



## Essay Review

### Henry's House: The Smithsonian Institution and the Making of American Public Science

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The history of science as a discipline seems to have acquired an impressive number of correspondence projects devoted to the collection, analysis and publication of the gathered papers of its great men (and they are almost invariably men). Just as political historians gather the literary remains of great statesmen and literary historians pore over the scraps of paper left lying around by dead authors and poets, so historians of science and technology celebrate genius of one kind or another with lavishly produced *Correspondences* and *Collected Papers*. This is presumably, at least in part, a practice descended from the nineteenth-century tradition of *Lives and Letters*, when any reasonably eminent public figure could look forward to having their departure commemorated with a carefully sanitized presentation of unpublished letters, manuscripts and diary notes. Some of these projects—as in the case of Darwin or Einstein—have spawned veritable industries around themselves. The Henry papers project may not be quite in that league, but it is impressive enough. The ongoing effort to work through the American scientist Joseph Henry's papers is now entering its fourth decade and has produced eight volumes, whilst still being barely half-way through his career. It is also a fine example of all that is best about such massive commemorative enterprises. Like its nineteenth-century precursors, it may be celebratory, but hagiographic it most certainly is not.

The Henry papers matter in particular because they tell us a great deal about the origins of a very specific kind of individual who was fashioned during the nineteenth century, namely the public scientist. Natural philosophers have of course always been public figures in one sense. Science is always to at least some degree a matter of performance. Recent work in the history of science has demonstrated how important public presentation of various kinds was to natural philosophers from Galileo to Faraday.<sup>1</sup> Making themselves and their work public is central to the construction of

<sup>1</sup> Mario Biagioli, *Galileo, Courtier* (Chicago, Illinois, 1993); Iwan Rhys Morus, *Frankenstein's Children: Electricity, Exhibition and Experiment in early Nineteenth-Century London* (Princeton, New Jersey, 1998).

the man of science's persona and to the consolidation of their claims about the world. During the nineteenth century, however, particularly during its second half, a new kind of public role for the man of science was constructed. In Europe and North America, particular individuals emerged as recognized (and largely celebrated) public spokespersons for science and for increasingly homogeneous national and international scientific communities. These individuals took upon themselves or had accorded to them the role of speaking and standing for communities of practitioners that were increasingly vocal and united by the sense of belonging to a distinct group with particular interests and particular claims to an important cultural role in the public sphere.<sup>2</sup>

Examples of such figures emerging during the second half of the nineteenth century are not hard to find. In Britain there is William Thomson, later Lord Kelvin, or his *bête noir*, Darwin's bulldog, Thomas Henry Huxley. Both in important senses represented British science to its publics. They were figures that most educated middle-class people in late Victorian Britain would have recognized immediately. In crucial ways they stood for science and what it meant to be a practitioner. They represented science's values.<sup>3</sup> In France, Claude Bernard and Louis Pasteur stood for science in a similar way. At the height of their respective careers, both men were iconic figures within French public culture to an unprecedented degree. Their reputations and that of science were taken to have a constitutive role in making the reputation of the French State itself.<sup>4</sup> Similar figures can be found in Germany during the second half of the century. Obvious examples are Hermann von Helmholtz and Robert Koch.<sup>5</sup> In the USA throughout his reign as the Smithsonian Institution's first Secretary, Joseph Henry enjoyed this kind of reputation as well. The lavish ceremonials that surrounded his funeral in 1878 are just one indication of his towering stature as America's scientific representative, both to itself and to the world.<sup>6</sup>

As the volumes under consideration here make clear, Henry was an adept social performer. This was another feature that he shared with public scientists in Europe. The construction of his public persona as a man of science was a process that required hard work and effort. Like his contemporaries, Henry had to fashion himself as a scientific spokesperson. This was a process that went hand in hand with efforts in both Europe and North America to define what it meant to be a scientist and to construct a public culture of science.<sup>7</sup> As many historians have noted, efforts to 'professionalize'

<sup>2</sup> The notion of 'public science' is elaborated by Frank M. Turner, 'Public Science in Britain, 1880–1919', *Isis*, 71 (1980), 589–608.

<sup>3</sup> Crosbie Smith and Norton Wise, *Energy and Empire: A Biographical Study of Lord Kelvin* (Cambridge, 1989); Adrian Desmond, *Huxley: The Devil's Disciple* (London, 1994); Adrian Desmond, *Huxley: Evolution's High Priest* (London, 1997).

<sup>4</sup> Frederic L. Holmes, *Claude Bernard and Animal Chemistry: The Emergence of a Scientist* (Cambridge, Massachusetts, 1974); Bruno Latour, *The Pasteurization of France* (Cambridge, Massachusetts, 1988); Gerald Gieson, *The Private Science of Louis Pasteur* (Princeton, New Jersey, 1995).

<sup>5</sup> David Cahan (editor), *Hermann von Helmholtz and the Foundation of Nineteenth-Century Science* (Berkeley, California, 1994); Thomas Brock, *Robert Koch: A Life in Medicine and Bacteriology* (Madison, Wisconsin, 1988).

<sup>6</sup> The funeral is described in some detail by Albert E. Moyer, *Joseph Henry: The Rise of an American Scientist* (Washington, DC, 1997), 1–3.

<sup>7</sup> The classic study is by Susan F. Cannon, *Science in Culture: The Early Victorian Period* (New York, 1978). More recent studies of the emergence of a culture of public science include Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science* (Oxford, 1981); Ian Inkster and Jack Morrell (editors), *Metropolis and Province: Science and British Culture, 1780–1850* (London, 1983); Simon Baatz, 'Squinting at Silliman: Scientific Periodicals in the early American Republic', *Isis*, 82 (1991), 223–44; Iwan Rhys Morus, 'Manufacturing Nature: Science, Technology and Victorian Consumer Culture', *British Journal for the History of Science*, 29 (1996), 403–34.

the sciences were endemic throughout this period. It was by no means a straightforward process. In many ways, modern notions of what kind of individual professional scientists ought to be, how they should be trained and what kind of community they should belong to are the outcome of nineteenth-century debates such as those in which Henry participated. Becoming ‘professional’ was by no means a self-evident goal for nineteenth-century scientific practitioners. There were fierce debates over the issue of scientists becoming professional in anything remotely resembling the modern sense of a paid career requiring a specialized regime of training and preparation.<sup>8</sup> The self-fashioning of an individual such as Henry went hand in hand with his efforts to fashion the community to which he wanted to belong.

Joseph Henry had some strong views as to what that community should look like. Henry was the archetypal self-made man—and was clearly aware of the fact.<sup>9</sup> Coming from a struggling family in Albany, New York, he had as a child received little by way of a formal education. After intermittent evening classes and a job as a schoolteacher to pay his way, Henry was in his twenties before he enrolled as a student at the Albany Academy. He worked as a state surveyor, making useful contacts among New York’s political and cultural elite before landing a post as Professor of Mathematics and Natural Philosophy at the Albany Academy. Over the next several years, Henry forged a local, national and eventually international reputation for himself as an adept experimenter and instrument maker, particularly in his development of large and powerful electromagnets from William Sturgeon’s initial tabletop invention of 1824. His magnet’s power bought him valuable contacts in the East Coast’s nascent scientific community and led eventually to his appointment as Professor of Natural Philosophy at Princeton’s New Jersey College in 1832. Throughout his career, Henry was to draw on this history of his rise from obscurity to prominence to emphasize his credentials as a spokesperson for science.

At Princeton, and particularly through his growing links with other ambitious young men of science such as Alexander Dallas Bache, Henry became more confident in his assertions of how American science should be organized. He made good use in particular of an extended European tour during the late 1830s, in the course of which he visited London, Paris and Edinburgh, giving him an excellent opportunity to canvass a range of alternative visions of science in action.<sup>10</sup> The trip clearly brought about a sea change in Henry’s own self-perception. His correspondence with English electricians such as William Sturgeon before and after his tour, as evidenced by previous volumes of the Henry papers, show a marked change in his perspective of their respective status. His experiences at meetings of the British Association of the Advancement of Science and his mixed reception there gave him a powerful sense of how American organizations might best proceed and equally of the condescension which many European felt towards American culture in general and their science in particular. Increasingly Henry, like the patrician Bache, argued that American science

<sup>8</sup> The literature on professionalization is massive. Of particular interest here are Sally Kohlstedt, *The Formation of the American Scientific Community: The American Association for the Advancement of Science* (Chicago, Illinois, 1976); Nathan Reingold, ‘Definitions and Speculations: the Professionalization of Science in America in the Nineteenth Century’, *The Pursuit of Knowledge in the Early American Republic: American Learned Societies from Colonial Times to the Civil War*, edited by Alexandra Oleson and Sanborn Brown (Baltimore, Maryland, 1976), 33–69; Robert V. Bruce, *The Launching of Modern American Science, 1846–1876* (New York, 1987). For a British comparison see Peter Alter, *The Reluctant Patron: Science and the State in Britain, 1850–1920* (Oxford, 1987).

<sup>9</sup> Thomas Coulson, *Joseph Henry: His Life and Work* (Princeton, New Jersey 1950); Moyer (note 6).

<sup>10</sup> Henry’s trip is described in detail by Nathan Reingold (editor), *The Papers of Joseph Henry* (London and Washington DC, 1979), iii, 160–347.

had to be the province of an elite. Science according to Henry's vision could not afford to be a democracy. American science in particular was infected by a charlatantry that only determined elite control could overcome.<sup>11</sup>

This perception was central to Henry's view of the proper allocation of the problematic Smithson legacy. The bequest from the Englishman James Smithson of half a million dollars to the American people to create 'an Establishment for the increase and diffusion of knowledge among men' had lain fallow for a decade by the mid-1840s. The problem lay with what to do with it. Even the eventual passage of a bill through Congress to establish the Smithsonian Institution in 1846 did not resolve the question of what kind of Institution it should be. Henry's own first act in his cautious angling towards being offered the position of the fledgling Smithsonian's first Secretary was to set down on paper his own blueprint of what the Institution should become.<sup>12</sup> His recipe for the Smithsonian's success was deeply informed both by his own experiences in Europe as well as during his struggles to make his mark at Albany and Princeton and by his perception that American science needed to free itself from the taint of quackery—a tendency he perceived that overly egalitarian habits encouraged. It is interesting to note that the feature which most people today would most readily associate with the Smithsonian, namely its network of museums, would never have seen the light of day if the Institution's first Secretary had had his way. For Henry, the proposed museum was both too local in its attraction and too populist. The emphasis in his reading of Smithson's legacy was 'increase' and not 'diffusion'.

As many historians have argued, Henry's prescription for the Smithsonian was in many ways an effort to toe a rather fine line between insisting on autonomy and recognizing its future role as a public institution. Henry was insistent from the first that the Institution's role was independent of Congress. As Secretary he was to reject vehemently the notion that he was in any sense a public servant. Congress was merely the trustee of the Smithson legacy. Some of the correspondence in these volumes are good examples of Henry's delicate manoeuvrings on this issue. As his interest in securing the post of Secretary increased, he retreated strategically from some of his initial pronouncements. Congress required an impressive building—a monument to their commitment to science—and, despite his plea that 'the name of Smithson is not to be transmitted to posterity by a monument of brick and mortar, but by the effects of his institution on his fellow men',<sup>13</sup> Henry backed down. In the same way he pulled back from his initial opposition to the housing of a library and a museum in the Smithsonian. What these two volumes show clearly is the amount of sheer legwork and delicate negotiation that was required in the Smithsonian's early years to make reality resemble, even approximately, Henry's vision of what it should be.

It would be a mistake, of course, to suppose that Henry was alone in his endeavours. As a member of the self-styled 'Lazzaroni' he had some powerful allies.<sup>14</sup>

<sup>11</sup> For Bache's patrician view of science and its practitioners see Hugh Richard Slotten, 'Alexander Dallas Bache and the U.S. Coast Survey', *Isis*, 84 (1993), 26–49; Hugh Richard Slotten, *Patronage, Practice, and the Culture of American Science: Alexander Dallas Bache and the U.S. Coast Survey* (Cambridge, 1994).

<sup>12</sup> Moyer (note 6), 248–53.

<sup>13</sup> Quoted in Moyer (note 6), 253.

<sup>14</sup> Mark Beach, 'Was there a scientific Lazzaroni?', *Nineteenth-Century American Science: A Reappraisal*, edited by George H. Daniels (Evanston, Illinois, 1972), 115–32. The 'Lazzaroni' were an informal group of scientific friends and like-minded colleagues gathered around Henry and Alexander Dallas Bache, named after a group of Italian beggars.

The Lazzaroni's Chief, Alexander Dallas Bache, was a member of the board established by Congress to put flesh on the bones of the Smithsonian bill. He was instrumental in encouraging Henry to apply for the position and in furthering his claims in Washington. As superintendent of the US Coast Survey, nephew of the then vice-president and great grandson of Ben Franklin himself, Bache was a well-established and powerful figure. Through the Coast Survey he already had a considerable say in the funds made available by the federal government for scientific purposes. Others in this scientific cabal included Louis Agassiz, the eminent Swiss geologist recently emigrated to the USA and Benjamin Peirce, Bache's eventual successor on the Coast Survey. Together with others such as University of Pennsylvania Professor John Frazer and James D. Dana, editor of the *American Journal of Science*, the Lazzaroni formed a powerful and, to some, dangerous, clique capable of wielding considerable influence. Bache and Henry in particular were old friends following their respective European travels of the late 1830s.

The Lazzaroni operated by means of networks of mutual acquaintance, family and patronage. Several had close connections to local and national political elites. They shared a largely patrician perspective on cultural and political affairs. Their aim was to dominate American scientific life and to mould it in their own image. As practised political players they proved increasingly adept at turning both established and new scientific institutions to their own purposes for much of the second half of the century. The setting up of the Smithsonian Institution was too good an opportunity for them to miss. Bache in particular lobbied hard to have Henry appointed as first Secretary. The two shared a common view of the importance of placing American science on what they regarded as a professional footing. This was to be an exercise in social exclusion as much as anything else. Only those with the proper credentials could be allowed inside the citadel. This was one reason why both Bache and Henry were so determined on preserving the Smithsonian's autonomy. Access to its resources could not be allowed to become subject to the whims of mere elected representatives who had no scientific training and were in any case sullied by their dependence on the electorate for continued office. Their aim was to construct a uniquely American approach to science that might graft what they regarded as European values and standards on to a democratic egalitarian polity.<sup>15</sup>

These two volumes, covering as they do the crucial years from 1847 to 1853 when Henry was first finding his feet as the Smithsonian Secretary, show in fascinating detail the micropolitics of American science during this period. They lay out the scope of Henry's negotiations with a whole raft of individuals concerning both the day-to-day operation of the Institution and his own aspirations concerning its future. It is clear, for example, that Henry was no hands-off administrator. The extent of his daily engagement with routine, not to say mundane, aspects of the Smithsonian's administration was by modern standards positively staggering. The prospect that his twenty-first-century successors would stoop so low as to deal with some issues that Henry seemingly coped with as a matter of course, is indeed startling. What becomes clear as well in perusing these volumes is the fragility of Henry's position at the Smithsonian. One reason at least why he delegated so little and kept so much of the Institution's routine management in his own hands was that he clearly trusted no-one else to carry out these tasks according to his requirements. An iron grip on routine

<sup>15</sup> For an overview of 'national styles' with reference to American science see Nathan Reingold, 'The peculiarities of the Americans or are there national styles in the sciences?', *Science in Context*, 4 (1991), 347-66.

was integral to maintaining his own vision of the Smithsonian's future against subversion. The volumes give a strong sense of the sheer labour involved in sustaining the Institution during its first years, particularly as Henry juggled with home life and other scientific and academic commitments.

A good indication of the way Henry regarded the security of the Smithsonian position during these early years is the way that he resolutely kept his options open. He retained his position as Professor of Natural Philosophy at Princeton for several years. Writing to an old Albany colleague in 1847 he emphasized that 'All the screws of the Smithsonian have not as yet been fully tightened is most true,' explaining that 'My object in thus retaining my connection with Princeton was twofold; first that I might not too suddenly leave the Institution in the midst of a course of lectures and secondly that in case the affairs of the Smithsonian were not very promising I might return to my former position' (Vol. 7, pp. 63–4). He did not submit his final resignation until more than a year later in June 1848. Later in 1847 he was toying with the idea of allowing his name to go forward as a candidate to replace Robert Hare in the prestigious Professorship of Chemistry at the University of Pennsylvania. He determined in the end that 'If it is the design of Providence that I should be a candidate some way will be opened for me to retire with honor [*sic*] from the Smithsonian if not I must then do the best I can with the position in which I have been placed no doubt for wise purposes since the position is not of my own seeking [*sic*]' (Vol. 7, p. 109). As late as the end of 1853 he was still considering a return to Princeton, whose vice president had written undertaking 'to raise from the friends of the College the sum of fifty thousand dollars, the money to be invested at the discretion of the Trustees; the interest to be paid to you; and the payment to begin from the time you enter upon your duties here' (Vol. 8, p. 490).

One of Henry's key projects as Secretary was the 'Smithsonian Contributions to Knowledge'. The projected series encapsulated the essence of what Henry argued the Smithsonian should be about—the increase of knowledge. As these volumes show, Henry was prepared to devote prodigious effort to ensure the project's success. His negotiations with the authors of the first volume, Ephraim George Squier and Edwin Hamilton Davis, were both detailed and fraught, particularly with Squier. The correspondence shows Henry in a state of restless activity, working hard to sustain his own interpretation of the Contributions' purpose and the Smithsonian's responsibilities against Squier's importunities. He was determined 'to be very cautious in conducting the first business of the Institution in order [*sic*] that I may not establish precedents which may embarrass my future operation' (Vol. 7, p. 123). He found himself arguing about the cost and quality of the paper to be used and the number of engravings to be included as well as mediating between the two authors over the merits of their respective contributions. He had to work at reining in Squier's enthusiasm for more material: 'I do not think it advisabl [*sic*] that you should extend your researches until the present memoir is finished and indeed I would be just as well pleased if this article were confined almost exclusively to an accurate account of the facts of your explorations' (Vol. 7, p. 249). The last remark is indicative. One of Henry's and the other Lazzaroni's complaints against 'American' science was what they regarded as its practitioners' tendency towards unguarded speculation. Theory of this kind was a mark of charlatanry and exactly the kind of thing that the Contributions was meant to eschew at all costs.

Henry's determination to keep a tight rein on the Smithsonian's affairs is clear throughout the correspondence. He took the view that 'I was induced to accept the

office with the hope of being able to reduce to practice a scheme I had devised for the advance of science in our country in strict accordance with the liberal bequest of Smithson,' and furthermore that 'All the propositions of the plan advocated by myself have proved eminently practical and these effects are now beginning to be seen and felt throughout the civilized world' (Vol. 8, pp. 355–6). This determination frequently extended to surveillance of his subordinates' every move. In a blast of 'blue matter' to Alexander Dallas Bache he complained that 'I shall be obliged to give some of my assistants a very severe rebuke unless they act differently—I informed Prof B. before he left that all the business must be in such a condition as to be at my command during his absence. The next day after his departure having occasion to write a letter to our agent in Paris I asked for the Foreign corresponden [*sic*]. I was informed that the whole was locked up in the Prof's desk and the key not to be found. I directed B to be informed by letter that I should be obliged to break open his desk unless the key was forth coming' (Vol. 8, p. 368).

Throughout these early years at the Smithsonian, Henry was also in recurring dispute with his erstwhile friend Samuel Morse as their ongoing quarrel over the invention of the electromagnetic telegraph continued to fester. The two had parted ways over publication of a history of the electric telegraph by Morse's partner, Alfred Vail. Henry felt slighted over Vail's failure to give him what he regarded as adequate credit for the invention. Morse and Vail on the other hand felt that Henry was muscling in on their territory. For Henry this was a crusade for science as much as for his own personal credit. One of his recurring complaints was that scientists' contributions in America were denigrated in favour of those of 'practical men'—like Morse and Vail—who exploited scientific discoveries without crediting the discoverer.<sup>16</sup> The editors have included excerpts from Vail's diary to illustrate the suspicion with which he and Morse regarded Henry's motives. Had Henry waited before announcing his supposed discovery 'until Prof Morse had tried it and run the risque [*sic*] of all the obliquy of such a visionary thing as the public pronounced it; before Prof H should claim it as his own?' (Vol. 7, p. 275). Henry went as far as to solicit testimonials from former students at Albany and Princeton to substantiate his claims of prior invention. The point as far as Henry was concerned was not so much to demand personal credit, but to ensure that what he regarded as proper science be credited for its role in underpinning technical innovation.

Earlier volumes of the Henry papers have set high standards of editorial direction. As a neophyte trying to find out about early nineteenth-century American science a decade ago, I found the exhaustive footnotes to the first few volumes of the Henry papers to be far and away the most valuable resource available. Every reference, however obscure, had been thoroughly researched and comprehensively annotated. The present editors have a great deal to live up to therefore and by the evidence of these two volumes they are succeeding admirably. As with the previous volumes, the material is carefully chosen, providing a comprehensive overview of the range of Henry's interests and activities. The reader gets a clear impression of Henry's struggles to balance family life and career and to keep the Smithsonian committed to the course that he thought best for it. As before, the footnotes are extensive and thoroughly researched. Dipping into these volumes, as the preceding paragraphs indicate, results in far more than a better understanding of Joseph Henry, or even a

<sup>16</sup> See Arthur P. Molella and Nathan Reingold, 'Theorists and Ingenious Mechanics; Joseph Henry defines Science', *Science Studies*, 3 (1973), 323–51; Arthur P. Molella, 'At the Edge of Science: Joseph Henry, "Visionary Theorizers", and the Smithsonian Institution', *Annals of Science*, 41 (1984), 445–61.

better understanding of the early years of the Smithsonian Institution. What emerges as much as anything else is a sense of the construction and consolidation of a particular kind of scientific culture in mid-nineteenth century America.

Most importantly, these volumes provide a welcome sense of the contingency of that construction and consolidation. It is very clear from these pages that there was nothing inevitable about such a process. Henry had to work hard to turn the Smithsonian his way. He had to convince or sideline his opponents. He had to recruit and placate allies. He had to compromise. Others among his contemporaries had their own very different notions concerning the way the new institution should develop—and about the future of science in America. Contingency is always an important historiographical lesson. Institutional formations are not the straightforward outcome of applied ideological imperatives, neither are they the results of self-evident pragmatic drives towards rational structures. Their initial form does not define their future. What emerges from a perusal of these volumes of the Henry papers is a recognition of how important local politics are to the ‘big picture’ and vice versa. It is important to remember that neither fully determines the other. Henry and his fellow Lazzaronis had to devote a great deal of time and effort towards the realization of their particular version of the American Dream.