

## The public worth of Mary Somerville†

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**Abstract.** This article assesses the reputation of Mary Somerville in the 1830s and suggests that critical confusion over her status in the changing world of early nineteenth-century science is not new. Drawing on Somerville's own writings, contemporary newspaper and periodical reviews, political debates and unpublished manuscripts, Somerville's 'uniqueness' as a public figure is examined through the eyes of both the nascent scientific community of the time as well as the wider audience for her work. Somerville's status as a popularizer and an educator is more complicated than may have previously been assumed and can be both confirmed and undermined by an analysis of contemporary public opinion. Although her works were directed at the public who indirectly paid her pension for services to science, Somerville's private and published comments about and within her writings offer an alternative interpretation. Despite an apparent turn to more popular works in order to bolster her finances, Mary Somerville relished the specialist aspect of her writings and valued the difficulties which prevented the ordinary reader from obtaining ultimate insight into celestial mechanics.

In November and December 1837, during a debate on the Civil List, the House of Commons witnessed sustained attacks on the recent system of awarding pensions to literary and scientific figures, especially in the light of the perceived injustices arising from the New Poor Law of 1834. Although the pension system came under criticism itself, one name frequently occurred in discussion of the illegitimacy of civil reward: that of Mary Somerville. A scientific expositor and author of an explication, entitled *Mechanism of the Heavens* (1830), of Laplace's notoriously complex treatise, Somerville had recently written an original survey of contemporary scientific thought, *On the Connexion of the Physical Sciences* (1834). Somerville's pension of £200, awarded by the Tory Robert Peel in 1835, had been raised by the new Whig government of Lord Melbourne to £300 per annum. This was a sum equivalent to that granted to practising men of science such as George Airy, David Brewster and Michael Faraday. What angered the debaters was not only the siphoning of funds into the pockets of those authors who already earned their money from the benevolence of the public, but the impropriety of awarding pensions to the likes of Somerville, who, as the radical member for Liskeard and future Poor Law commissioner Charles Buller put it so scathingly, constituted a 'waste of money'. For 'no one could undertake to say that [Somerville's works] added anything to the stock of human knowledge or enlarged

† This is an expanded version of the essay awarded the Singer Prize of the BSHS for 2004.

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I would like to thank Simon Schaffer and two anonymous readers for their extremely helpful comments and suggestions. My heartfelt thanks also to Ben Dew for all his support and understanding.

the bounds of science'.<sup>1</sup> In Buller's opinion Mary Somerville did not write books which sought to inform and enlighten the public.

Mary Somerville's lack of fit in the history of science is only too apparent in current critical interpretations of her life and writings. Within the past couple of years alone she has been labelled 'a female popularizer of science',<sup>2</sup> 'difficult to categorize as an author',<sup>3</sup> and most recently 'an ingenious experimentalist on the one hand, and a brilliant surveyor, interpreter and high-level communicator of contemporary science on the other'.<sup>4</sup> Somerville's 'uniqueness', in terms of both her respected position in a nascent professional scientific community and her enormous public popularity, makes her impossible to assimilate into a straightforward narrative concerning the place of the female science-writer in the nineteenth century. But, as the Civil List debates explosively revealed, this uncertainty over Mary Somerville's scientific worthiness is far from recent. From the House of Commons to societies for the working classes, Somerville's contemporaries wrangled over her public position in the 1830s and sought frantically to assess her value. An analysis of Somerville's contemporary reception may also help to explain why economic considerations, rather than propriety or inclination, forced her to popularize her style of writing. After the publication of *Mechanism of the Heavens* Somerville appeared to choose explanations over equations, not because of the inappropriateness of a woman writing expertly about celestial mechanics, but precisely because she had written so expertly that she was at risk of losing an audience outside the universities. The use of the term 'appeared' here is deliberate. Even when presenting the public with a supposedly more popular format, Somerville denied her readers ultimate understanding of abstruse concepts and was thus unable to adhere to the rules of clarity and explanation requisite for popularization. Somerville's own difficulties when writing for a wider audience were finally reflected in obituaries that summed up her career. In the *Monthly Notices of the Royal Astronomical Society* Richard Proctor noted that the 'remarkable and distinguishing quality' of Somerville's mind ensured that, for the general reader, her work was a 'failure'. Even the very 'elements of the subjects' she attempted to expound were incomprehensible to the vast majority of the reading public.<sup>5</sup> The initial reaction to *Mechanism of the Heavens*, as Proctor suggested, would in fact colour the reception of Mary Somerville's future writings.

At the core of Charles Buller's House of Commons argument lay two charges: first, that Mary Somerville's writing lacked the originality of a scientific discovery which would form the catalyst to much-prized social or industrial progression; second, that

1 Debates on the Civil List appear in *Hansard* (1838), 39, 23 November, cols. 161–78 and 19 December, cols. 1284–317. This reference is from the latter debate and can be found in col. 1316.

2 Bernard Lightman, 'Set introduction', in *Science Writing By Women* (ed. B. Lightman), 7 vols., Bristol, 2004, i, pp. xi–xix, p. xii.

3 James A. Secord, 'General introduction', in Mary Somerville, *The Collected Works of Mary Somerville* (ed. J. A. Secord), 9 vols., Bristol, 2004 (hereafter *Collected Works*), i, pp. xv–xxxix, p. xxvi.

4 Allan Chapman, *Mary Somerville and the World of Science*, Bristol, 2004, 43–4.

5 R[ichard] A. P[roctor], 'Mary Somerville', *Monthly Notices of the Royal Astronomical Society* (14 February 1873), 23, 190–7, 193, in *Collected Works*, i.

her writings did not benefit those who sought knowledge for intellectual and social improvement. Indeed, at the end of her long life, when she reviewed her achievements, Somerville found herself especially wanting in the first area indicated by Buller. In an original passage of her *Personal Recollections*, tellingly excised by her daughter Martha for posthumous publication in 1873, Somerville reflected upon her role as a successful scientific writer:

In the climax of my great success, the approbation of some of the first scientific men of the age and of the public in general, I was highly gratified, but much less elated than might have been expected, for although I had recorded in a clear point of view some of the most refined and difficult analytical processes and astronomical discoveries, I was conscious that I had never made a discovery myself, that I had no originality. I have perseverance and intelligence but no genius.<sup>6</sup>

Despite the publication of two papers in the Royal Society's influential *Philosophical Transactions* detailing original discoveries concerning sunlight and magnetism, and international acclaim for her mathematical and astronomical prowess, Somerville felt the irony of her exceptionally high academic standing. After her death, the *Saturday Review* confirmed these fears, insisting that she was an interpreter and expounder, not an original discoverer:

It is not invidious, still less discourteous, in us to say that the one is to the other as moonlight is to sunlight. Receptive, bright and keen, the mind of woman may give back or diffuse the rays of knowledge for the source or emanation of which a stronger and more original power is necessary.<sup>7</sup>

Coupled with her perceived lack of genius, however, were further complexities. First, the oft-quoted passage from the *Personal Recollections* concerning female intellectual 'earthiness' was followed by a line scored out in the manuscript hinting at potential progress, though at a lower level: 'whether higher powers may be allotted to us in another state of existence, God knows, original genius in science at least is hopeless in this. [scored out: At all events it has not yet appeared in the higher branches of science.]'<sup>8</sup> This glimmer of hope that the female scientific 'spark' is incipient was reinforced immediately afterwards by a reference to Buller's Commons attack and a proud reassertion that the 'sovereign contempt' displayed by the 'member for some place I have forgotten in the West of England' may have caused brief annoyance, but left lasting confidence that 'he showed that he was totally ignorant of the state of science'.<sup>9</sup>

6 Dorothy McMillan (ed.), *Queen of Science: Personal Recollections of Mary Somerville*, Edinburgh, 2001, 145.

7 *Saturday Review*, 7 December 1872, 721–2, 722.

8 McMillan, op. cit. (6), 145.

9 This passage was expunged from the final draft of Somerville's *Personal Recollections*, not having passed the censorious eye of her daughter, Martha. However, McMillan has reinstated the passage in *Queen of Science* and shows that Somerville's second draft 'has a marginal note in MS's hand saying this may stay' (McMillan, op. cit. (6), 146).

Second, as already mentioned, Somerville did carry out her own experiments and published the results in highly respected scientific journals.<sup>10</sup> When she came to write *Mechanism of the Heavens* she was known primarily as an original scientific practitioner whose experiments ‘On the magnetizing power of the more refrangible rays’ had been published in 1826 in the *Philosophical Transactions*. She was only the second woman after the astronomer Caroline Herschel to present her discoveries, with her own name firmly attached, in this very public way. Somerville’s experimental work was also concerned with pressing contemporary issues. Following Hans-Christian Oersted’s discovery in 1820 of the relationship between electricity and magnetism, scientific practitioners became increasingly fascinated with such magnetic effects.<sup>11</sup> In her own experimental work, Somerville was eager to embrace recent developments. Hearing that several ‘unsuccessful attempts had been made in Italy to ascertain whether the most refrangible rays of the solar spectrum possess a magnetic power’, she was prompted to carry out experiments of her own armed with advice and apparatus from her friends William Wollaston and John Herschel. When Somerville’s results were published they were noticed by luminaries of European science such as Laplace, Gay-Lussac and Oersted himself. The fact that her experiments were repeated and verified by the Viennese professor Baumgarten revealed the importance and primacy of Somerville’s work as an original scientist in the 1820s.<sup>12</sup>

Although her claims about the effects of sunlight upon magnetism were later discredited, Somerville carried on not only experimenting but also publishing her results.<sup>13</sup> These were not the actions of a woman crushed by her mistakes. Her constant threat to throw her writings into the fire, should they prove incorrect, has always been interpreted as the behaviour of a woman afraid of damaging her personal reputation. But, being the perfectionist that she was, Mary Somerville’s inflammatory tendencies

10 Secord has importantly collected all Somerville’s original scientific papers and reviews in the first volume of *The Collected Works of Mary Somerville*. As well as published experimental work, these include early responses to prize questions in the *New Series of the Mathematical Repository* and a letter to Josephine Butler on ‘The teaching of science’.

11 Elizabeth Chambers Patterson notes that Somerville’s ‘is the first of 11 papers touching on magnetism that appear in the *Philosophical Transactions* in the year 1826’. See E. C. Patterson, *Mary Somerville and the Cultivation of Science, 1815–1840*, Boston and The Hague, 1983, 47.

12 McMillan, *op. cit.* (6), 109. Baumgarten reproduced his results in Arago’s *Annales de chimie et de physique* (1826), 33, 333–5 and in the *Zeitschrift für Physik und Mathematik* (1826), 6, 265; see Patterson, *op. cit.* (11), 47. This ensured that by 1826 Somerville’s name would additionally be known to French- and German-speaking scientific communities.

13 After her original 1826 experiments, Somerville carried out and published the following: ‘Expériences sur la transmission des rayons chimiques du spectre solaire, à travers différents milieux. Extrait d’une lettre de Mme Sommerville à M. Arago’, *Comptes rendus hebdomadaires des séances de l’Académie des sciences* (1836), 3, 473–6, read 17 October 1836; ‘Extract of a letter from Mrs Somerville to M. Arago, detailing some experiments concerning the transmission of the chemical rays of the solar spectrum through different media’, *Edinburgh New Philosophical Journal* (April 1837), 22, 180–3; ‘“On the action of the rays of the spectrum on vegetable juices:” being an extract from a letter by Mrs. M. Somerville to Sir John F. W. Herschel, Bart., dated Rome, 20 September 1845. Communicated by Sir John F. W. Herschel, Bart. F.R.S.’, *Abstracts of the Papers Communicated to the Royal Society of London* (December 1845), 5, 569–70; ‘On the action of the rays of the spectrum on vegetable juices. Extract of a letter from Mrs. M. Somerville to Sir J. F. W. Herschel, Bart., F.R.S. dated Rome, 20 September 1845’, *Philosophical Transactions of the Royal Society of London* (1846), 136, 111–20, read 27 November 1845. All appear in the first volume of *Collected Works*, *op. cit.* (3).

stemmed from a fear of failure rather than from any desire to protect her status as a woman. After accepting the commission from Henry Brougham to translate Laplace's *Mécanique Céleste*, Somerville noted twice in her memoirs that the manuscript would be burned if she should 'fail' in her task.<sup>14</sup> Her subsequent experimental 'failures' were excised from the final edition of the *Personal Recollections*. However, when restored they offer a picture of a scientific practitioner mortified at the cost to a professional, public reputation:

[*First draft:*] I imagined I had succeeded or I should not have published my experimentation in the transactions of the Royal Society of which I am heartily ashamed as I think I must have been mistaken. I am still more ashamed of my presumption in having sent a copy to the Marquis de Laplace, who very good-naturedly thanked me for it in a letter he wrote introducing M. Bouvard the astronomer and savant. [*Second draft adds:*] Since then I have committed all copies to the flames.<sup>15</sup>

The shame arose here solely from having failed in original experiment, the sense of palpable frustration from having shared erroneous results with the European scientific community.

Buller's point about Somerville's inability to translate the physical sciences to a wider audience was the prevailing interpretation of her work in the 1830s and one to which Somerville herself subscribed. *Mechanism of the Heavens*, originally commissioned by the Society for the Diffusion of Useful Knowledge (SDUK), had so far exceeded the grasp of its intended artisan audience that it had earned the dubious accolade of impenetrability and was subsequently adopted as a university textbook for only the brightest students. As Somerville informed Brougham from the outset, it would be almost impossible to cater for the non-specialist audience he had in mind:

you must be aware that the work in question can never be popularised, since the student must at least know something of the differential and integral calculi, and as a preliminary step I should have to prove various problems in physical mechanics and astronomy. Besides, Laplace never gives diagrams or figures, because they are not necessary to persons versed in the calculus, but they would be indispensable in a work such as you wish me to write.<sup>16</sup>

The select audience anticipated for such an enterprise ensured that 750 copies were printed. Some were taken up informally over the years by students at Cambridge University, where Somerville suggested the majority of the edition was 'chiefly sold'.<sup>17</sup>

14 McMillan, op. cit. (6), 133, 135.

15 McMillan, op. cit. (6), 120, 109.

16 McMillan, op. cit. (6), 132–3. Julia Swindells makes much of Brougham's original epistolary approach to William Somerville rather than his wife when commissioning her to write *Mechanism*, in order to support her argument about the patronizing way Mary Somerville was treated by her male contemporaries. However, as the *Personal Recollections* reveal, when Brougham visited it was Mary Somerville herself who personally negotiated the ideas for the necessary alterations detailed in this quotation. See Julia Swindells, 'Other people's truths? Scientific subjects in the *Personal Recollections, from Early Life to Old Age, of Mary Somerville*', in *Women's Lives into Print: The Theory, Practice and Writing of Feminist Auto/Biography* (ed. Pauline Polkey), Basingstoke, 1999, 96–108.

17 Peacock to Somerville, 14 February 1832, in McMillan, op. cit. (6), 141. Peacock and Whewell apparently took 'steps into the course of [their] studies at Cambridge' and had 'little doubt that it will immediately become an essential work to those of our students who aspire to the highest places in our examinations'. This

Writing to her daughter Martha in January 1836, Somerville, whose husband was resident physician at Chelsea Hospital, reported a discussion overheard among the pensioners: 'How easy it is to gain 200 a year & how lucky to be called clever: the government had little to do with the public money when they gave 200 a year to Mrs Somerville for writing a book that nobody can understand.'<sup>18</sup>

Here lies the paradox both of Somerville's important public position and of her award of government aid. As the Chelsea pensioners noted with scorn, she received an annual amount from the Civil List for writings commissioned to address a popular audience that were unintelligible to the public who indirectly paid her pension. Somerville was simultaneously too popular and not popular enough in the 1830s; her writings sold in the hundreds and later thousands, yet were considered by some to be unreadable.

This point was not lost on the acerbic *Athenaeum* reviewer (conjectured, unsurprisingly, to be Charles Buller) of Somerville's *Mechanism of the Heavens*. The review was smug and sneering, questioning her 'sacrilege of remodelling' Laplace's original.<sup>19</sup> The clarity, learning and extraordinary talents praised by all other reviewers were here reduced to accusations of incompleteness and overreaching. But it was the intended audience who received the most sarcastic comments. The irony of one of the most difficult works of celestial mechanics ever published, whose fully comprehending readers could be numbered on one hand, now being directed particularly towards the working classes, was certainly not lost in the review:

We are convinced that the gratitude of the working classes would be unlimited, could they but appreciate the extent of the obligation. We are not, however, sanguine on this subject. With the very best wishes for the general diffusion of knowledge, we do not expect, for many years, to find the work of La Place much read among the labouring poor.<sup>20</sup>

'The hands of the unwashed', suggested the reviewer, were unlikely to cherish a beautifully produced volume, priced at £1 10s.<sup>21</sup> While the inability of the working classes to understand Somerville's writing was the primary concern of the reviewer, the cost of a volume in the difficult economic conditions of the early 1830s clearly rankled too. If *Mechanism* had been published at the length and format originally intended by Brougham's SDUK popular-science series, it would have cost around 6d.<sup>22</sup> Statistics suggest that on average during the 1830s the actual price of £1 10s would amount to

implied that the book was not a textbook per se, but one which would be used by the most able students to advance their position in the Tripos system. Secord notes in his Introduction to *Mechanism of the Heavens* (*Collected Works*, op. cit. (3), ii, pp. ix–xx, p. xiii) that 'Murray had 750 copies printed ... but of these only 73 were taken up by other booksellers at his annual sale, an unusually small percentage. Somerville herself had 60 copies sent out as presentation copies; 6 went to the reviews; and 11 went to Stationer's Hall for the purposes of copyright'.

18 Quoted in Patterson, op. cit. (11), 179.

19 [Charles Buller], 'Review of *Mechanism of the Heavens*', *Athenaeum* (1832), 221, 43–4.

20 [Buller], op. cit. (19), 44.

21 Patterson, op. cit. (11), 82.

22 For the cost of Brougham's SDUK works, in comparison to other publishers of a variety of genres in the 1820s and beyond, see James A. Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of the Vestiges of the Natural History of Creation*, Chicago and London, 2000, 48.

a week's wages for a skilled worker, while it could take the lowest-paid urban semi-skilled worker around two months to earn this amount of money.<sup>23</sup> Clearly, despite the deliberately patronizing tone of the reviewer, this was not a feasible purchase for the working man. The prohibitive cost, 'the splendour of the typography' and the 'patrician name of the bibliopole' (John Murray, the fashionable publisher for the middle classes) were all sure to count against its success.<sup>24</sup>

It was not only the *Athenaeum* which raised problems with the accessibility of Somerville's text. While Somerville noted in her dedication to Brougham that her work had 'unavoidably exceeded the limits of the Publications of the Society for the Diffusion of Useful Knowledge, for which it was originally intended', she hoped that, as her 'highest ambition', she would instead bolster its fundamental aims and 'concur with that Society in the diffusion of useful knowledge'. Yet within a few pages of the dedication Somerville offered a devastating blow to those who hoped to master the contents of her text. The 'Preliminary Dissertation' superficially presented an enticing image of the benefits of mathematical and mechanical comprehension for a general reader:

A complete acquaintance with Physical Astronomy can only be attained by those who are well versed in the higher branches of mathematical and mechanical science: such alone can appreciate the true beauty of the results, and of the means by which these results are obtained. Nevertheless a sufficient skill in analysis to follow the general outline, to see the mutual dependence of the different parts of the system, and to comprehend by what means some of the most extraordinary conclusions have been arrived at, is within the reach of many who shrink from the task, appalled by difficulties.<sup>25</sup>

However, closer examination of the language used in this passage shows that it effectively removed the mysteries of physical astronomy from the grasp of the uninitiated, those who would benefit from 'the diffusion of knowledge'. While the first sentence contains only absolutes such as 'complete', 'alone' and 'true', the second, purportedly inclusive, statement points to more tremulous vocabulary: 'sufficient', 'outline', 'within the reach'. Far from widening her audience, Somerville emphasized the fundamental distinction between the scientific elite and everyone else. Even in the deliberately accessible part of *Mechanism*, which was Somerville's apparent concession to popularity, only the former could fully and intimately 'appreciate' the workings of the mechanism of the heavens and thus, by logical extension, the design of their Creator.

For the *Athenaeum* reviewer, the fate of Somerville's *Mechanism of the Heavens* was to be similar incomprehension; the pages would be cut and turned, but without any understanding of the 'mysterious symbols which so mysteriously shadow forth its meaning'. Momentary but 'delightful prattle' would be its fate, before the volume's

<sup>23</sup> John Burnett, *A History of the Cost of Living*, reprint edn, Aldershot, 1993, 251, 263. Based upon semi-skilled workers (between 1810 and 1850) earning 16 shillings a week on average and urban semi-skilled workers (around 1841) being paid 15 shillings to one pound a week.

<sup>24</sup> [Buller], op. cit. (19), 44.

<sup>25</sup> Mary Somerville, 'Preliminary Dissertation', in *idem*, *Mechanism of the Heavens*, London, 1831, pp. v-lxx, p. vii.

consignment to an uninterrupted retirement, conspicuously placed somewhere in the library.<sup>26</sup> Misdirected and unable to translate to an audience beyond the specialist, Somerville's writings deserved only the status of fashionable fripperies, making a momentary noise in the world, but too abstruse for general understanding. According to the reasoning behind the Civil List pension, as Southwark MP and founder of the *Sunday Times* Daniel Whittle Harvey reminded the House during the 1837 debate, 'no pension should be granted which was not justified by some public service – some high literary or scientific pretensions'. In a dramatic connection he went on to suggest that this justification should be proved in a manner akin to the New Poor Law's interrogation of prospective supplicants for parish relief, for 'when they dealt out that species of justice to the poor, the old, the unprotected, and the helpless, would they yet suffer a list of 12,000 pensioners, 300 of them with titles, and many of them connected with the proudest of the land, to go unquestioned?' Mary Somerville was specifically mentioned by name in Harvey's plea for further investigation into the 'reasons for the continuance of pensions'.<sup>27</sup>

Why, lamented Harvey during the Civil List debate, need there be so much concern for the privileged when the poor were starving? Was the House 'exclusively solicitous for persons with splendid titles and without sympathy for the poor and dejected'? Why should women like Mary Somerville not be forced to undergo an intrusive and rigorous test in order to prove their deserving status? The debate made explicit radical concerns about the spate of Whig reforms in the first half of the 1830s, reforms which had proved ineffective and even damaging to the disadvantaged. Referring to his recent visit to a meeting of Poor Law Guardians, Harvey offered an example of the treatment of the needy under the new Act:

a poor woman, 70 yrs of age, bearing upon her back the tattered evidence of past respectability [entered] ... [S]he was the widow of a man once a considerable tradesman in the parish, and who had contributed to various parochial burdens ... [S]he had 2 sons [who] earned about 18s. a-week each, which was little enough to support their own families. What was the answer of the board to this woman? That while she had 2 children, and they were earning 18s. a-week each, she must look to her 2 sons for support. And when the committee were reminded that she was the widow of a man once in as good circumstances as most of themselves, they gave her 18d. and a loaf, and told her not to mention it to others, fearing the example might become expensive. Was not the same rule of justice to be enforced against the rich as against the poor?<sup>28</sup>

Addressing the chancellor of the exchequer, Thomas Spring-Rice, Harvey made an impassioned plea that if pension recipients were found wanting, they should be similarly dismissed rather than let them 'live on the national bounty – let them live on the people's industry – let them feed on the unenviable notoriety that they were sustained, by contributions coming from the highly-taxed industry of the labouring poor'.<sup>29</sup>

26 [Buller], op. cit. (19), 44.

27 *Hansard* (1838), 39, 23 November, cols. 170, 177.

28 *Hansard* (1838), 39, 23 November, cols. 175–7.

29 *Hansard* (1838), 39, 23 November, col. 177.



The analogy between the two disproportionate modes of reward was further developed by the Liberal MP and historian George Grote, who warned of the consequences of economic disparity in awarding pensions ‘simply as a means of gratifying courtly favour and caprice’:

you place yourself in awful contradiction with the strict principle involved in the Poor-law Amendment Act, and that in the present temper of the nation, you cannot too carefully avoid the suspicion of administering relief strictly towards the labouring classes, and indulgently towards others.<sup>30</sup>

Spring-Rice deflected this suggestion and claimed that the ‘relief granted under the Poor-laws was not a return for public service, but a contribution for the relief of the pauper’s necessities’.<sup>31</sup> The name of Mary Somerville was again thrown into the discussion, unsurprisingly, by Charles Buller. Following Harvey’s lead, Buller lamented not only that had the fund been ‘perverted’ to allow Somerville a pension instead of more worthy male candidates such as William Wallace, professor of mathematics at Edinburgh, but also that she ‘was in perfectly easy circumstances’ and her talent was, effectively, anomalous, ‘confined to the acquirements of branches of learning to which her sex had not aspired’.<sup>32</sup>

Mary Somerville’s pension and the reception of her first work thus brought numerous issues about the state of early nineteenth-century science to the forefront. Should those who could only dabble in scientific pursuits be permitted to receive public money? Should financial awards be distributed only for original and thus socially beneficial discovery? Was it enough to explain complex theories to largely uncomprehending audiences? If Somerville had not educated anyone in celestial mechanics, then why should she be in receipt of money collected from precisely the people who could think of very little to do with all those funny hieroglyphs?

But to press such questions would be to follow too closely the arguments of Buller and miss key aspects of the pursuit of the sciences in the early nineteenth century. In a society where writers of both science and literature were attaining the status of heroes and scientific discoveries were altering the face and pace of the country, the decision to award public money to those who were contributing to the changes might seem long overdue. Lacking what Charles Babbage labelled in his 1830 *Reflections on the Decline of Science in England* the status of a specifically scientific ‘class’, early nineteenth-century British scientific society was built upon what one historian of astronomy has called a ‘Great Amateur’ tradition.<sup>33</sup> Letters from Mary Somerville to Charles Babbage reinforce this suggestion of a community which thrived on sociable interaction, where scientific ideas were exchanged through a lively epistolary network, as well as through the circulation of books and manuscripts and conversationally

30 *Hansard* (1838), 39, 19 December, cols. 1285, 1297.

31 *Hansard* (1838), 39, 19 December, col. 1303.

32 *Hansard* (1838), 39, 19 December, col. 1316.

33 Charles Babbage, *Reflections on the Decline of Science in England and on Some of Its Causes*, London, 1830, 11; Chapman, op. cit. (4) and Chapman, *The Victorian Amateur Astronomer: Independent Astronomical Research in Britain, 1820–1920*, Chichester and New York, 1998.

during parties or soirées. Indeed, in the *Personal Recollections* Somerville proudly explained that she was still able to keep up her hectic social schedule while she wrote *Mechanism of the Heavens*: ‘I was a considerable time employed in writing this book, but I by no means gave up society, which would neither have suited Somerville nor me.’<sup>34</sup> During the 1830s, when she was composing and revising her first works, Somerville wrote several times to Babbage for the loan of books or for personal consultations. On 18 June 1830 Somerville hoped Babbage could lend her Plana’s theory of the Moon,<sup>35</sup> while on 6 November 1835 she was eager to find out more about Professor Powell’s success in ‘bringing the dispersion of light under the laws of the undulating theory’ and required Babbage to furnish her with ‘some account of it, or can you tell me if he has published any thing on the subject and where’.<sup>36</sup> Revisions for the third edition of *On the Connexion of the Physical Sciences* in 1836, however, required a private discussion, Somerville requesting Babbage emphatically to ‘bring’ a solution to her difficulties.<sup>37</sup>

As Somerville’s correspondence with Babbage reveals, the higher-level pursuit of scientific studies required constant access to often expensive books held by a very few wealthy non-academic individuals. Those who could afford actively to pursue scientific interests, like Babbage, were blessed with a private income; others, like Somerville, without the benefit of access to university libraries or the reading rooms of scientific associations or clubs, relied heavily upon the goodwill of friends and relatives. Yet it was Babbage whose *Reflections* pleaded for the deserved recognition due to the sciences in contemporary society. On becoming Prime Minister in 1835, Robert Peel, himself an accomplished mathematician and influenced by Babbage’s ‘declinist’ arguments, implemented the first scientific pensions. These awards were to be distributed apolitically, based solely on merit, honouring science as a whole as well as the named individual. *The Times* quoted Peel’s anxiety ‘to relieve the country from a charge of perfect indifference to subjects of scientific nature’.<sup>38</sup> Indeed, both Peel’s speeches and private correspondence stressed the public benefits to be achieved from the creation of scientific pensions and the national pride to be won from sponsoring scientific endeavours. The pensions, Peel stated, were to be awarded ‘on a public Principle’, as ‘a Public claim’,<sup>39</sup> for those who ‘have rendered a service to the public, and to enable those who have rank and title but no means of maintaining them to live at least in public dignity’.<sup>40</sup>

It was, however, precisely this ‘publicity’ principle which placed Mary Somerville at the centre of the Civil List and Poor Law debates. As the general reception of *Mechanism of the Heavens* revealed, Somerville’s writing deflected and bemused rather than attracted public understanding. It worked against its own brief, confining itself

34 McMillan, op. cit. (6), 135. The Somervilles’ financial concerns often seem to stem from this need to live an entertaining, sociable existence, often way beyond their means.

35 Mary Somerville to Charles Babbage, 18 June [1830], British Library (BL) Add. MS 37185 f. 231.

36 Somerville to Babbage, 6 November [1835], BL Add. MS 37189 f. 189.

37 Somerville to Babbage, 26 February [1836], BL Add. MS 37189 f. 307.

38 *The Times*, 5 August 1830.

39 Sir Robert Peel to Mary Somerville, 30 March [1835], BL Add. MS 40418 f. 316.

40 Quoted in Patterson, op. cit. (11), 157.

solely to the few, narrowing rather than enlarging scientific boundaries. But the small comprehending audience viewed the text quite differently. For the scientific elite, Somerville's writing had, in fact, bolstered the public claims of science.

After the critical turbulence resulting from Babbage's polemical *Reflections*, the metropolitan scientific community sought to prove its worth. It was in fact the publication of Somerville's *Mechanism of the Heavens* in December 1831 which countered the declinist argument and helped to earn scientific authors the public credit they deserved. Every reviewer of the text, except Buller, pointed not only to the excellence of the achievement but also to the fact that, although it had exceeded the SDUK's original commission, Somerville's interpretation should be praised for its public importance. The astronomer Francis Baily succinctly labelled the text 'of great benefit to the public; not only as tending to their improvement, but removing the imputation of the DECLINE OF SCIENCE in this country'.<sup>41</sup> In the *Edinburgh Review* Thomas Galloway introduced Somerville to the public as an original thinker and experimenter, drawing attention to the difficulty and skill of her chosen field as well as the 'independent form' of the work.<sup>42</sup> The reviewer from the *Literary Gazette* also commented upon the text as a display 'consonant with the boldness and vigour of an original thinker'.<sup>43</sup> The Cambridge academic George Peacock expressed a view diametrically opposed to that of the acerbic Buller. Far from not 'enlarging the bounds of scientific discovery' in any way, Peacock noted that Somerville's work would 'contribute greatly to the extension of the knowledge of physical astronomy, in this country, and of the great analytical processes which have been employed in such investigations. It is with this view that I consider it to be a work of the greatest value and importance'.<sup>44</sup> References to Somerville's sex were not patronizing but generous and, although expressing the amazement natural at so impressive a production from an uneducated woman, the reviews did not suggest that it was necessary for Somerville to efface her womanliness in order to write the book. Instead they drew attention to the lack of affectation and vanity in her style (failings characterized as female), rather reviewing her work as, deservedly, a serious scientific publication.<sup>45</sup>

So when Peel came to place Mary Somerville on the Civil List her public standing within the scientific community was justifiably high, both as an experimental scientist and as the translator of one of the most important mechanical treatises of the age. Ironically, however, the financial support of scientific pensions had not come as expected from the Whigs and Lord Brougham, dedicatee of *Mechanism of the Heavens*. Civil List pensions, as the Commons debates revealed, were politically inflected. In December 1835 the Tory *Fraser's Magazine* could gloat that the supposedly reforming Whigs had done nothing to aid scientific progress in Britain, while Peel

41 Quoted in Patterson, *op. cit.* (11), 87.

42 *Edinburgh Review* (April 1832), 55 (109), 1–25.

43 *Literary Gazette* (December 1831), 778, 806–7.

44 McMillan, *op. cit.* (6), 140.

45 This is a point also made in the most recent full-length book on Somerville: Kathryn A. Neeley, *Mary Somerville: Science, Illumination and the Female Mind*, Cambridge, 2001, 126.

had actively ‘sought out’ the deserving.<sup>46</sup> In 1837 Radical and Liberal members of Parliament such as Buller or Whittle Harvey would, in the light of the harsh consequences of the New Poor Law, twist this debate to highlight the injustice of awarding pensions to those who supposedly ‘deserved’ assistance. The Somerville family viewed Brougham’s volte-face as especially tantamount to treachery. Somerville’s son from her first marriage, Woronzow Greig, responded vehemently in a letter to his mother:

What a contrast does this generous conduct [by Peel] form with that of the late Administration the most powerful admirers and supporters of science will that ungentlemanlike scoundrel Brougham ever dare to look you in the face again? ... but enough of him he is not worth a thought, the blackguard.<sup>47</sup>

Coupled with the change of government, Somerville had also achieved more general popularity with the publication of her second book, *On the Connexion of the Physical Sciences*. The work was already available in a second edition by the time Peel wrote to Somerville in March 1835 with his offer of a pension. Rather than continue with the publication of further mathematically complex writings, which John Murray was evidently reluctant to publish, Somerville turned her attention after *Mechanism of the Heavens* to a more accessible format, in the realization that this was where the financial prospects lay. As Harriet Martineau claimed in her *Daily News* obituary of Somerville in December 1872,

the sort of pressure Mrs Somerville then underwent from her publisher finally convinced her of her own unfitness for popularising science. Many an inferior student would, in fact, have done it much better. When there was already no time to lose in regard to her proof-sheets, she had hint upon hint from Mr Murray that this and that other paragraph required to be made plainer to popular comprehension. She declared that she tried very hard to please Mr Murray and others who made the same complaint, but that every departure from scientific terms or formulae appeared to her a departure from clearness and simplicity; so that by the time she had explained and described to the extent required, her statements seemed to her cumbrous and confused. In other words, this was not her proper work.<sup>48</sup>

The shift to popularity was clearly an awkward one for Mary Somerville.

But Somerville needed to conform in order to publish her writings. A greater concentration on economic considerations in the later 1830s is revealed on one occasion by the worries Somerville suffered over an editorial decision not to publish an article on meteors for the *Quarterly Review*, which would have earned her between £30 and £50.<sup>49</sup> The prospect of insolvency clearly haunted the Somervilles. Mathematical

46 ‘Shewing how the Tories and the Whigs extend their patronage to science and literature’, *Fraser’s Magazine* (December 1835), 12, 703–9. An extract was also printed in *The Times*, 28 November 1835. This politically partisan article mainly concerned Prime Minister Lord Melbourne’s treatment of Michael Faraday’s doubts over accepting a pension, which Peel had desired to award before his fall from office in April 1835. Melbourne was purported to have called the pension system ‘humbug’.

47 Quoted in Patterson, op. cit. (11), 163.

48 [Harriet Martineau], ‘The late Mrs Somerville’, *Daily News*, 3 December 1872, 2, reproduced in *Collected Works*, op. cit. (3), i.

49 See Patterson, op. cit. (11), 179.

treatises could henceforth only be indulged in at leisure. Encouraged by the French mathematician Poisson to follow her inclination for analysis, Somerville worked on 'the density and compression of the earth'. 'My work was extensive', she claimed proudly in her *Personal Recollections*, 'for it comprised the analytical attraction of spheroids, the form and rotation of the earth, the tides of the ocean and atmosphere, and small undulations'. She also began a 'work of 264 pages on curves and surfaces of the higher order'.<sup>50</sup> It is clear from the reception of *Mechanism of the Heavens* outside the scientific community that these complicated theoretical works would not sell and that, as Somerville herself had realized from the outset, the 'Preliminary Dissertation' would be the only part of the work 'intelligible to the general reader'. Added to the financial worries that even after the award of her pension were exacerbated due to bad investments, Mary Somerville made a conscious decision to capitalize upon the intelligibility of the 'Preliminary Dissertation' and more accurately gauge a market with her next production, omitting all the mathematical 'hieroglyphics' for which she had been so censured.<sup>51</sup> It was a decision she would regret for the rest of her life. Until the day of her death, according to her daughter Martha, she carried out 'the revision and completion of a treatise, which she had written years before, on the "Theory of Differences" (with diagrams exquisitely drawn), and the study of a book on Quaternions' – the two books Murray had decided not to publish in the mid-1830s. The 'mistake' she had made was to depart from 'the natural bent of [her] mind' and divert her energies towards the 'popular'. Somerville suffered particularly over the publication of her final unenthusiastically reviewed book, *On Molecular and Microscopic Science*, which was issued only in one edition in 1869. As she later confessed in her *Personal Recollections*, her desire had been to 'devote' herself 'exclusively' to mathematics, where she could have contributed 'something useful, as a new era had begun in that science'. Instead she turned once again to the 'popular' in the hope of securing sales. 'Preferring analysis to all other subjects', Somerville's intellectual inclination was for mathematics, but her practical side realized the need for financial prudence. A 'natural bent' would not provide the income to be obtained from writing for the public.<sup>52</sup>

From 1834 the wider public indeed appeared to recognize Somerville's writings as popular rather than elitist. In a spectacular reversal, reviewers for the large periodicals now noted their accessibility and their readability. The previously hostile *Athenaeum*

50 McMillan, op. cit. (6), 162.

51 McMillan, op. cit. (6), 141, 145. In support of the argument that Somerville was anxious to earn more money through her writings than *Mechanism of the Heavens* had provided, Patterson (op. cit. (11), 95) suggests, fascinatingly, that Mary Somerville did not attend the second meeting of the British Association for the Advancement of Science, held at Oxford in 1832, not because she feared the encouragement her presence would give to less able females, but in fact because the Somervilles were chronically short of money. Second ('General introduction', op. cit. (3), i, p. xxx) notes that the Somervilles were 'hardly destitute: with an annual income of almost £900 a year – a third of it from Mary's civil list pension, some from royalties and most from William's retirement at half-pay'. But with two grown-up daughters to support, their peripatetic lifestyle in Italy from the 1840s suggests a perceived lack of security and highlights their inability to live within their means and return to England.

52 McMillan, op. cit. (6), 301, 273, 162.

was seduced and issued only superlatives: ‘a most delightful volume’ and ‘with the exception of Sir John Herschel’s treatises, the most valuable and pleasing work of science that has been published within the century’. Stylistically enticing, the *Connexion* was also attractive in its content: ‘at the same time a fit companion for the philosopher in his study, and for the literary lady in her boudoir; both may read it with pleasure, both consult it with profit’.<sup>53</sup> Instead of languishing unread, like *Mechanism of the Heavens*, the *Connexion* offered both amusement and instruction. Indeed, as the *Athenaeum* noted, even women could enjoy Somerville’s work. *Mechanism of the Heavens* had been viewed by women with both admiration and perplexity. The novelist Maria Edgeworth offered perhaps the most telling reading of the only part she could hope to comprehend, the ‘Preliminary Dissertation’, in a letter to Somerville reproduced in *Personal Recollections*:

For my part, I was long in the state of a boa constrictor after a full meal – and I am but just recovering the powers of motion. My mind was so distended by the magnitude, the immensity, of what you put into it! I am afraid that if you had been aware of how ignorant I was you would have felt that you were throwing away much that I could not understand, and that could be better bestowed on scientific friends capable of judging of what they admire. I can only assure you that you have given me a great deal of pleasure; that you have enlarged my conception of the sublimity of the universe, beyond any ideas I had ever before been able to form.<sup>54</sup>

The level of concentration required here, and Edgeworth’s confusing and confused spatial metaphors, are in complete distinction to the *Athenaeum*’s suggestion that Somerville’s second book can be read with the leisure and intellectual security implied by the location of the boudoir. A lifelong believer in the need for improved female education, the autodidact Somerville dedicated the *Connexion of the Physical Sciences* to Queen Adelaide and also revealed her ‘endeavour to make the laws by which the material world is governed more familiar to [her] countrywomen’.<sup>55</sup> As the dramatist Joanna Baillie noted in a letter to Somerville, she had ‘done more to remove the light estimation in which the capacity of women is too often held, than all that has been accomplished by the whole sisterhood of poetical damsels and novel-writing authors’.<sup>56</sup>

With such popular recognition, even the previously sceptical *Athenaeum*, Buller’s mouthpiece, could now comment on ‘the merited pension settled on Mrs Somerville’.<sup>57</sup> Peel’s letter to Somerville notifying her of the pension stressed her vital contribution to the enlargement of the bounds of science. Explaining that he was only ‘fulfilling a public duty’ in conferring this honour, he found it ‘impossible to overlook’ Somerville’s ‘successful prosecution of studies of the highest order, both from the importance of the objects to which they relate, and from the faculties and acquirements which they demand’. Even though she had inherited money from her first marriage and had an extremely supportive husband, as a woman Somerville relied exclusively upon the

53 *Athenaeum*, Saturday, 15 March 1834, 202–3.

54 McMillan, op. cit. (6), 163.

55 Mary Somerville, ‘Dedication’, *On the Connexion of the Physical Sciences*, London, 1834.

56 McMillan, op. cit. (6), 165.

57 *Athenaeum*, Saturday, 11 April 1835, 280.

efficiency of William Somerville's financial management and the small royalties from her books. Peel's 'provision w[ould] enable [her] to pursue [her] labours with less of anxiety, either as to the present or the future'. Awarded 'to encourage others', Somerville's deserved pension was offered for her 'bright example' and 'scientific attainments'.<sup>58</sup>

Somerville did indeed *encourager les autres*, especially women, as the reception of the *Connexion of the Physical Sciences* revealed. But what of the working men upon whose livelihood, according to Buller and Harvey, Somerville's pension so fatally impinged? Somerville's new work, though still far beyond the poorest, cost 7s. 6d. and the more accessible, cheaper format was reflected in vastly increased sales figures. Four editions were printed in the 1830s alone and despite a price rise to 10s. 6d. after the first, rapidly selling, edition, the total number sold during this period was 9,000 copies.<sup>59</sup> A review of the *Connexion* also offered a different interpretation of the impact of Mary Somerville's work upon the working classes. In March 1834 the *Mechanics' Magazine*, a self-help journal for the working man, offered a very prompt and rapturous review of Somerville's text. Realizing that 'cultivation of scientific knowledge is at once the glory and the peculiar characteristic of the days in which we live', the reviewer delighted in Somerville's contribution to 'the spread of knowledge'. 'Already well-known to all the learned' and now, suggested the reviewer, certain 'by the noble effort she had here made to reduce to popular comprehension the various important results of scientific research, her name will become through all future time equally familiar to the unlearned of every nation in the civilised world'. The concluding advice of the journal was the opposite to Buller's suggestion of the text's resting place. By no means should the book idly be 'placed on the shelf': 'Instead of that we say – read it!'<sup>60</sup> Rather than perplexedly turning over Somerville's work in their grubby hands, as Buller would have it, working men were actively profiting from the contents. So much so that in October 1835 Somerville sent a complementary copy of the second edition of the *Connexion* to Birkbeck's Mechanics' Institution. Mary Somerville may have been receiving a pension collected from 'the highly taxed labouring poor', but through her endeavour to relay the most complex ideas of physical science to new audiences, she was in fact contributing to rather than detracting from their industry.

Yet there was a final twist to the Somerville narrative. On closer examination of Peel's words, it is apparent that the pension was not being awarded for popular acclaim or accessibility but for her 'successful prosecution of studies of the highest order'. The spatial metaphor is unmistakable, especially when the majority of the letter concerned 'public' duty. Noticeably, the reviews of Somerville's work by scientific practitioners also stressed a different sort of 'public' to that mentioned by the Commons debaters. By concentrating upon a refutation of declinist arguments and thus the national and international benefit to be gained by the scientific community, partisan reviewers,

58 Sir Robert Peel to Mary Somerville, 30 March 1835, BL Add. MS 40418 f. 316.

59 Sales figures from the John Murray Archive, reprinted in Secord, 'General introduction', op. cit. (3), iv, p. xi. The ten nineteenth-century editions, including the final one, which was revised by Arabella Buckley, sold a total of 17,500 copies.

60 *Mechanics' Magazine* (29 March 1834), 20, 442–7, 442, 447.

in similar fashion to Peel, focused on a limited conception of the public. Furthermore, there were still dissenting voices concerning Mary Somerville's oeuvre, including her own. A talk given by Professor John Nichol of the University of Glasgow in 1849 illustrated the chasm between Somerville and her desired audience in ways similar to the Commons debates. Reprinted in a volume entitled *The Importance of Literature to Men of Business*, Nichol's speech was joined by those of other luminaries dispensing educational advice such as David Brewster, Benjamin Disraeli and John Herschel. *The Importance of Literature* was a collection aimed at 'lend[ing] willing and earnest aid to the cause of social progress through the diffusion of knowledge' and 'present[ing] a hand-book to every young man desirous of making the most of his leisure hours, and of being directed by those most capable of giving advice in the prosecution of mental improvement'.<sup>61</sup> Delivered at the Stirling School of Arts, Nichol's lecture was concerned with the public accessibility and delivery of scientific thought. Mary Somerville's *Mechanism of the Heavens*, despite its 'excellent' content, came in for extensive criticism. As a university teacher and political radical, Nichol lambasted Somerville's 'foreign' text:

turn over the pages, observe them one after the other full of symbols as unintelligible apparently, and uninviting as a work in Arabic, – who shall pretend to teach *this* to a popular audience? And if such really be the science of astronomy, then is not what we can do or can teach – a mere sham, a set of loose assertions, and in truth no science at all?<sup>62</sup>

Rather than inviting her readers to share her knowledge, Somerville had done the opposite and alienated them through her use of complex and abstruse mathematical formulae, which simply would not translate to a wider audience. Nichol drew his audience's attention to the discovery of the secrets of the Coptic language which had recently enabled a deciphering of Egyptian history. What was once beautiful but silent had now revealed the language of the past to all in the present. Making an analogy with the translation of the heavens, Nichol asked his audience if they thought that such hieroglyphs, 'quite as repellent of the general reader, as Mrs Somerville's algebra', should be accessible only to those who understood the very essence of the Coptic language, in the way that Somerville expected her readers to penetrate to the very depths of mathematical and scientific terminology:

Is it, then, for one moment to be counted illegitimate – contrary to the ordinances of what they term logic – that men's hearts shall warm beneath the midnight skies, and feel awed by a sense of the order prevailing through their august hosts, unless, after first criticising and duly weighing the methods by which the solitary student – working, not for himself merely, but for all men and all time – has been enabled to descry that order? Verily, how absurd is this! Am I to benefit in nowise by the toils of the traveller, unless – as boon companions – we have carried each other's knapsacks?<sup>63</sup>

61 Anon., 'Preface', in *The Importance of Literature to Men of Business: A Series of Addresses Delivered at Various Popular Institutions* (ed. John P. Nichol), London and Glasgow, 1852, pp. v–viii, pp. vi, viii.

62 Anon., 'Address delivered at the soiree of the Stirling School of Arts, on the 10th January 1849', in *The Importance of Literature to Men of Business: A Series of Addresses Delivered at Various Popular Institutions* (ed. John P. Nichol), London and Glasgow, 1852, 212–52, 217. Original emphasis.

63 Anon., *op. cit.* (62), 218–19.



With this image of the solitary traveller, supposed to discover and elaborate for the benefit of all, Nichol revealed just how celestial Somerville's mechanics really were for her average reader. Concluding his discussion of Somerville with a flourish, Nichol thundered that 'we do not teach what is written in that volume of Mrs Somerville's, or other books of corresponding aim. I say, emphatically, that we do not use such books, because we do not desire to teach what is in them'. Dishonestly withholding the 'fundamental dynamical laws' from her readers, Mary Somerville 'deduces' rather than 'explains', 'unfolds' or 'illustrates'.<sup>64</sup>

The *British Critic* encapsulated some of the frustrations Somerville herself felt in trying to write for a more popular audience. In a review of the *Connexion of the Physical Sciences* it concluded, 'As a book of reference to the most lately ascertained conclusions it may be useful; but certainly to the beginner in science it would be perfectly unintelligible, and as digest for one more advanced it is incomplete'.<sup>65</sup> In his obituary of Mary Somerville in February 1873, Richard Proctor began his assessment of the *Connexion* with a positive statement: 'It is a work full of interest, not only to the student of advanced science, but to the general reader.' But the praise was swiftly qualified:

In saying this we indicate its chief merit and its most marked defect. It is impossible to conceive that any reader, no matter how advanced or how limited his knowledge, could fail to find many most instructive pages in this work; but it is equally impossible to conceive that any one reader could find the *whole* work, or even any considerable portion, instructive or useful.

The problem, claimed Proctor, was

that Mrs Somerville recognised, or, which is practically the same thing, wrote as if she recognised no distinction between the recondite and the simple. She makes no more attempt at explanation, when speaking of the perturbations of the planets or discussing the most profound problems of molecular physics, than when she is merely running over a series of statements respecting geographical or climatic relations. It would almost seem as though her mind was so constituted that the difficulties which ordinary minds experience in considering complex mathematical problems had no existence for her.<sup>66</sup>

Somerville's supreme control of her material ensured that the reader was prevented, through the lack of 'explanation' expected in a popular text, from achieving any more than a superficial understanding of the physical sciences.

The *Edinburgh Review* analysis of the same text, written by Somerville's friend and fellow Scot David Brewster, presented a different point of view, but one which still questioned Somerville's public position:

Mrs Somerville's great mathematical acquirements, her correct and profound knowledge of the principles of physical science, and the talent for original enquiry which she has already evinced in her paper on the magnetism of the violet rays, induce us to urge her to original investigation ... The fame of scientific authorship is but a poor compensation for its toils; and the fleeting celebrity of writing the best book upon a science which is undergoing continual change, and demanding new expositors, cannot gratify a mind like hers.<sup>67</sup>

64 Anon., op. cit. (62), 220.

65 *The British Critic* (1834), 16, 123–32; 132.

66 P[roctor], op. cit. (5). Original emphasis.

67 *Edinburgh Review* (1834), 60, 154–71, 171.

Far from praising her decision to write for wider audiences, Brewster was actively critical of a move which ensured that Somerville would be subject to the arbitrary sway of an undistinguishing and indistinguishable general public. Instead, lamented Brewster, Somerville should have turned her ‘great’ and ‘profound’ talents to ‘original investigation’, to experiment and analysis. The importance of Somerville’s work to the scientific community was also reflected in the Cambridge academic William Whewell’s *Quarterly* review of the *Connexion*. For Whewell, Somerville’s work embodied the true scientific enterprise. Reiterating an idea he had first presented at the previous year’s British Association for the Advancement of Science meeting, Whewell proposed for the first time in print a comprehensive title for those engaged in all forms of scientific study at a time when the sciences were beginning to splinter from the all-inclusive natural philosophy into more professional fields of physics, chemistry, natural history and so on. ‘Scientist’, suggested Whewell, could be employed in similar fashion to artist or economist.<sup>68</sup>

As Somerville moved away from the more elite forms of mathematical analysis in her writing, Whewell placed her correspondingly at the heart of the debate over the future direction of the sciences. Paradoxically, while Whewell valued the elements of ‘connexion’ between what were soon to become different disciplines and thus harked back to the glory of interdisciplinary unity, the title he chose became one which would be commonly adopted as the movement towards professionalization grew. By according Somerville the title of scientist, Whewell’s gesture illustrated the permeability between the professional and the popular. Somerville was clearly never reconciled to the time she was forced to set aside for her ‘popular works’ at the expense of her mathematics, yet she realized, in the same manner as the *British Critic*, how her seductive style had lured even the uncomprehending to believe, erroneously, that they had understood her work. For, as Somerville noted with pride in her *Personal Recollections*, even her supposedly accessible work of the 1830s was essentially unfathomable: ‘No one has attempted to copy my *Connexion of the Physical Sciences* the subjects are too difficult.’<sup>69</sup> At the centre of the supposedly accessible lay an unyielding core. Despite her illusion of popularity, Mary Somerville’s devotion to the abstract ensured that she had the last laugh.

68 [William Whewell], ‘Review of “On the Connexion of the Physical Sciences” by Mrs Somerville’, *Quarterly Review* (1834), 51, 54–68.

69 McMillan, op. cit. (6), 238.