



## Victorian Periodicals, Evolution, and Public Controversy

**Author(s):** Bernard Lightman

**Source:** *Spontaneous Generations: A Journal for the History and Philosophy of Science*, Vol. 5, No. 1 (2011) 5-11.

**Published by:** The University of Toronto

**DOI:** [10.4245/sponge.v5i1.15324](https://doi.org/10.4245/sponge.v5i1.15324)

### EDITORIAL OFFICES

Institute for the History and Philosophy of Science and Technology  
Room 316 Victoria College, 91 Charles Street West  
Toronto, Ontario, Canada M5S 1K7  
[hpsat.society@utoronto.ca](mailto:hpsat.society@utoronto.ca)

Published online at [jps.library.utoronto.ca/index.php/SpontaneousGenerations](http://jps.library.utoronto.ca/index.php/SpontaneousGenerations)  
ISSN 1913 0465

Founded in 2006, *Spontaneous Generations* is an online academic journal published by graduate students at the Institute for the History and Philosophy of Science and Technology, University of Toronto. There is no subscription or membership fee. *Spontaneous Generations* provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge.

## Victorian Periodicals, Evolution, and Public Controversy\*

Bernard Lightman<sup>†</sup>

In 1854 the biologist Thomas Henry Huxley pointed to a significant change in the way that reviewers were treating books that endorsed deeply flawed scientific theories. In the past, “when a book had been shown to be a mass of pretentious nonsense,” it “quietly sunk into its proper limbo. But these days appear, unhappily, to have gone by.” Due to the “utter ignorance of the public mind as to the methods of science and the criterion of truth,” scientists were now forced to review such books in order to expose their deficiencies (Huxley 1903, 1). Huxley’s observation indicates how the development of a mass reading audience in mid-nineteenth century Britain transformed the very nature of scientific controversy. Scientists were compelled to debate the validity of theories in new public sites, not just in exclusive scientific societies or in specialized scientific journals with limited circulation. It was during the nineteenth century that public controversy—not limited to science alone—became possible for the first time. In this short piece I will discuss how the “communications revolution” produced a public space for the debate over evolutionary theory in mid-nineteenth century Britain. I will focus on periodicals as one of those public spaces in which the debate took place.<sup>1</sup> As Huxley found, attempting to resolve a scientific controversy in the general periodical press could be a risky venture. Although a non-specialized journal could provide the public space necessary for reaching the reading audience, maintaining scientific authority in such a site was somewhat problematic.

\* Received 14 July 2011.

<sup>†</sup> Bernard Lightman is Professor of Humanities at York University. He works primarily in the area of the cultural history of Victorian science. His most recent publications include *Science in the Marketplace* (co-edited with Aileen Fyfe, 2007), *Victorian Popularizers of Science* (2007), and *Evolutionary Naturalism in Victorian Britain* (2009). Currently he is working on a biography of John Tyndall and on editing the Metaphysical Society Papers.

<sup>1</sup> The widespread debate in periodicals on nineteenth-century scientific theories has been recognized for some time. In his *Darwin and the General Reader* (1958), Alvar Ellegård analyzed the many articles on Darwin’s theory of evolution that appeared in the non-scientific press. But Ellegård has rightly been criticized for not being sufficiently sensitive to the significance of changing periodical formats in this period. See Alvar Ellegård, *Darwin and the General Reader: The Reception of Darwin’s Theory of Evolution in the British Periodical Press, 1859-1872*. Göteborg: Göteborgs Universitets Arsskrift, 1958; also see Dawson, Noakes, and Topham, 2004, 3.

In his *Victorian Sensation*, Secord has persuasively argued that the communications revolution represented the “greatest transformation in human communication since the Renaissance” by “opening the floodgates to a vastly increased reading public” (Secord 2000, 2). The communications revolution in the second quarter of the nineteenth century allowed publishers to eventually reach a mass reading audience in the second half of the century that included more and more members of the working class. It created, for the first time, a truly public space for the written word. As literacy rates increased, publishers found that the market for cheap books became viable. The introduction and development of the Fourdrinier machine, steam-driven presses, and case binding, in addition to the reduction of the “taxes on knowledge” and the development of the railway system, were features of the revolution in this period (Lightman 2007, 30-31). The revolution was not limited to the production of larger quantities of books that were increasingly affordable. During the middle of the nineteenth century the British periodical press grew by leaps and bounds, due to the greater demand from increasingly literate and leisured reading audiences (Dawson, Noakes, and Topham 2004, 16).

A new generation of scientists arrived on the scene in the 1850s, just when the communications revolution was gathering steam. T. H. Huxley, and many of the other scientific naturalists, were among them. The general periodical press, as opposed to the more specialized scientific periodicals, became central to the agenda adopted by Huxley, the physicist John Tyndall, the mathematician William Kingdon Clifford, and their fellow scientific naturalists, especially in the debates concerning evolutionary theory. As Dawson, Noakes, and Topham have argued,

if the new professionals were to achieve the cultural authority over science that they sought, they would need to make their voices heard in general periodicals, and many did. It was in this mid-century battle for cultural authority that scientific polemicists like Huxley came into prominence in the general periodical press. (2004, 17)

The scientific naturalists sought to reform science by making it independent of the Church. They rejected natural theology and aimed to secularize science. Their ambitions went beyond redefining science. They also planned to wrest cultural authority away from the Anglican clergy by depicting themselves as the intellectual leaders best equipped to lead a modern, industrialized British nation. The controversy over evolution provided them with the perfect occasion to raise the key issues in their program for scientific and cultural reform.

Huxley first became embroiled in the very public debate over evolutionary theory when he reviewed the tenth edition (1853) of the notorious *Vestiges of the Natural History of Creation*, first published anonymously in 1844. As a young medical student in the middle of the 1840s, and then as assistant surgeon on the HMS *Rattlesnake* from 1846 to 1851, he watched the controversy unfold

from the sidelines. The unparalleled success of *Vestiges*, as Secord has shown, was due to Robert Chambers's ability to understand the sensibilities of a new "polity of consumers" composed of a middle- and working-class family readership (Secord 2000, 69). Drawing on his experience as a publisher and journalist for this audience, Chambers was able to present transmutationism, previously linked to blasphemous radicalism, in an appealing light. Men of science responded to the popularity of *Vestiges* with harshly critical reviews in the periodical press. Chambers's version of evolutionary theory was assailed as a hasty generalization with little scientific validity. Chambers replied in his *Explanations, A Sequel* (1845), where he attacked the authority of scientists and refused to accept their judgment on the scientific merits of his book. Their research had become too narrowly specialized for them to appreciate the value of his grand vision of a universal law of evolution operating from the beginning of time. Instead, Chambers appealed to ordinary readers and argued that they had the ability to judge for themselves if his theory was scientifically viable. He championed a broad, speculative natural philosophy in which all could participate (Yeo 1984). Bypassing the men of science by bringing his case before the bar of public opinion entailed great risk. Not only did it alienate the scientists even more, it put their authority at the center of the controversy.

In his 1854 review of the *Vestiges* Huxley sided with Chambers's critics. He referred to the *Vestiges* as a "notorious work of fiction" that dispensed "totally with logic." The anonymous author, he charged, indulged in "science at second-hand." Huxley did not believe that he, or she, had ever been engaged in real scientific research. "We look for evidence of knowledge," Huxley declared, "and we find—what might be picked up by reading 'Chambers's Journal' or the 'Penny Magazine.' We look for original research and we find reason to doubt if the author ever performed an experiment or made an observation in any one branch of science." The scientific foundation upon which the author of *Vestiges* made claims about the successive development of life on earth was "baseless and rotten." Then Huxley launched into a scathing condemnation of the reading audience that had so uncritically accepted the *Vestiges* as a genuine work of science. Referring to them as "the mob," he remarked that this was the same public that eminent physicist Michael Faraday had recently admonished for their fascination with the "folly" of table turning. Those who admired the *Vestiges* undermined the scientific enterprise by confusing authentic scientific reasoning with unbridled speculation. "In the popular mind the foolish fancies of the 'Vestiges' are confounded with science," he indignantly wrote, "to the incalculable diminution of that reverence in which true philosophy should be held" (Huxley 1903, 1-3, 15, 17-19). This amounted to a complete rejection of the important role Chambers had assigned to the public in resolving scientific controversy. They lacked the expertise needed to pass judgment on a book whose author was also deficient in scientific knowledge. It is worth noting that Huxley's review appeared in the pages of a medical journal, the

*British and Foreign Medico-Chirurgical Review*, and not in a general periodical. His audience here would have been fellow scientists.

Just five years later, in his anonymous review of the *Origin of Species* in the *Times*, Huxley's attitude towards evolution had changed dramatically. Of course by this time Huxley was not nearly as hostile to evolutionary theory, due to his discussions with Darwin. In the *Times* he treated the *Vestiges* far more sympathetically, depicting the anonymous author as a well-meaning visionary. "Since Lamarck's time," Huxley affirmed, "almost all competent naturalists have left speculations on the origin of species to such dreamers as the author of the 'Vestiges,' by whose well-intentioned efforts the Lamarckian theory received its final condemnation in the minds of all sound thinkers." But Darwin, Huxley pointed out, was a more than competent naturalist. He cautioned his readers that before attacking Darwin they should take into account the high quality of his previous scientific work and the fact that the *Origin* was the result of twenty years of investigation and reflection. So the reader had a duty to "listen even though we be disposed to strike." Huxley admitted that as he read the *Origin* the "attention which might at first be dutifully" given gradually became "willingly" given, "so clear is the author's thought, so outspoken his conviction, so honest and fair the candid expression of his doubts" (Huxley 1894, 13, 15).

Just as Huxley had changed his mind about evolutionary theory, he had also altered his stance on the role of the public in scientific controversy. Whereas in 1854 he wanted to deny the public a significant role in resolving the *Vestiges* debate due to their ignorance of the scientific issues at stake, in the *Times* article he invited his audience to read Darwin's work and judge its validity for themselves. Like Chambers, Huxley risked alienating his scientific colleagues and undercutting his own scientific authority. But Huxley knew that his fellow scientific naturalists, some of whom had also been courted by Darwin, would support the idea of a fair hearing for the theory of natural selection. He also assigned the public a proscribed role in the controversy that retained the scientist's authority. Huxley, then, was taking far less risks than Chambers. The risks were worth it, in Huxley's estimation, since the readers of the *Times* were potential allies.

Instead of raising questions about the public's ability to evaluate Darwin's theory, Huxley implied that with some guidance (supplied by him and other professional scientists) they could judge the merits of the book—provided that they read it. "Those who would judge the book must read it," he insisted, and "we shall endeavour only to make its line of argument and its philosophical position intelligible to the general reader in our own way." To bolster his claim to be a trustworthy guide to reading the *Origin* correctly, Huxley played the role of the impartial observer. He told the audience that he could not whole-heartedly embrace the theory of natural selection. Refusing to be the ultimate judge of the *Origin's* truth, he argued that twenty more years of research would confirm or deny its validity. But he insisted that Darwin's theory had at least

one advantage over Lamarck's (and therefore Chambers's): it was not merely speculative. Empirically based, it was capable of being tested (Huxley 1894, 15, 20-21).

In a second anonymous review of the *Origin* in the following year, this time in the liberal *Westminster Review*, Huxley again acknowledged that the general reader had a legitimate role to play in the public controversy over evolutionary theory. "When the public is eager and interested," he declared, "reviewers must minister to its wants." He again adopted the stance of the neutral observer who would supply the reading audience with the scientific information they needed to make their own decision about the validity of Darwin's theory. Huxley believed that Darwin's grasp of zoology, anatomy, geology, and geographical distribution was so thorough, that he doubted if "any one is likely to be competent to pronounce judgment on all the issues" he had raised. In the review, Huxley therefore assumed "the humbler, though perhaps as useful, office of an interpreter between the 'Origin of Species' and the public." Huxley would content himself with pointing out the nature of the problems it discussed, with distinguishing "between the ascertained facts and the theoretical views which it contains; and finally, to show the extent to which the explanation it offers satisfies the requirements of scientific logic." This did not prevent him from asserting that Darwin's theory was "as superior to any preceding or contemporary hypothesis, in the extent of observational and experimental basis on which it rests, in its rigorously scientific method, and in its power of explaining biological phenomena, as was the hypothesis of Copernicus to the speculations of Ptolemy" (Huxley 1894, 23, 25-26, 78).

Huxley's strategy for resolving controversy in an era when science was an integral component of the public sphere became even more important in succeeding decades when a new type of periodical was founded in the 1860s. The publishers of the "shilling monthlies," such as Alexander Macmillan of *Macmillan's Magazine* (f. 1859) and George Smith of the *Cornhill Magazine* (f. 1860), were entrepreneurs who attempted to reach a new segment of the mid-Victorian reading public: educated members of the middle class who were not interested in the cheap family journals or expensive monthly literary magazines. The new monthly reviews of the 1860s were designed to imitate the intellectual debates taking place in societies, clubs, and *conversazioni*. Unlike the quarterlies, which contained anonymous pieces that toed the journal's party line, the monthlies created an open intellectual forum, with signed articles by authors who embraced a diversity of viewpoints. Scientific material was a key element in the strategy adopted by these journals to cater to the middle-class taste for topical, learned, and entertaining subject matter. These magazines became an important venue for Huxley and his friends to address a wider audience on the debates surrounding evolutionary theory (Dawson, Noakes, and Topham 2004, 19-20). Tyndall, Huxley, and other scientific naturalists contributed many of their most important popular pieces

to quarterlies such as *Macmillan's Magazine*, the *Fortnightly Review* (f.1865), the *Contemporary Review* (f. 1866), and, later, the *Nineteenth Century* (f. 1877). Huxley wrote over fifty articles for these four periodicals over the course of his life. The monthlies became the journal of choice for the scientific naturalists when they wished to enter into public controversy, and not specialized scientific journals such as *Nature*, edited by Norman Lockyer. Not only did Joseph Dalton Hooker, Tyndall, and other scientific naturalists lose confidence in the middle of the 1870s in how Lockyer handled debate in the pages of his journal, they recognized that they could reach a larger and broader public through the monthlies (Barton 2004, 228, 223).<sup>2</sup>

Over seven years ago Dawson, Noakes, and Topham issued a call to scholars to pay more attention to the role of the general periodical in scientific controversies. "Scholars have long recognized the historical value of studying controversies in the sciences," they wrote. "Less familiar, however, is the extent to which scientific controversies of the nineteenth century were conducted in, or extended to, semi-popular scientific journals and generalist periodicals" (Dawson, Noakes, and Topham 2004, 29). Arguably, their insight is applicable far more to the second half of the nineteenth century than to any other period in history. For it was during this time in Britain, in the wake of the communications revolution, that a mass reading audience existed for the first time. It was also a period before science became too specialized for the public to fully participate in controversies. When publishers began to cater to this new audience, a powerful group of would-be professionals, led by Huxley, Tyndall, and other scientific naturalists, recognized that the public was a potential ally in their controversies with the old guard. The communications revolution altered the dynamics of the relationship between elite scientists and the public, which in turn transformed the way scientific controversies were conducted. Debate could no longer take place just between members of the scientific elite in scientific societies or specialist journals, especially in the case of evolutionary theory, which raised such crucial religious, political, social, and philosophical questions. The scientific naturalists insisted that debate also take place in public sites such as the general periodical press.

BERNARD LIGHTMAN  
309 Bethune College, York University  
4700 Keele St.  
Toronto, Ontario  
Canada, M3J 1P3  
lightman@yorku.ca

<sup>2</sup> *Nature* was more important to the second generation of scientific naturalists for publishing their work, but by that time the journal was largely geared toward scientific specialists rather than the popular reader. See Melinda Clare Baldwin, 2010, "Nature and the Making of a Scientific Community, 1869–1939," Ph.D. Thesis, Princeton University.

## REFERENCES

- Barton, Ruth. 2004. Scientific Authority and Scientific Controversy in *Nature*: North Britain against the X Club. *Culture and Science in the Nineteenth-Century Media*, eds. Louise Henson, Geoffrey Cantor, et al., pp 223-235. Aldershot, Hants, England: Ashgate Publishing Limited.
- Dawson, Gowan, Richard Noakes, and Jonathan R. Topham. 2004. Introduction. In *Science in the Nineteenth-Century Periodical: Reading the Magazine of Nature*, eds. Geoffrey Cantor, Gowan Dawson, Graeme Gooday, Richard Noakes, Sally Shuttleworth, and Jonathan R. Topham, pp 1-15. Cambridge UK: Cambridge University Press.
- Huxley, Thomas H. 1894. *Darwiniana*. London: Macmillan and Co.
- Huxley, Thomas H. 1903. Vestiges of the Natural History of Creation. Tenth Edition. London, 1853. In *The Scientific Memoirs of Thomas Henry Huxley. Supplementary Volume*, eds. Professor Sir Michael Foster and Professor E. Ray Lankester, pp 1-19. London: Macmillan & Co., Limited.
- Lightman, Bernard. 2007. *Victorian Popularizers of Science: Designing Nature for New Audiences*. Chicago: University of Chicago Press.
- Secord, James. 2000. *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation*. Chicago: University of Chicago Press.
- Yeo, Richard. 1984. Science and Intellectual Authority in Mid-Nineteenth-Century Britain: Robert Chambers and *Vestiges of the Natural History of Creation*. *Victorian Studies* 28, no. 1 (Autumn 1984): 5-31.