
Book Section:
Ellis, H. orcid.org/0000-0001-8571-0340 (2024) Whewell, Gender and Science. In: Verburgt, L.M., (ed.) William Whewell: Victorian Polymath. Science and Culture in the Nineteenth Century . University of Pittsburgh Press , Pittsburgh ISBN 9780822948292

<CN>11

<CT>Whewell, Gender, and Science

<CA>Heather Ellis

<TX>When William Whewell has been discussed in relation to gender and science in nineteenth-century Britain, he has sometimes been seen as an advocate of women's involvement in science.[1] He is often remembered (erroneously) as having coined the term *scientist* as a gender-neutral term for a cultivator of science in honor of the famous female mathematician and science writer Mary Somerville.[2] In a review of Somerville's *On Connexion of the Physical Sciences* in the *Quarterly Review* in 1834, Whewell does indeed offer fulsome praise for her book, referring to "Mrs Somerville's able and masterly . . . exposition of the present state of leading branches of the physical sciences."[3] On closer inspection, however, it becomes clear that Whewell was not a far-sighted visionary in terms of women's participation of science, but rather much more in line with the attitudes of contemporary men of science. If we look more closely at his praise for Somerville, both in the *Quarterly Review* and elsewhere, we can see that it is instrumentalized by Whewell to argue for a particular form of scientific masculinity, namely the model of gentlemanly science that the British Association for the Advancement of Science (BAAS) had been promoting since its foundation in 1831.[4] As a prominent Cambridge mathematician, Whewell was intimately involved with the establishment of the BAAS and is counted among the "gentlemen of science" who initiated the new association.[5] Referring to Somerville's achievement in the preface to the 1836 edition of his *On the Free Motion of Points, and on Universal Gravitation*, Whewell declares, "Our willingness to adopt a more extended study of the mechanism of the heavens into our academic system must needs increase, when these severer studies, thus shewn to be reconcilable with all the gentler train of feminine graces

and accomplishments, can no longer, with any shew of reason, be represented as inconsistent with a polished taste and a familiar acquaintance with ancient and modern literature."[6] Here he is specifically calling for the natural sciences to be made a more integral part of university education, a topic on which he spent so much of his time, first as a fellow and tutor, and later as master of Trinity College, Cambridge.

<H1>Whewell, Women, and a Gentlemanly Mode of Science

<TX>The first element to explore here is Whewell's alignment of Somerville's "feminine graces and accomplishments" with what he refers to as "a polished taste and a familiar acquaintance with ancient and modern literature." There is an assumption operating here that a gentlemanly persona, characterized by "a polished taste and a familiar acquaintance with ancient and modern literature," partakes of and exhibits something of these very "feminine graces and accomplishments." Any model of masculinity that positions itself as celebrating in any way explicitly feminine virtues is at considerable risk of attack from those seeking to accuse its adherents of effeminacy and unmanliness. In this one statement Whewell encapsulates much of the fragile and unstable position in which British science found itself in the early nineteenth century with respect to its reputation as a masculine practice.[7]

A brief discussion of the position of science as a gendered practice in this period is necessary here to understand what was at stake when Whewell made these claims. When it was founded in 1831, the BAAS was seeking in part to revivify science and reform it as a socially acceptable practice for gentlemen. It was reacting to a debate that was raging in the periodicals at the time about the "decline of science" in Britain.[8] Science was still frequently aligned with the activities (and social disadvantages) of the pedantic university scholar, despite (as Whewell makes clear above) the relative weakness of the natural sciences (in comparison with classical

studies and mathematics) at Oxford and Cambridge.[9] Scientists (like university pedants) were seen as unmanly, socially awkward, and disconnected from the cut and thrust of conversation and business. One of the aims of the BAAS was to transform the investigation of the natural world into a practice fit for gentlemen. It approached this task in a number of ways, including the relentless recruitment of England's gentry and aristocracy to host, support, and attend its peripatetic annual meetings. Ironically, this sustained attempt at courting aristocratic favor resulted in the new association, within a few years, acquiring a reputation for another form of effeminacy—this time one associated with the pampered, lazy, and excessive lifestyles of the aristocracy.[10] Such noble sponsorship had clearly not been traditional for scientific gatherings outside the Royal Society, underlining the very different social world with which scientists had previously been associated. At the 1837 BAAS meeting in Liverpool, visiting men of science were treated to "mountains of venison and oceans of turtle," with the Cambridge geologist and close friend of Whewell, Adam Sedgwick, asking, "Were ever philosophers so fed before? . . . Twenty hundred-weight of turtle were sent to fructify in the hungry stomachs of the sons of science!"[11] Emulating the lifestyle of the aristocracy also opened up the BAAS to charges of effeminacy because one of its defining characteristics was a mixed-sex sociability in which women played a significant role, civilizing the manners and behavior of the men taking part and elevating the tone of meetings.

Whewell seems to have been personally invested in this attempt to transform the public image of science into a socially acceptable, gentlemanly practice. Unlike many of his fellow dons, Whewell had himself come from lowly origins and despite his best efforts had acquired a reputation in Cambridge for his (relatively) coarse expressions and social behavior. As Richard Yeo writes, "For a time Whewell was not only very much alone, but also seen as unusual. His

manners and speech were considered rude or rustic. There is a report of Whewell's comment upon a herd of pigs being driven past the college gate soon after his arrival: 'They're a hard thing to drive—very—when there's many of them—is a pig.'"[12] From his early days as an undergraduate, Whewell was keen to get out of Cambridge and see London society. As Yeo records: "Having visited London for the first time in 1815 Whewell admitted to his sisters that he had only seen the city from 'the outside' because, not knowing anyone there, he could not 'see anything of its society.'"[13] It seems likely that Whewell would have felt doubly excluded from dominant models of gentlemanly masculinity: first on the grounds of his (relatively) poor, rustic origins, as Richard Yeo has highlighted,[14] and second as a university scholar. The social distance apparent between the aristocracy, courted so assiduously by the BAAS in its early years, and many practicing men of science confirms the survival well into the nineteenth century of the substantial social gap between the scholar and the gentleman that Steven Shapin observed in the seventeenth and eighteenth centuries.[15] As late as September 1840, when the geologist Charles Lyell wrote to Whewell informing him of his nomination for the BAAS presidency in the following year,[16] Whewell was extremely reluctant to be put forward for the role, on the grounds that he was not a man of sufficiently high social rank and influence. "It could only produce failure and ridicule," he wrote to Roderick Impey Murchison, "to have me put in a place which should be occupied by some person of great local position, influence and popularity," in short, a "person coming nearer to the usual conditions, and likely to give the business its usual attractions."[17]

Thus, when we look more closely, we see that Whewell's endorsement of Mary Somerville and of women's participation in the world of science generally, was more about recommending a particular gentlemanly mode of science, characterized by patterns of mixed-sex

sociability, fashionable among the aristocracy, designed to counter still powerful critiques of men of science as unworldly pedants, than it was about explicitly promoting women's involvement in scientific research. If we place Whewell's comments within the context of contemporary debates about the participation of women in the activities of the BAAS (debates in which Whewell himself took an active part) this distinction becomes clearer. Mixed-sex sociability was an important part of aristocratic culture and central to the civilizing role of knowledge during the Enlightenment. Jack Morrell and Arnold Thackray specifically identify the involvement of women as a "major factor in the change from natural knowledge as a remote and cloistered virtue to science as a public resource."[18] The involvement of women in the early years of the BAAS was also key to the transformation of the public reputation of men of science from retiring, effete scholars to active, socially engaged gentleman scientists. The first ever conversazione, which emulated elite mixed-sex social gatherings on the continent, was held in 1831 at the first BAAS meeting at York. The *Yorkshire Gazette* remarked on the presence of "elegant females" and "fashionable ladies" and how "the charms of beauty and the varied stores of philosophy seemed united."[19]

A powerful case could be made for admitting women to sectional discussions at BAAS meetings in terms of boosting the masculine reputations of the male scientists presenting there. While masculinity could certainly be validated by peers within an all-male audience, women also had an important role to play in terms of confirming the masculine reputations of male speakers. The obvious admiration of his largely female audiences had been a significant factor in establishing Humphry Davy's reputation as a Romantic hero of science. As Jan Golinski writes, "His deportment as a lecturer at the Royal Institution made use of conventions of masculine display before an audience that was, to a significant degree, female. The command of his

audience that Davy achieved was a significant resource in making his reputation as a discoverer."[20] Some leading BAAS members in the early years of the association's history commented similarly about the role of women at meetings, that they stimulated the assembled men of science to fresh efforts. During the 1832 meeting at Oxford, Adam Sedgwick described the ladies' gallery as "that blazing crescent which had decorated the meetings" and spurred the philosophers on to new efforts. Whewell and Sedgwick pushed hard for the increased presence of the wives and daughters of scientists at meetings as they were convinced it encouraged a gentlemanly atmosphere.[21]

This view of the potentially positive role of female audiences in helping to construct the public masculine reputations of male scientists is confirmed in recent research carried out by Charles Withers and Rebekah Higgitt. Considering female audiences for Section E (geography) of the BAAS, they write that "women provided a successful foil to the heroic, manly explorers they flocked to hear." In this way they helped to reinforce the gendered dichotomy central to the BAAS's self-understanding in its early years between "male expert/female audience."[22] Withers and Higgitt argue that, in general, women were content to adopt a passive, admiring role when watching and listening to male scientists at BAAS meetings. "Seeing and describing the scientific lions took a prominent place in women's accounts of BAAS meetings."[23] Reflecting on the masculine qualities of the various men of science they encountered was a favorite activity according to a study of women's diaries. They would try to discern the mental character of particular scientists or traces of the hardships they had endured by scrutinizing their faces and deportment. Some of the thoughts recorded by women attending BAAS meetings at the time confirm this impression. Sara Jane Clarke, for example, wrote that she was "truly impressed by the manner and presence" of scientists like Thomas Romney Robinson and David Brewster.[24]

Harriet Martineau thought that women chiefly attended BAAS gatherings "to sketch the *savans*."[25] *The Times* likewise reported of the 1836 meeting in Bristol that the "softer portion" of the audience were "on the full gaze, to see what kind of creature a philosopher was."[26]

This admiration on the part of female audiences, moreover, seems to have been directly encouraged by the men of science themselves. Their perceived attractiveness to women became part of their masculine image, and something they worked hard to secure. Caroline Fox, for example, records Adam Sedgwick, as "saying many soft things to the soft sex" at the 1852 meeting in Belfast.[27] We gain a little more detail from a letter written by John Herschel to his wife in 1838, relating an earlier example of Sedgwick's flattery: "Sedgwick said, in his talk on Saturday, that the ladies present were so numerous and so beautiful that it seemed to him as if every sunbeam that had entered the windows in the roof (it is all windows), had deposited there an angel."[28] When writing to Charles Daubeny about the arrangements for the 1832 Oxford meeting, Charles Babbage stressed the "importance" of "enlist[ing] the ladies in our cause." The participation of ladies guaranteed a gentlemanly atmosphere, he maintained, ensuring that "scientific men mix more in general society, and that the more intelligent amongst the upper classes . . . get a little imbued with love for science." He positively extolled the value of female admiration. "Remember the dark eyes and fair faces you saw at York," he urges Daubeny, "and pray remember that we absent philosophers sigh over the eloquent descriptions we have heard of their enchanting smiles."[29] It is important to remember, however, that this fondness for the presence of ladies did not generally extend to their active participation in scientific research. The geologist William Buckland, as BAAS president in 1832, made clear his view that women ought not to attend the scientific part of meetings; he confessed, however, that they were vital to the public image of the association: "Their presence at private parties is quite another thing," he

declares, “and at these I think the more ladies there are, the better.”[30] It was, I would suggest, in this way that Whewell thought Mary Somerville’s scientific accomplishments were most useful, not in the first instance for their own scientific merit, but because they seemed to make the practice of science more acceptable in gentlemanly circles, more consistent with “a polished taste and a familiar acquaintance with ancient and modern literature.” In other words, Somerville made it easier (and more socially acceptable) for a university scholar like Whewell to take part in scientific research.

<H1>“A Sex in Minds”: Whewell and Mary Somerville

<TX>Despite praising Somerville’s *Connexion of the Physical Sciences* as “able” and “masterly,” Whewell also denies it any claim to be considered as containing original discoveries. “Mrs Somerville’s work,” he writes, “is, and is obviously intended to be, a popular view of the present state of science.”[31] As evidence of this he quotes at length Somerville’s own dedication in which she claims to aim at nothing more than “to make the laws by which the material world is governed, more familiar to my countrywomen.”[32] Whewell goes to quite some length to reassure his readers (and one suspects himself) that Somerville’s work is no threat to men of science. Indeed, he fully endorses her expressed hope that women will learn much from her work, although not without raising the question *whether* the women of England have yet progressed far enough in their general knowledge and understanding of science to receive the full benefit of Somerville’s instruction. More than this, when asking this question, Whewell highlights precisely those tropes and stereotypes about the female character that cast them as beautiful endorsers and inspirers of male scientific activity but as potentially incapable of the firmness of mind needed to be original inquirers themselves. Indeed, he adopts a kind of flirtatious and chivalric (but ultimately condescending) attitude toward them here that reminds us

strongly of the attitude toward women at early BAAS meetings: "And if her countrywomen have already become tolerably familiar with the technical terms which the history of the progress of human speculations necessarily contains; if they have learned . . . to look with dry eyes upon oxygen and hydrogen, to hear with tranquil minds of perturbations and eccentricities, to think with toleration that the light of their eyes may be sometimes polarized, and the crimson of their cheeks capable of being resolved into *complementary colours*;—if they have advanced so far in philosophy, they will certainly receive with gratitude Mrs. Somerville's able and *masterly* . . . exposition."[33]

Whewell continues to "praise" Somerville's work in this style by going so far as to say that even men of science—and note the phraseology chosen—"individuals of that gender which plumes itself upon the exclusive possession of exact science . . . may learn much that is both, novel and curious in the recent progress of physics from this little volume."[34] This statement needs some unpacking. On the surface, Whewell is praising Somerville's book, saying that its usefulness and interest go far beyond the limited audience of "countrywomen" she addresses it to; indeed, that there are "few" men who will not benefit from reading it. However, two things are worthy of note. First, Whewell does not use the word *men* but rather "individuals of that gender which plumes itself upon the exclusive possession of exact science," reinforcing not only that "exact science" is normally considered the "exclusive possession" of men, but also that this is something that is important to their identity as men (they "plume" themselves upon it). Hence, Mary Somerville's intervention into the field of "exact science" is not in truth to be welcomed, but rather represents a threat to the status quo. This is not explicitly said by Whewell of course (as this would not be gentlemanly), but it is apparent in his somewhat condescending reference to Somerville's "little volume."

More evidence of Whewell's underlying discomfort at Somerville's achievement is provided by the extensive discussion he offers on the fact that the *Connexion of the Physical Sciences* has been authored by a woman. It is so extensive that his biographer Isaac Todhunter, writing a few short years after Whewell's death, feels the need to suggest to his readers that "perhaps too much stress is laid on the fact, which is brought prominently forward, that such a work had been written by a woman."[35] A substantial part of this discussion is taken up with the exceptional nature of Mary Somerville as a "person of real science" (he clearly does acknowledge her ability at some level).[36] He calls upon his (male) readers to validate his views about Somerville's exceptional status: "Our readers cannot have accompanied us so far without repeatedly feeling some admiration rising in their minds, that the work of which we have thus to speak is that of a woman." "There are various prevalent opinions concerning the grace and fitness of the usual female attempts at proficiency in learning and science," Whewell writes, implying it is generally not considered "graceful" or "fitting" for women to engage in scientific research.[37] Somerville, however, proves the rare exception to this rule, not principally because of her "real and thorough acquaintance with these branches of human learning, acquired with comparative ease," but rather because these abilities are "possessed with unobtrusive simplicity" that, Whewell suggests, befits the female sex. She does not, like men, "plume" herself on her achievements. In this "remarkable circumstance," Whewell writes, "all our prejudices against such female acquirements vanish,"[38] but only because Somerville takes care to act within the prescribed boundaries of what (male-dominated) society deems as acceptable female behavior. Addressing her work only to her "countrywomen," she takes care not to put herself in direct competition with men of science, to avoid being seen as a threat.[39] In feminist literary criticism, this has become known as the "modesty topos."[40]

Somerville's modesty is praised by Whewell in a number of other places. A reviewer of his *History of the Inductive Sciences* (1837) expressed a wish ("foolishly" Whewell's biographer Todhunter remarks)[41] that Mary Somerville should have been included in the work. Whewell's reply is clear: he does not see Somerville as an original discoverer and besides this, he believes her proper feminine modesty would never allow her to permit her name to be included—even if she deserved it: "With regard to the excellent and accomplished lady whose name the critic has thought proper to introduce into his pages . . . I will only say, that if I had employed my office of historian for the purpose of complimenting her with a place among discoverers in astronomy . . . I am persuaded that her clear sense and genuine modesty would have disapproved of the introduction of such a passage into my work."[42] His review of Somerville's *On the Connexion of the Physical Sciences* concludes with two pseudo-chivalric sonnets praising Somerville, presumably composed by Whewell himself.[43] The form of the sonnets place Somerville firmly in the traditional female position as the object of male adoration while also underscoring Whewell's own credentials as a literary gentleman. The content of the sonnets is as interesting as their form, as it is Somerville's modesty that is once more the focus. In the second of the two poems, while she is described as "learned" she is also "popular"; though she "instructs the world," she remains modest and "unobtrusive," so that she retains her femininity intact and is "dubbed by none a Blue [stocking]."[44] Whewell's sonnet thus contains a veiled threat of what might happen to Somerville if she were not modest: she would be subject to gendered insults ("dubbed a Blue"), just as BAAS members were called unmanly as a result of their elaborate feasting. Her achievement would not be acceptable but for her modesty. In a similar way, the first of the two sonnets seeks to lessen the threat that Somerville appears to represent. While she is praised for having precisely that clarity of thought that men, according to Whewell at least, lack ("Full of

clear thought; free from the ill and vain / That cloud our inward light"),[45] she appears—almost godlike—on a pedestal, the romantic subject of the chivalric "lays" of an "earlier time," removed from any direct comparison or competition with Whewell himself.

In his 1834 review of Somerville, Whewell pronounces: "Notwithstanding all the dreams of theorists, there is a sex in minds. He [that is, man] learns to talk of matters of speculation without clear notions; to combine one phrase with another at a venture; to deal in generalities; to guess at relations and bearings; to try to steer himself by antitheses and assumed maxims. Women never do this: what they understand, they understand clearly: what they see at all, they see in sunshine."[46] As far as it goes, this seems to equate to the "equal but different" school of thought regarding men's and women's respective intellectual powers; yet Whewell goes on to state that although women could, on occasion, exhibit a similar "power of understanding" to men (albeit of a different "kind" and "mode"), "it may be, that in many or most cases, this brightness belongs to a narrow Goshen; that the heart is stronger than the head."[47] In other words, for the vast majority of women, although they may in some respects possess greater clarity of thought than men, this is focused only in a narrow area, and their feelings predominate over their reason. With his final sentence Whewell makes his position clear: "It certainly is to be hoped that it is so."[48] A few exceptional women, such as Mary Somerville, there may be, and if they remain modest and adhere to the social expectations of femininity, then so be it. However, Whewell is clear that this should not be the case for the majority of women. These remarks reflect Whewell's wider thoughts on women's education. He certainly supported their education and did not feel that it should be confined to traditional female accomplishments. This is clear from his endorsement of the educational value of Mary Somerville's work for other women, as well as his support for initiatives such as the Queen's College for General Female Education located in

Harley Street, London. His sister-in-law, Lady Monteagle, who was one of the "Lady Visitors" of that College, invited him to lecture there on Plato, which he agreed to do.[49] Elsewhere, he expresses the view that "ladies" as well as men could benefit from reading Euclid.[50] However, when writing to his friend, Mrs. Austin, about his plan to lecture to ladies about Plato on 13 May 1857, Whewell declares that while he did not believe there to "be any difference of power of understanding in men and women . . . of kind and mode of understanding there may be and is."[51]

Further doubt about Whewell's enthusiasm for women of science arises when we consider the stories he tells about the few exceptional women he knows who have risen to the heights of mathematical and scientific knowledge. Although presented merely as historical accounts, read through a critical feminist lens, their grizzly ends send a warning to Whewell's female contemporaries of the fate awaiting women who do not keep within their boundaries. Most prominent here is the story of Hypatia, which Whewell describes as "unhappily as melancholy as it is well known," as though underscoring the point that the women of his day really should know the dangers of stepping outside the bounds of femininity. "She was the daughter of Theon," he continues,

> <EXT>the celebrated Platonist and mathematician of Alexandria, and lived at the time when the struggle between Christianity and Paganism was at its height in that city. Hypatia was educated in the doctrines of the heathen philosophy, and in the more abstruse sciences; and made a progress of which contemporary historians speak with admiration and enthusiasm. Synesius, bishop of Ptolemais, sends most fervent salutations "to her, the philosopher, and that happy society which enjoys the blessings of her divine voice." She succeeded her father in the government of the Platonic school, where she had a crowded and delighted audience. She was admired and consulted by Orestes, the

> governor of the city and this distinction unhappily led to her destruction. In a popular tumult she was attacked, on a rumour that she was the only obstacle to the reconciliation of the governor and of Cyril the archbishop. "On a fatal day," says Gibbon, "in the holy season of Lent, Hypatia was torn from her chariot, stripped naked, dragged to the church, and inhumanly butchered by the hands of Peter the reader and a troop of savage and merciless fanatics: her flesh was scraped from her bones with oyster shells, and her quivering limbs were delivered to the flames."[52]

<TXFL>The most telling line in this story is perhaps when Whewell explains to his readers (who are likely to have included women interested in a review of Mary Somerville's work that was especially addressed to them) that it was precisely Hypatia's "distinction" (talent, that which made her distinct and different from other women) that "led to her destruction."

<TX>Until now, Whewell assures us, Mary Somerville has maintained that modesty required of women; yet, for all her modesty, she is proclaimed to be as "rare" as Hypatia, one of only a tiny number of women who have excelled at mathematics in the same way as men; she is likened directly to Hypatia; and in many ways Somerville's actions—writing and publishing books under her own name, even delivering scientific papers at meetings of male scientists (albeit through her husband)[53]—do fly in the face of conventional expectations (including, as he admitted, Whewell's own) of female behavior and ability. His inclusion of the story of Hypatia and the graphic and horrific detail of her torture and death (which serve no clear purpose in the review) can reasonably be interpreted as evidence that Whewell felt personally threatened by Somerville, particularly as she was encroaching on what he viewed as very much his own territory, the communication and explanation of the history of science to a popular audience. We remember the quotation mentioned earlier, when Whewell, in a reply to a reviewer asking why

Somerville has no place in his history, highlights the elevated status of "my role as historian" and his right *not* to recognize her achievement.

<H1>Whewell and the "Great Man" Theory of the History of Science

<TX>From the discussion above, where we see that Whewell did indeed feel threatened by Mary Somerville, we can move on to focus on his relationship with other male scientists. One of the reasons that Whewell appears to have felt threatened by Mary Somerville is because she adopted a role (and made a name for herself) in an area close to Whewell's own—explaining the development of scientific knowledge to a popular audience. When we consider the wider scientific enterprise in England at the time, this type of role seems to sit rather awkwardly in terms of its perceived value, importance, and manliness. In the scientific community, there was a strong sense in the early nineteenth century that the great men of science were those who made great discoveries, not those who merely communicate knowledge of those discoveries to others. We see this clearly with regard to Whewell himself when Francis Galton describes why he is not included in the "Men of Science" section of his work *Hereditary Genius* (1869), just three years after Whewell's death. One criterion was particularly important for inclusion, according to Galton in the introduction to the section: "The fact of a person's name being associated with some one striking scientific discovery."[54] Galton admits that Whewell's "intellectual energy was prodigious, his writing unceasing, and his conversational powers extraordinary." Moreover, "his influence on the progress of Science during the earlier years of his life" was, we are told, "considerable"; yet for all this he was not selected by Galton because "it is impossible to specify the particulars of that influence, or so to justify our opinion that posterity will be likely to pay regard to it. Biographers will seek in vain for important discoveries in Science with which Dr Whewell's name may hereafter be identified."[55] In other words, his chosen role as "historian" of

science, an explainer—the same role Mary Somerville was identified with—was not sufficient to admit him to the pantheon of elite scientific men. We remember Whewell's own reply to a reviewer of his *History*, that he had not given Mary Somerville "a place among the discoverers of astronomy" because she was none such and to do so would be mere flattery.

That Whewell was sensitive during his life to the view that Galton expressed about him after his death, while not certain, is strongly suggested when we examine his response to his brother-in-law Frederic Myers's *Six Lectures on Great Men*.[56] While praising his project in general terms (particularly "that it may help to correct the tendency of the present times to moral cowardice"[57]), Whewell criticizes Myers in a letter of March 1848 for focusing on "great men," those he identifies as "bold and vehement" as opposed to "good men,"[58] who, though less remarkable for their individual achievements, nonetheless contribute to noble projects that benefit humanity as part of a much larger collective effort: "The difference between us I have sometimes expressed . . . by contrasting worship of heroes with reverence for ideas. It appears to me that a reverence for the ideas of truth, justice, humanity, and for the forms in which they have been embodied—law, institutions, books, national habits, including, of course, religious light and heat—that these are more truly deserving of reverence than any man's character."[59] Whewell tries to argue that "the progress of mankind . . . consists in the progress of these things" and "not in the energy with which at intervals this man or that labours to promote their progress." "Only a slow progress is granted to man," he continues, adopting an elevated religious tone, "and only a slight share to any one man and the men to whom the greatest share is due are not, I think, those whom you call great men."[60] In other words, whatever the world might think of individual "great men," it was, Whewell was suggesting, rather those who labored humbly and inconspicuously for the greater good who were really more deserving of credit and renown.

And yet, in his own *Philosophy of the Inductive Sciences* (1840), Whewell does indeed label certain individual discoverers as "great men" just in the way that Galton does in *Hereditary Genius*. He describes Bacon, for example, as the "Hero of the revolution in scientific method," standing "far above the herd of loose and visionary speculators who, before and about his time, spoke of the establishment of new philosophies."[61] Drawing on the language of classical myth, Bacon is for Whewell "not only one of the Founders, but the supreme legislator of the modern Republic of Science, not only the Hercules who slew the monsters that obstructed the earlier traveller, but the Solon who established a constitution fitted for all future time."[62] Indeed, Whewell describes his own approach to the history of science in strikingly similar terms to Myers's lecture series—as an evaluation of the contribution of "the great men of the past" and their "discoveries."[63] When covering the ancient world, he endorses the speech of Pliny praising Hipparchus and others in a similar vein: "Great Men! elevated among the common standard of human nature, by discovering the laws which celestial occurrences obey, and by freeing the wretched mind of man from the fears which eclipses inspired."[64] Thus, in both his *History* and *Philosophy*, Whewell plays his part in constructing that image of the history of science as, in Dena Goodman's words, "a mythical history of masculine reason."[65]

In the end, we are left with the impression of a man who was somewhat ill at ease with himself and his own masculinity (like many of his contemporary men of science); he sought to be recognized as a gentleman rather than a scholar, although he doubted his credentials even when he became master of Trinity. He did not see himself sufficiently aristocratic to be elected as president of the BAAS. He idealizes great men such as Bacon and Newton, "discoverers" in the history of science, but struggled to live up to this ideal himself. He tried at times (particularly in his response to Frederic Myers's lectures on great men) to construct an alternative vision of

good, humble men, team players rather than heroes, who work together collaboratively for the collective good of science and humanity. But he did not seem to believe fully in this alternative ideal, although it is the one he was aligned with by Galton after his death. Ultimately, as we have seen in his comments about Mary Somerville, modesty and humility were, for Whewell (and his contemporaries), fundamentally feminine virtues—and this fact was hard to reconcile with a vision of himself as an influential, independent man of science.

<NHD>11. Whewell, Gender, and Science

<NTX>[1] See, for example, Kathryn A. Neeley, *Mary Somerville: Science, Illumination, and the Female Mind* (Cambridge: Cambridge University Press, 2001), 13–15.

[2] For Mary Somerville and her contribution to early nineteenth-century science, see Elizabeth Chambers Patterson, *Mary Somerville and the Cultivation of Science, 1815–1840* (The Hague: Nijhoff, 1983).

[3] [William Whewell], "*On the Connexion of the Physical Sciences.* By Mrs. Somerville," *Quarterly Review* 51, no. 101 (March 1834): 55–56.

[4] For the importance of a gentlemanly model of scientific masculinity at the BAAS in its early years, see Heather Ellis, *Masculinity and Science in Britain, 1831–1918* (London: Palgrave Macmillan, 2017).

[5] See Jack Morrell and Arnold Thackray, *Gentlemen of Science: The Early Years of the British Association for the Advancement of Science* (Oxford: Clarendon Press, 1981).

[6] William Whewell, *On the Free Motion of Points, and on Universal Gravitation, Including the Principal Propositions of Books I. and III. of the Principia; The First Part of* A Treatise on Dynamics. *Third Edition* (Cambridge: J. & J. J. Deighton; London: Whittaker & Arnot, 1836), v.

[7] See Ellis, *Masculinity and Science in Britain*, esp. chap. 4.

[8] On the "decline of science" debate, see, for instance, James A. Secord, *Visions of Science: Books and Readers at the Dawn of the Victorian Age* (Chicago: University of Chicago Press, 2014), 52–79. See also Max Dresow's chapter in the present volume.

[9] Steven Shapin, "'A Scholar and a Gentleman': The Problematic Identity of the Scientific Practitioner in Early Modern England," *History of Science* 29, no. 3 (1991); Ellis, *Masculinity and Science in Britain*, 24–32.

[10] Ellis, *Masculinity and Science in Britain*, esp. chap. 4.

[11] Adam Sedgwick to Mrs Lyell, October 16, 1837, quoted in in J. W. Clark and T. M. Hughes, *The Life and Letters of the Reverend Adam Sedgwick*, 2 vols. (Cambridge: Deighton, Bell, 1890), 1:490.

[12] ODNB, s.v. "Whewell, William," by Richard Yeo, accessed June 19, 2022, https://doi.org/10.1093/ref:odnb/29200. For more on Whewell's social origins, see Christopher Stray's chapter in the present volume.

[13] WW to his sisters, April 14, 1815, Add.Ms.a.301, WP, TCL.

[14] On the importance of Whewell's social origins in shaping his academic and scientific career, see Yeo, *Defining Science*, esp. 15–19.

[15] See Shapin, "Scholar and a Gentleman."

[16] Charles Lyell to WW, September 23, 1840, Add.Ms.a.208/130, WP, TCL.

[17] WW to R. I. Murchison, September 18, 1840, quoted in Todhunter, *Whewell*, 2:287.

[18] Morrell and Thackray, *Gentlemen of Science*, 149.

[19] Morrell and Thackray, *Gentlemen of Science*, 150.

[20] Jan Golinski, "Humphry Davy's Sexual Chemistry," *Configurations* 7, no. 1 (1999): 20.

[21] Adam Sedgwick, quoted in Morrell and Thackray, *Gentlemen of Science*, 151.

[22] Charles W. J. Withers and Rebekah Higgitt, "Science and Sociability: Women as Audience at the British Association for the Advancement of Science, 1831–1901," *Isis* 99, no. 1 (2008): 14.

[23] Withers and Higgitt, "Science and Sociability," 20.

[24] Withers and Higgitt, "Science and Sociability," 21.

[25] Harriet Martineau, *Harriet Martineau's Autobiography*, 2 vols. (London: Virago, 1983), 2:137.

[26] *Times*, August 24, 1836, quoted in Withers and Higgitt, "Science and Sociability," 13.

[27] Caroline Fox, quoted in Withers and Higgitt, "Science and Sociability," 22.

[28] John Herschel, quoted in Clark and Hughes, *Adam Sedgwick*, 1:516.

[29] Charles Babbage to Charles Daubeny, April 28, 1832, quoted in Morrell and Thackray, *Gentlemen of Science*, 137.

[30] William Buckland, quoted in Morrell and Thackray, *Gentlemen of Science*, 151.

[31] [Whewell], "*On the Connexion of the Physical Sciences*," 55.

[32] [Whewell], "*On the Connexion of the Physical Sciences*," 55.

[33] [Whewell], "*On the Connexion of the Physical Sciences*," 55; original emphasis.

[34] [Whewell], "*On the Connexion of the Physical Sciences*," 56.

[35] Todhunter, *Whewell*, 1:92.

[36] [Whewell], "*On the Connexion of the Physical Sciences*," 58.

[37] [Whewell], "*On the Connexion of the Physical Sciences*," 64.

[38] [Whewell], "*On the Connexion of the Physical Sciences*," 65.

[39] [Whewell], "*On the Connexion of the Physical Sciences*," 65.

[40] Mary Orr, "Catalysts, Compilers and Expositors: Rethinking Women's Pivotal Contributions to Nineteenth-Century 'Physical Sciences,'" in *The Palgrave Handbook of Women and Science*

since 1660, ed. C. G. Jones, A. E. Martin, and A. Wolf (Cham, Switzerland: Palgrave Macmillan, 2021), 507.

[41] Todhunter, *Whewell*, 1:116.

[42] William Whewell, quoted in Todhunter, *Whewell*, 1:116. Todhunter quotes from Whewell's reply to a reviewer of the *History*.

[43] We know for certain that at least the first of the sonnets was composed by Whewell as it reappears in his *Sunday Thoughts and Other Verses* (Cambridge: Cambridge University Press, 1847), 27.

[44] [Whewell], "*On the Connexion of the Physical Sciences*," 68.

[45] [Whewell], "*On the Connexion of the Physical Sciences*," 68.

[46] [Whewell], "*On the Connexion of the Physical Sciences*," 65.

[47] [Whewell], "*On the Connexion of the Physical Sciences*," 65.

[48] [Whewell], "*On the Connexion of the Physical Sciences*," 65.

[49] WW to Mrs [Sarah] Austin, May 13, 1857, quoted in Janet Ross, *Three Generations of Englishwomen. Memoirs and Correspondence of Mrs. John Taylor, Mrs. Sarah Austin, and Lady Duff Gordon*, 2 vols. (London: John Murray, 1888), 2:50.

[50] Ross, *Three Generations of Englishwomen*, 465.

[51] WW to Mrs. Austin, quoted in Ross, *Three Generations of Englishwomen*, 492–93.

[52] [Whewell], "*On the Connexion of the Physical Sciences*," 66.

[53] On the role of Mary Somerville's husband, William Somerville, in supporting and promoting her scientific work, see Brigitte Stenhouse, "Mister Mary Somerville: Husband and Secretary," *Mathematical Intelligencer* 43, no. 1 (March 2021).

[54] Francis Galton, *Hereditary Genius: An Inquiry into Its Laws and Consequences* (London: Macmillan, 1869), 192.

[55] Galton, *Hereditary Genius*, 193.

[56] Frederic W. H. Myers, *Six Lectures on Great Men* (Keswick, UK: T. Bailey and Son, 1848).

[57] WW to Frederick W. H. Meyers, June 18, 1848, quoted in Douglas, *Whewell*, 350.

[58] WW to Frederick W. H. Meyers, June 18, 1848, 353.

[59] WW to Frederick W. H. Meyers, June 18, 1848, 351–52.

[60] WW to Frederick W. H. Meyers, June 18, 1848, 352. For more details on Whewell's views on the character of great scientists, and the broader context in which they were shaped, see, for instance, Richard Yeo, "Genius, Method, and Morality: Images of Newton in Britain, 1760–1860," *Science in Context* 2, no. 2 (1988).

[61] William Whewell, *The Philosophy of the Inductive Sciences, Founded upon Their History*, 2 vols. (London: John W. Parker, 1840), 2:392.

[62] Whewell, *Philosophy*, 2:389.

[63] William Whewell, *The History of the Inductive Sciences, from the Earliest to the Present Time*, 3 vols. (London: John W. Parker, 1837), 1:xi–xii.

[64] Whewell, *Philosophy*, 2:302–3.

[65] Dena Goodman, *The Republic of Letters: A Cultural History of the French Enlightenment* (Ithaca, NY: Cornell University Press, 1994), 3.