More, *The Life and Works of the Honorable Robert Boyle*, Oxford University Press: Oxford, 1944.

57. See, for example, P. H. Oehser, "Review of the Life and Works of the Honorable Robert Boyle by Louis

Trenchard More," *Sci. Monthly*, **1944**, 59, 240; J. F. Fulton, "Review of the Life and Works of the Honorable Robert Boyle by Louis Trenchard More," *Isis*, **1944**, 35, 341-342; G. Sarton, "Boyle and Bayle: The Skeptical Chemist and the Skeptical Historian," *Chymia*, **1950**, 3, 155-189, footnote 3, p. 157.

58. L. T. More, "Boyle as Alchemist," *J. Hist. Ideas*, **1941**, 2(1), 61-76.

59. L. Principe, *The Aspiring Adept: Robert Boyle and His Alchemical Quest*, Princeton University Press: Princeton, NJ, 1998, p. 20.

60. M. Boas, *Robert Boyle and Seventeenth-Century Chemistry*, Cambridge University Press: Cambridge, 1956.

61. J. R. Jacob, *Robert Boyle and the English Revolution*, Franklin: New York, NY, 1977.

62. M. Hunter, *Robert Boyle, 1627-91: Scrupulosity and Science*, Boydell: Woodbridge, 2000.

63. M. Hunter, *Robert Boyle: Between God and Science*, Yale University Press: New Haven, CT, 2009.

64. Reference 7b.

65. Reference 7e.

66. More married Eleanor Herron, a sister-in-law of William Howard Taft, on 17 March 1903. She died in November of 1931. The couple had two children.

67. L. T. More, "The Pretensions of Science," in N. Foerster, Ed., *Humanism and America*, Farrar & Rinehart: New York, NY, 1930, pp. 3-24.

68. L. T. More, "Three Realms of Knowledge," *Hibbert J.*, **1939**, 37, 271-290.